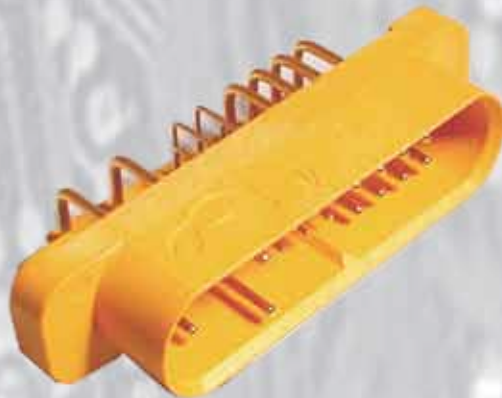
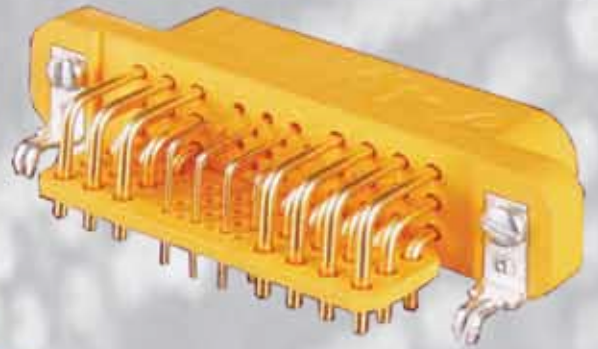


GOLDFISH

Power Connectors



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS

Goldfish Power Connectors

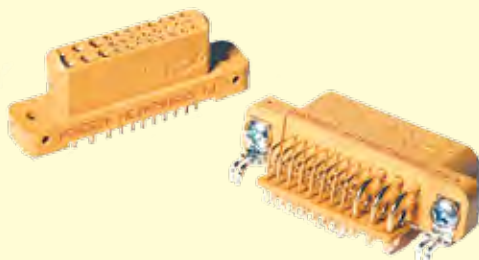


Typical Examples of Goldfish Power Connectors

GFSH02



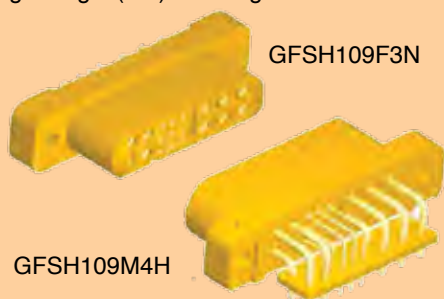
GFSH624



GFSH89



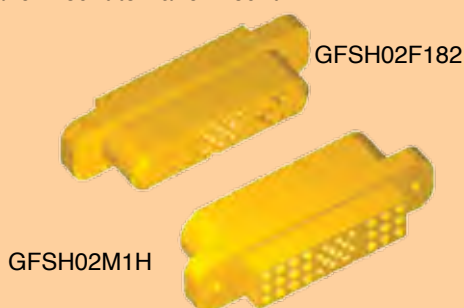
Right Angle (90°) to Straight PCB Mount



GFSH109F3N

GFSH109M4H

Panel Mount to Panel Mount



GFSH02F182

GFSH02M1H

Goldfish Power Connector Features !!!

- **Excellent Power Density**
- **Blind mate - Float mounting**
- **20, 30, 35 and 50 ampere power contacts**
- **Hot Plug Capability**
- **AC, DC and Signal solid machined contacts in one connector**
- **Lower Cost Precision-Formed Female Signal Contacts also available**
- **Safety Agency Recognition**

Unless otherwise specified, dimensional tolerances are:

1. Male contact mating diameters	±0.03 [0.001]
2. Contact termination diameters	±0.08 [0.003]
3. All diameters	±0.13 [0.005]
4. All other dimensions	±0.38 [0.015]

All dimensions are in millimeters [inches]

Unless otherwise stated, Positronic code and part number are marked on each connector. The contents of the code are subjected to the discretion of Positronic Asia Pte Ltd and it is for internal use only. Marking may be done on either side or both sides of the connector.

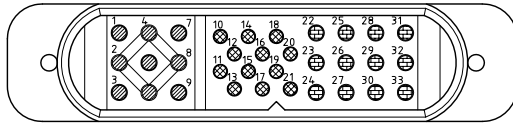
Positronic Asia Pte Ltd believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Asia Pte Ltd assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Goldfish Power Connectors

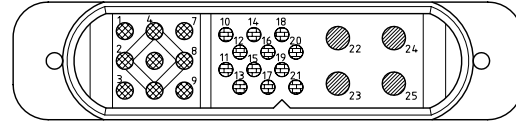
Connector versions and technical characteristics



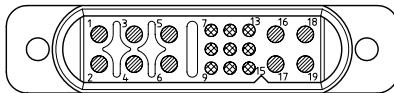
Connector Versions



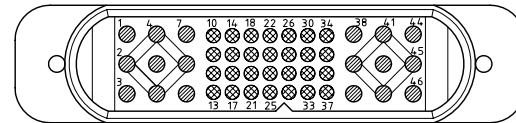
GFSH02: Fully populated
Twenty-one (21) Size 16 power contacts
Twelve (12) Size 20 signal contacts



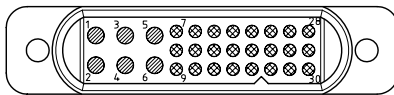
GFSH435: Fully populated
Four (4) size 12 power contacts
Nine (9) size 16 power contacts
Twelve (12) size 20 signal contacts



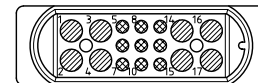
GFSH109: Fully populated
Ten (10) Size 16 power contacts
Nine (9) Size 22 signal contacts



GFSH928: Fully populated
Eighteen (18) Size 16 power contacts
Twenty-eight (28) Size 22 signal contacts



GFSH624: Fully populated
Six (6) size 16 power contacts.
Twenty four (24) size 22 signal contacts.



GFSH89: Fully populated
Eight (8) Size 16 power contacts
Nine (9) Size 22 signal contacts

Technical Characteristics

Materials and Finishes:

Insulator: Glass-filled nylon, UL 94V-0. Color: Orange.
Contacts: Precision machined copper alloy with gold over nickel plate. Other finishes available upon request.
Precision formed copper alloy with selective gold over nickel plate at mating end, and tin over nickel plate at termination end

Electrical Characteristics:

Contact Current Ratings (per UL 1977):
Size 12 Contacts: 35 amperes, continuous (standard material).
50 amperes, continuous (high conductivity material).
Size 16 Contacts: 20 amperes, continuous (standard material).
30 amperes, continuous (high conductivity material).
Size 20 Contacts: 5 amperes, nominal (standard material).
Size 22 Contacts: 3 amperes, nominal (standard material).
1 amperes, nominal (precision-formed).
Initial Contact Resistance (max.) per IEC 512-2, Test 2b:
Size 12 Contacts: 0.001 ohms (standard material).
Size 12 Contacts: 0.0004 ohms (high conductivity material).
Size 16 Contacts: 0.0016 ohms (standard material).
0.0007 ohms (high conductivity material).
Size 20/22 Contacts: 0.005 ohms (standard material).
Size 22 Contacts: 0.009 ohms (precision-formed).
Insulator Resistance (per IEC 512-2, Test 3a): 5 G ohms min.

Proof Voltage:

Power Contacts: 1500 V r.m.s.
1300 V r.m.s. (GFSH89 and GFSH624)
Signal Contacts: 1000 V r.m.s.

Working Voltage:

Power Contacts: 500 V r.m.s.
150 V r.m.s. (GFSH89 and GFSH624)
Signal Contacts: 333 V r.m.s.

Hot Pluggable (50 couplings per UL 1977, paragraph 15):

Size 12 Contacts: 250 VAC at 25 amperes.
Size 16 Contacts: Consult factory.

Mechanical Characteristics:

Blind Mating System: Molded in guides allow for misalignment up to 2.00 mm [0.079 inch].

Polarization: Provided by insulator.

Removable Contacts: Install contact from rear of insulator; release with extraction tool from front of insulator. Female contacts feature "closed entry" 1,000 cycles design.

Fixed Contacts: Size 12 and 16 female contacts feature "closed entry" 1,000 cycles design (for both straight & right angle (90°) PCB mount).
Size 22 machined and precision-formed contacts feature "open entry" 250 cycle design for both straight & right angle (90°) PCB mount.

Contact Retention in insulator (removable and fixed):

Power Contacts: 45 N [10 lbs.] min.
Signal Contacts: 27 N [6 lbs.] min.

Sequential Mating: Two and three level systems available. Consult factory for customization.

Climatic Characteristics:

Working temperature: -55° to +105°C.

Recognized:

UL: UL File E49351 is available for all GFSH versions except GFSH928 crimp version.

TÜV: File 006089

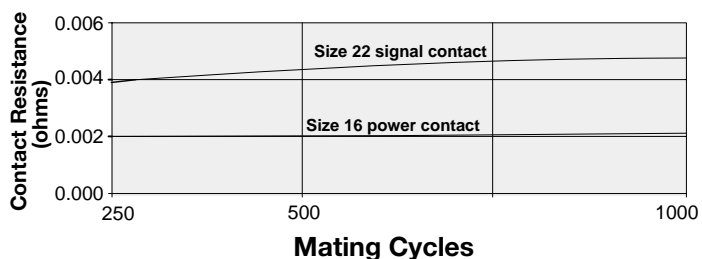
For TÜV, first mate contact is not designed for use as protective earthing terminal.

Consult factory for updated information.



Contact Performance

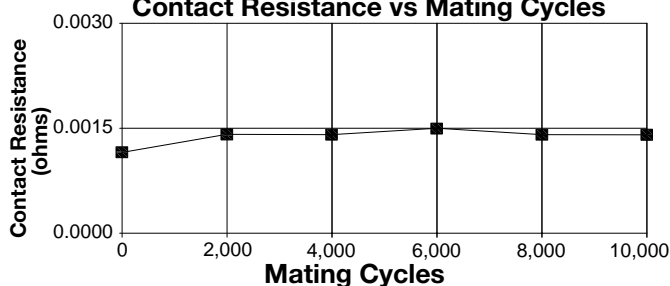
Contact Resistance vs Mating Cycles



Humidity condition per EIA-364-31B, Method II (condition A) after 250, 500 and 1,000 cycles.
Contact resistance tested per IEC 512-2, Test 2b.
Connectors tested: GFSH624.

Note: This information is supplied for reference. Contact wear and change in contact resistance may vary from one application to another.
Contact technical sales to discuss details.

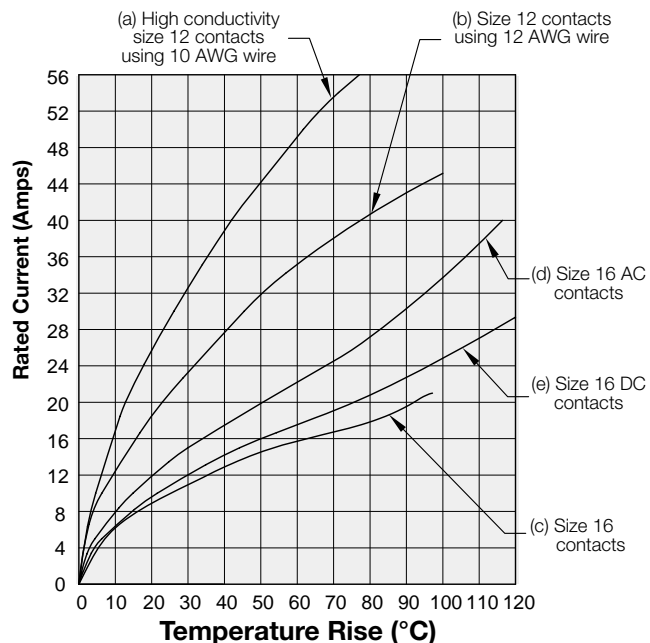
Contact Resistance vs Mating Cycles



Contact resistance test under 10,000 cycles mechanical operation using GFSH89 with 12 AWG wires and size 16 contacts under load (not utilizing signal contacts).
Tested per IEC 512-2, Test 2b. Connectors tested: GFSH89.

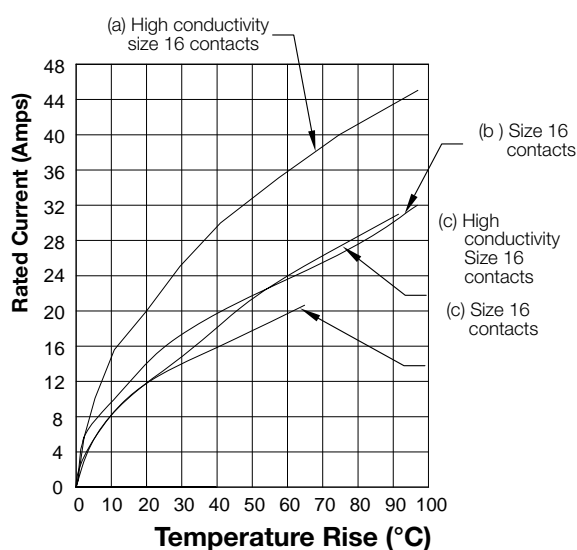
Temperature Rise Curves

Goldfish Versions 02, 435 and 928



- Connectors tested: GFSH435.**
Temperature curve developed using wires of 10 AWG and 12 AWG.
For curve (a) and (b).
All size 12 contacts under load.
- Connectors tested: GFSH928.**
Temperature curve developed using wire of 12 AWG.
For curve (c).
All size 16 contacts under load.
- Connectors tested: GFSH02.**
Temperature curve developed using wire of 12 AWG.
For curve (d) and (e).
All size 16 contacts under load.

Goldfish Versions 109, 624 and 89



- Connectors tested: GFSH89.**
Temperature curve developed using wires of 12 AWG.
For curve (a) and (b).
All size 16 contacts under load.
- Connectors tested: GFSH624.**
Temperature curve developed using wires of 14 AWG.
For curve (c).
All size 16 contacts under load.
- Connectors tested: GFSH109.**
Temperature curve developed using wires of 12 AWG.
For curve (d).
All size 16 contacts under load.

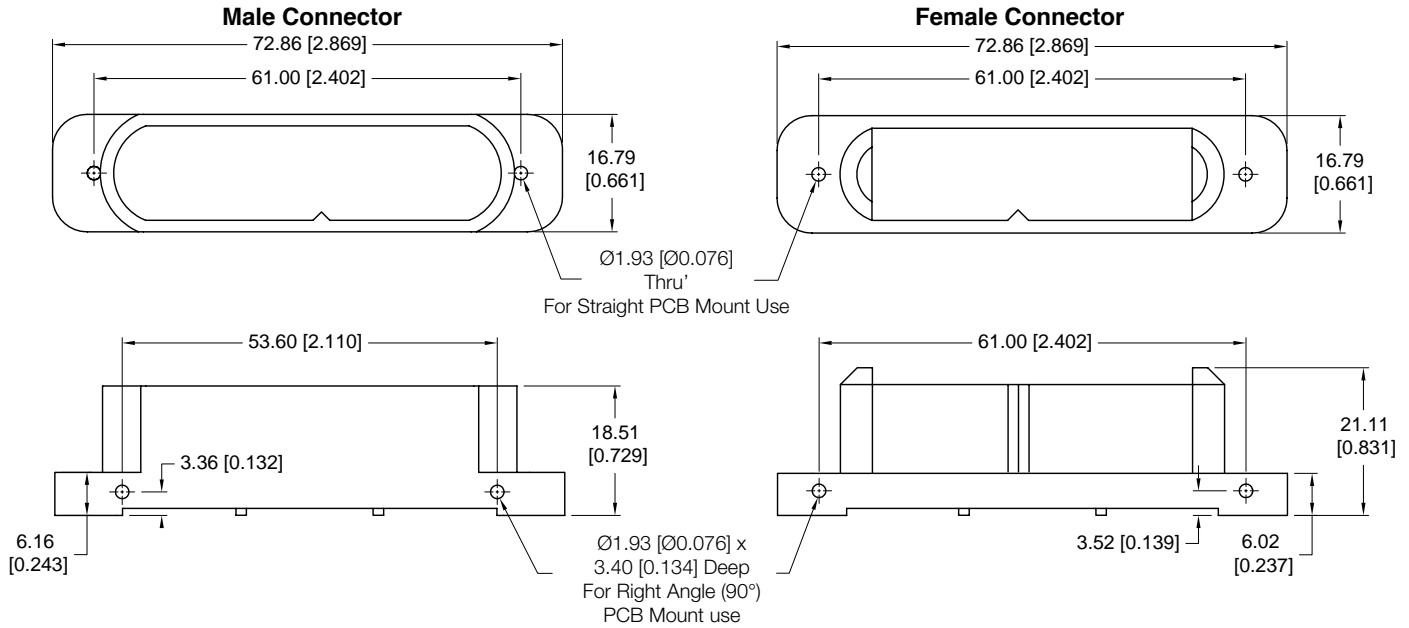
Tested per IEC Publication 512-3, Test 5a.

Note: These information supplied for reference only. Contact wear and change in contact resistance may vary from one application to another.
Contact technical sales to discuss details.

Straight and Right Angle (90°) PCB Mount Connectors Goldfish Versions 02, 435 and 928

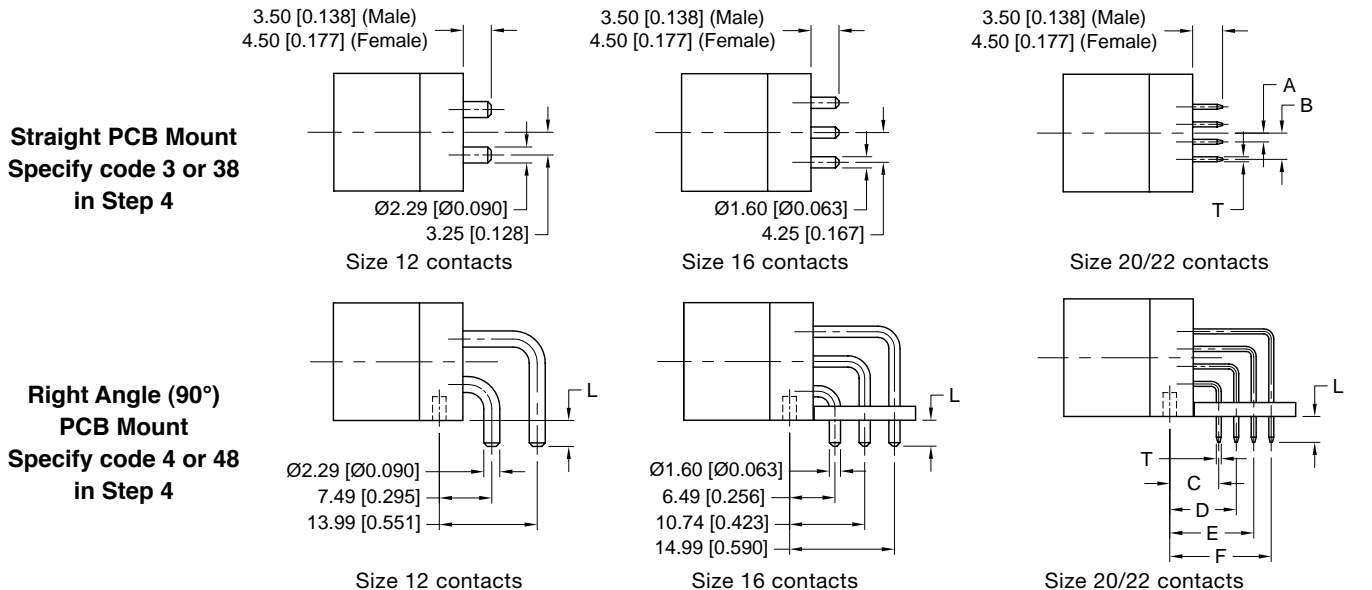


Outline Dimensions



Contact Termination Dimensions

See Step 4 of Ordering Information



DIM	Goldfish 02/435	Goldfish 928
A	1.25 [0.049]	1.35 [0.053]
B	3.75 [0.148]	4.05 [0.159]
C	6.99 [0.275]	6.49 [0.256]
D	9.49 [0.374]	9.32 [0.367]
E	11.99 [0.472]	12.16 [0.479]
F	14.49 [0.570]	14.99 [0.590]

T = Ø0.71 [Ø0.028]

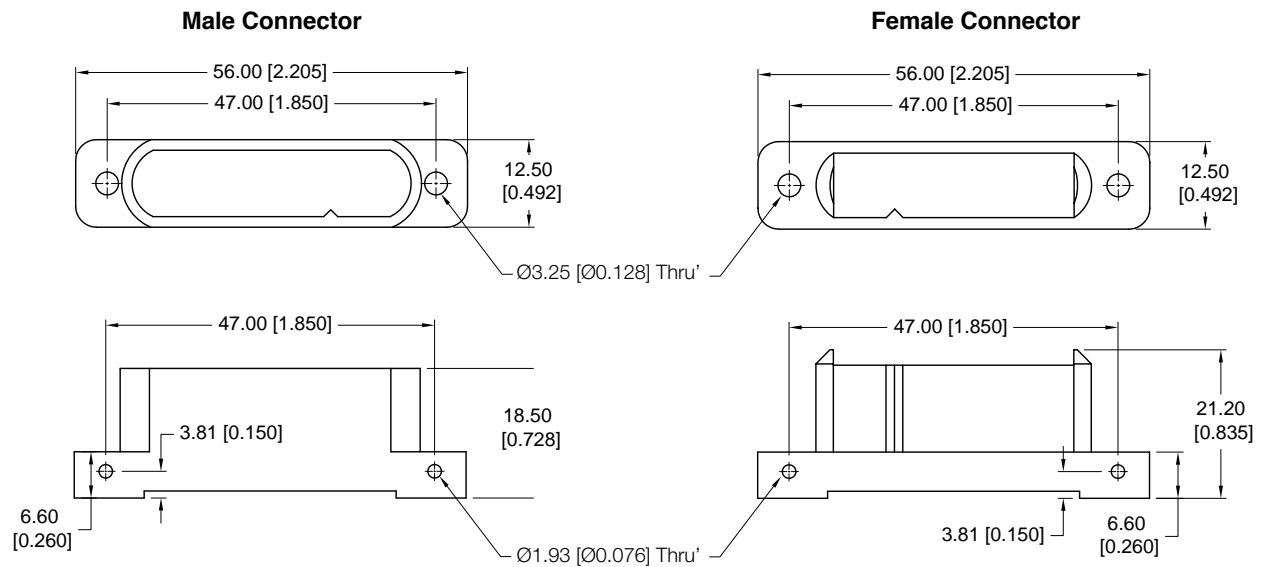
L = 3.70 [0.146] (Male)

4.50 [0.177] (Female)

Straight and Right Angle (90°) PCB Mount Connectors Baby Goldfish Versions 109 and 624



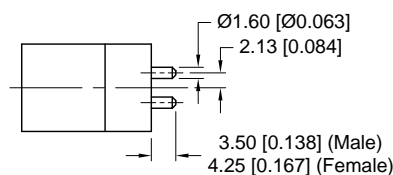
Outline Dimensions



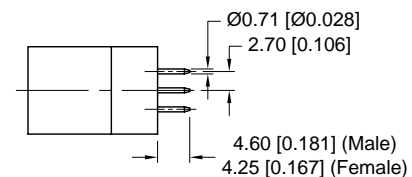
Contact Termination Dimensions

See Step 4 of Ordering Information

Straight PCB Mount
 Specify code 3 or 27
 in Step 4

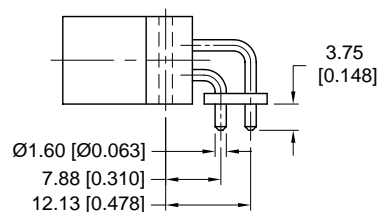


Size 16 contacts

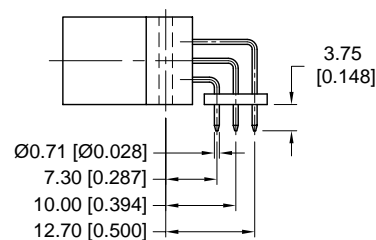


Size 22 contacts

**Right Angle (90°)
 PCB Mount**
 Specify code 4 or 47
 in Step 4



Size 16 contacts



Size 22 contacts

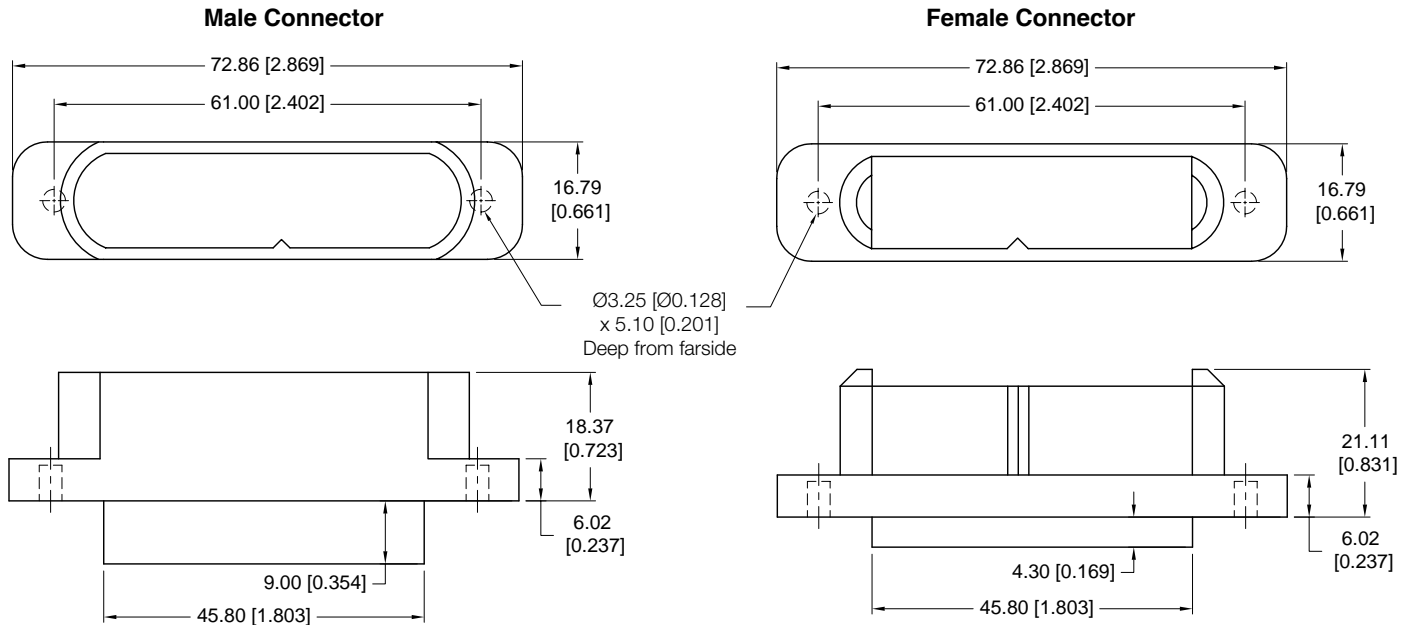
Panel Mount Connectors (Removable contacts)



Goldfish Versions 02, 435 and 928

Specify code 1 in Step 4 of Ordering Information

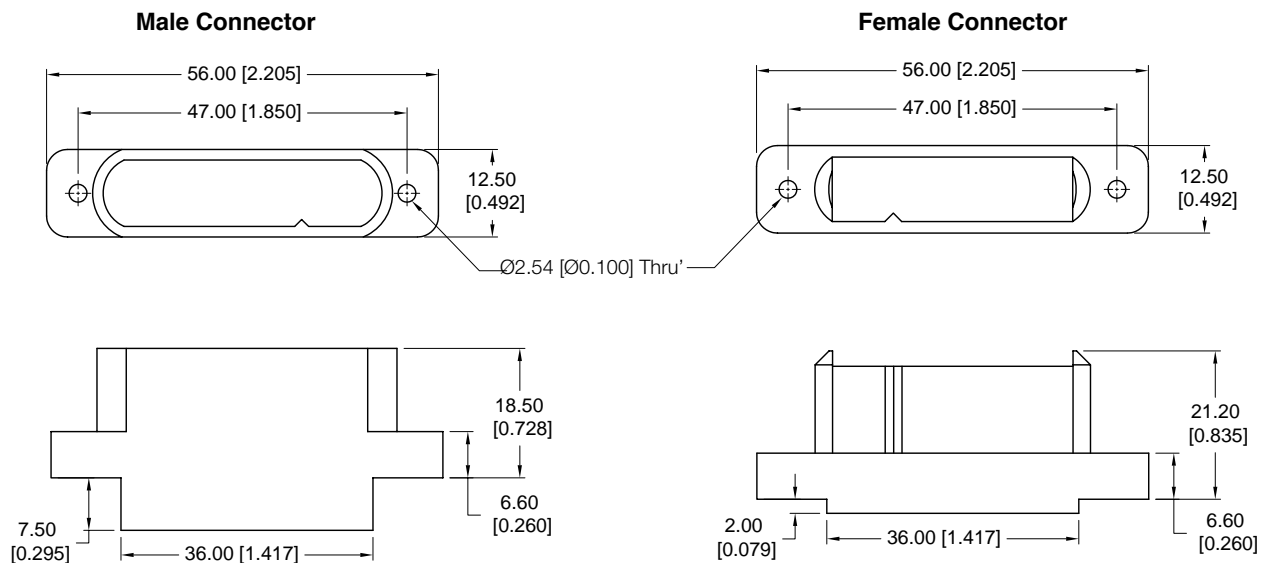
Outline Dimensions



Baby Goldfish Versions 109 and 624

Specify code 1 in Step 4 of Ordering Information

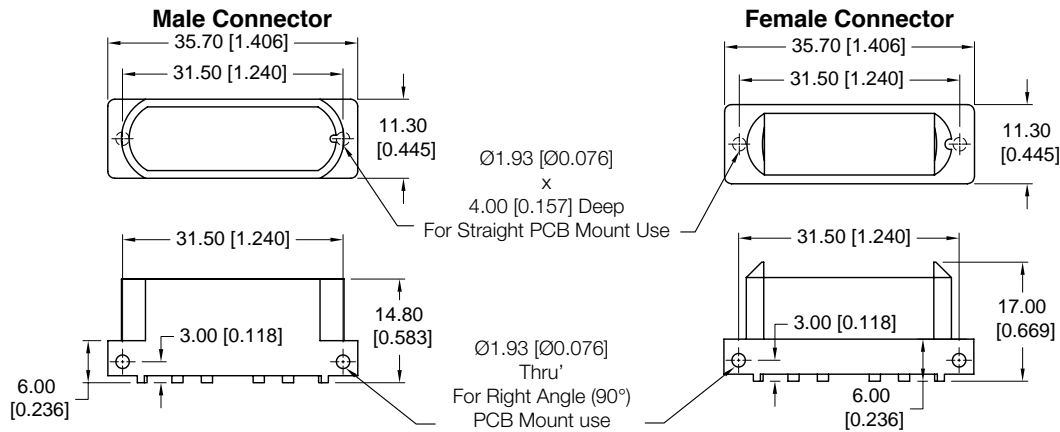
Outline Dimensions



Removable contacts should be allowed to float after installing in connector body for optimum mating.
Consult factory if alignment insert for male contacts is desired.
Alignment insert for GFSH89, GFSH109 and GFSH928 are available. Consult factory for other versions.

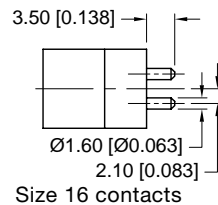


Straight and Right Angle (90°) PCB Mount Connector Outline Dimensions

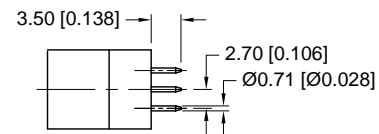


Contact Termination Dimensions - See Step 4 of Ordering Information

Straight PCB Mount
Specify code 3 or 37
in Step 4

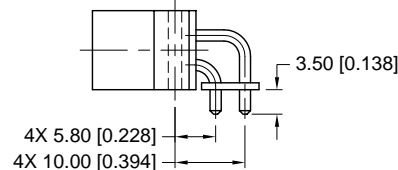


Size 16 contacts

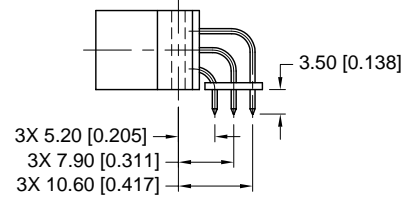


Size 22 contacts

**Right Angle (90°)
PCB Mount**
Specify code 4 or 47
in Step 4



Size 16 contacts

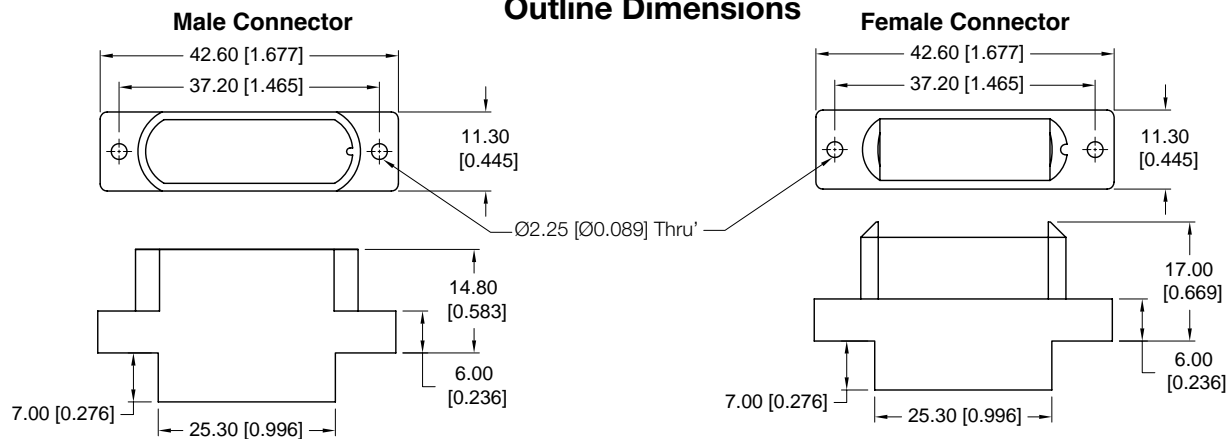


Size 22 contacts

Panel Mount Connectors

Specify code 1 in Step 4 of Ordering Information

Outline Dimensions

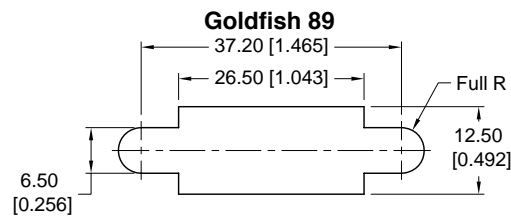
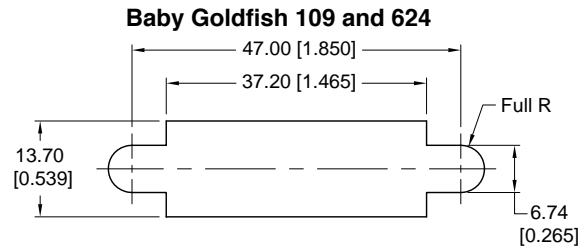
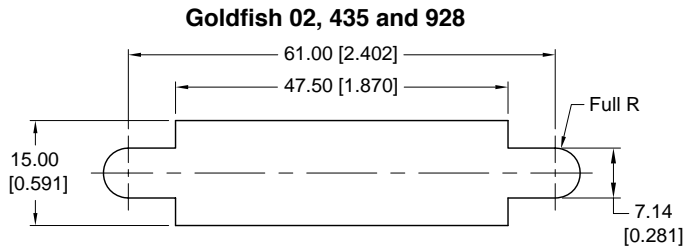


Removable contacts should be allowed to float after installing in connector body for optimum mating.
Contact factory for additional polarization features for panel mounting.

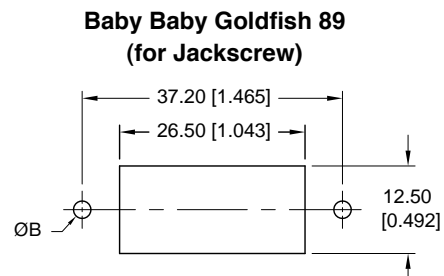
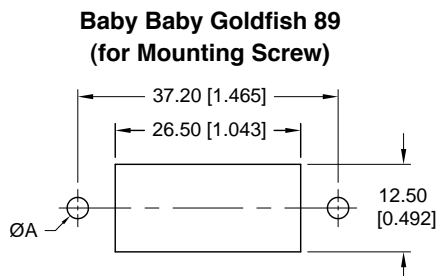
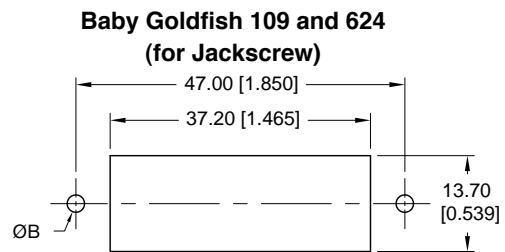
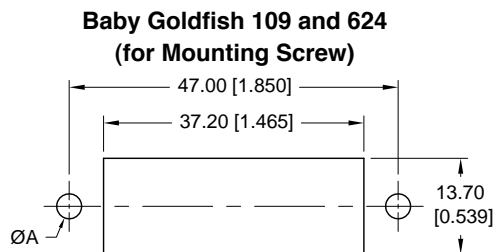
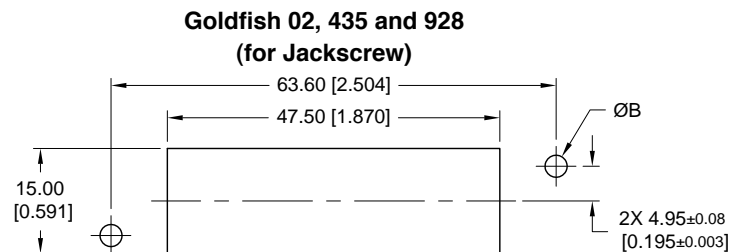
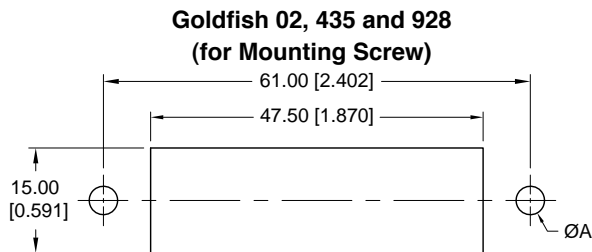
Panel Cutout Dimensions (For Panel Mount Connectors)



Panel Cutout Dimensions (for Float Bushing)



Panel Cutout Dimensions (for Mounting Screws and Jackscrews)



Mounting Screws	ØA ±0.08 [0.003]
02, 435 and 928	4.06 [0.160]
109 and 624	3.56 [0.140]
89	3.05 [0.120]

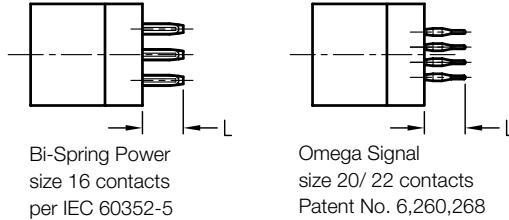
Jackscrews	ØB ±0.08 [0.003]
02, 435 and 928	3.15 [0.124]
109 and 624	2.49 [0.098]
89	2.49 [0.098]

Compliant Press-Fit Terminations For Straight PCB Mount Connectors

See Step 4 of Ordering Information



Contact Termination Dimensions



Connector shown is male. Unless otherwise specified, above dimensions are identical to female connector.

Specify code 93 or 94 in Step 4.



Order Code	"L" Length	PCB Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 [0.175] min.

Note: Outline dimensions for Press-Fit Connectors are the same as those of Straight PCB Mount Versions.

For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, please refer to SK6370 or consult factory for more information.

Press-Fit User Information

Connectors-to-PCB installation instructions:

1. Choose the proper tooling. Insertion tooling and single contact repair tooling are available from Positronic.
2. Insert the connector into the PCB or backplane and seat connector fully with seating/ support tool.
3. Secure the connector to the PCB or backplane using two self-tapping screws for plastic.

Need to repair a single contact because of damage in manufacturing, testing, or field use?

1. Choose the proper contact extraction tool.
2. Push the contact out with a firm, steady force. Remember, excessive force is not required.
3. Install a new contact with the proper contact insertion tool. You are done.

Single Contact Insertion/ Extraction Tools: Ordering Information

Contact Size	Insertion Tool Part No.		Extraction Tool Part No.
Size 16	Male	9513-100-0-0	9513-102-0-0
	Female	9513-101-0-0	
Size 20	Male	9512-100-0-0	9512-102-0-0
	Female	9512-101-0-0	
Size 22	Male	9512-103-0-0	9512-105-0-0
	Female	9512-104-0-0	

Mounting Screws: Ordering Information

Connector Variant	Screw Part No.
GFSH02/928* 1H	2076-12-6-16
GFSH02/928* 3H	4546- 7 -1-16
GFSH02/928* 4H	4546- 7 -0-16
GFSH02/928*93H	4546- 7 -2-16
GFSH02/928*94H	4546- 7 -3-16
GFSH109/624* 1H	2076-16-1-16
GFSH109/624* 3H	2076-12-6-16
GFSH109/624* 4H	4546- 7 -0-16
GFSH109/624*93H	2076-12-6-16
GFSH109/624*94H	2076-12-0-16
GFSH435* 1 H	2076-12-6-16
GFSH435* 3 H	4546- 7 -1-16
GFSH435* 4 H	4546- 7 -0-16
GFSH435*38H	4546- 7 -1-16
GFSH435*48H	4546- 7 -0-16
GFSH89*1H	4546-14-1-16
GFSH89*3H	4546- 7 -1-16
GFSH89*4H	4546- 7 -0-16
GFSH89*93H	4546- 7 -1-16
GFSH89*94H	4546- 7 -2-16

Material: Steel with Zinc plating

Connector Installation Tools: Ordering Information

Connector Variant	Seating Tool Part No.	Support Tool Part No.
GFSH02M93/94H	9513-309-2-0	9513-404-1-0
GFSH02F93/94H	9513-309-3-0	
GFSH109M93/94H	9513-309-4-0	9513-404-2-0
GFSH109F93/94H	9513-309-9-0	
GFSH435M93/94H	9513-309-10-0	9513-309-11-0
GFSH435F93/94H	9513-309-5-0	
GFSH624M93/94H	9513-309-12-0	9513-309-13-0
GFSH624F93/94H	9513-309-14-0	
GFSH89M93/94H	9513-309-7-0	9513-309-8-0
GFSH89F93/94H	9513-309-6-0	
GFSH928M93/94H	9513-309-15-0	9513-309-16-0
GFSH928F93/94H	9513-309-17-0	



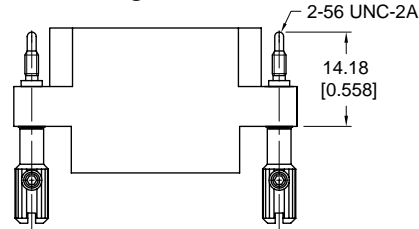
Jackscrew Systems for Goldfish Version 89

Goldfish Version 89 (Only for Panel Mount)

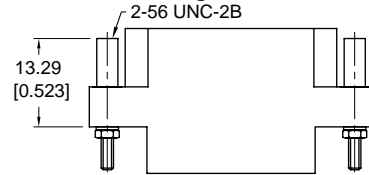
Material: E - Stainless Steel, Passivated.
T - Stainless Steel, Passivated.

Hex Nut and Lockwashers
- Stainless Steel, Passivated.
Knob - Aluminium, Yellow Anodized.

Specify code E in Step 5
of Ordering Information



Specify code T in Step 5
of Ordering Information



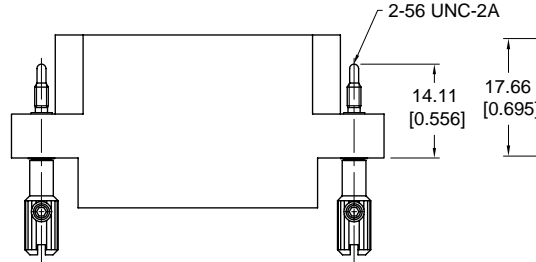
Jackscrew Systems for Goldfish Version 109 and 624

Goldfish Version 109 and 624 (Panel Mount)

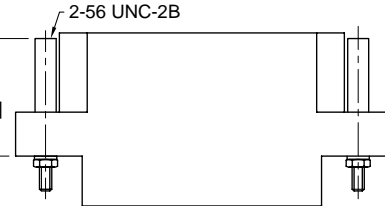
Material: E - Stainless Steel, Passivated.
T - Stainless Steel, Passivated.

Hex Nut and Lockwashers
- Stainless Steel, Passivated.
Knob - Aluminium, Yellow Anodized.

Specify code E in Step 5
of Ordering Information



Specify code T in Step 5
of Ordering Information

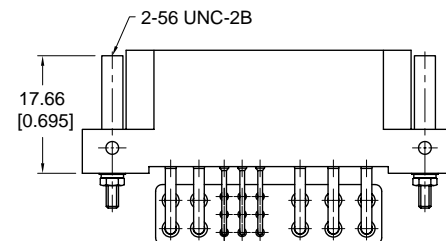
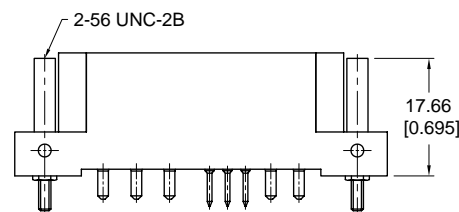


Goldfish Version 109 and 624 (Straight or Right Angle (90°))

Material: T - Stainless Steel, Passivated.

Hex Nut and Lockwashers
- Stainless Steel, Passivated.
For PCB version, only T is available.

Specify code T in Step 5 of Ordering Information



Note: For GFSH624, only PCB male fixed jackscrew and Panel female rotating jackscrew is available.

Jackscrew Systems for Goldfish Version 02, 435 and 928

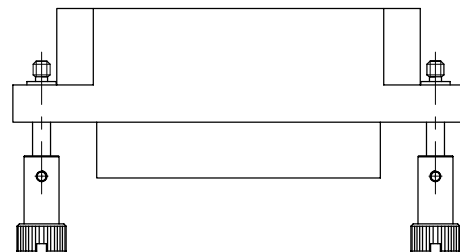
Goldfish Version 02, 435 and 928 (Panel Mount)

Material:
E - Steel, zinc plate with dichromate seal or chromate seal.
Knob - Aluminium, Yellow Anodized.

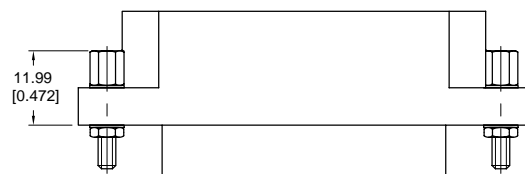
Material:
T - Steel, zinc plate with dichromate seal or chromate seal.
Hex Nut - Brass with dichromate seal or chromate seal
Lockwashers - Phosphor Bronze with dichromate seal or chromate seal

Consult factory for GFSH02, 435 and 928 PCB version of code T for availability.

Specify code E in Step 5 of Ordering Information



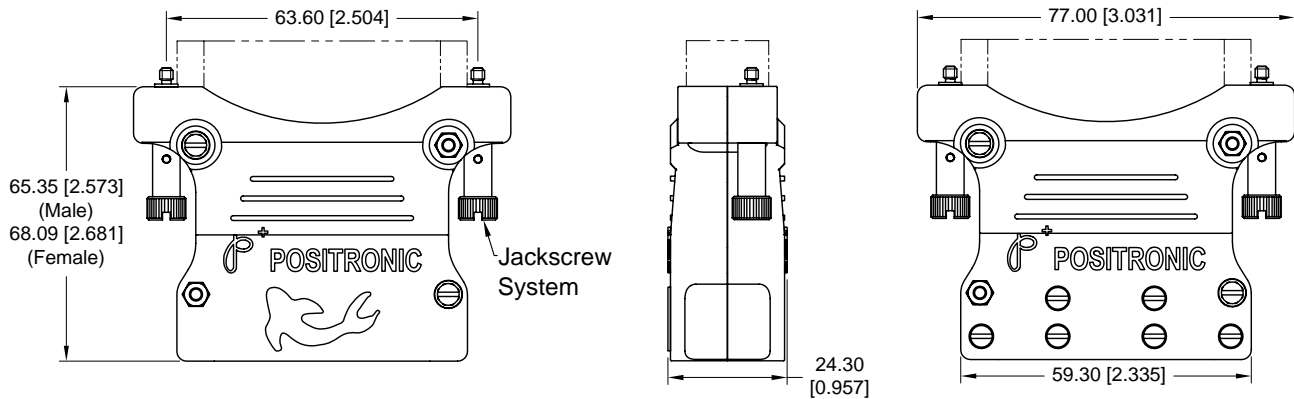
Specify code T in Step 5 of Ordering Information



Modular Cable Clamp Hoods for Goldfish Versions 02, 435 and 928 and Precision-Formed Female Signal Contacts



Specify code W or WE in Step 5 of Ordering Information



Code W: Hood, Cable Clamps, Hex Nuts and Screws.

Code WE : Hood, Rotating Jackscrews, Cable Clamps, Hex Nuts and Screws.

Standard Hood and Cable Clamps



GFSH435

Materials and Finishes:

Hood Top and Bottom

(Qty: 1x each) :

Cable Clamps (Qty: 3x):

Glass-filled nylon, UL 94-0. Black color.

Steel with Nickel Plate. Screws (Qty: 10x): Brass, zinc plate with chromate seal.

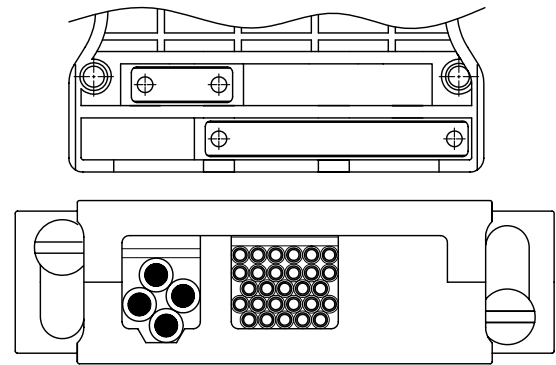
Hex Nuts (Qty: 4x):

Brass, zinc plate with dichromate seal or Brass, zinc plate with chromate seal.

Lockwashers (Qty: 4x):

Bronze, zinc plate with dichromate seal or Bronze, zinc plate with chromate seal.

Modular Hood and Cable Clamps



Consult factory for more customized Cable Clamp or Cable openings.

Note: Hood only available for GFSH02, 435 and 928.

Consult factory for GFSH89, 109 and 624 hood availability.

NEW!

Introducing Precision-Formed Female Signal Contacts for the Goldfish Connector Series.



- A Lower Cost and Lower Mating force of Precision-Formed Female Signal Contacts.
- Precision-Formed Female Signal Contacts available for size 22 contacts only.
- Available for Solder, Straight and Right Angle (90°) PCB Mount Versions of Goldfish 109, 624 and 928 FEMALE CONNECTORS ONLY.
- To order, please specify PA688 in step 7 of the GOLDFISH ordering information in page 17.(for example, GFSH624F3H-PA688)

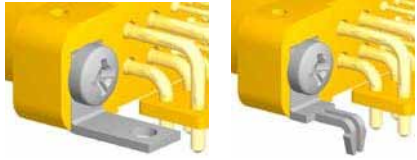
Note: For contact termination dimensions and contact hole patterns of straight and right angle (90°) PCB Mount also applied to female connector with precision form signal contacts of MOS PA 688

Mounting Styles and Contact Hole Patterns for PCB Mount



Mounting Styles

Right Angle (90°) Mounting Brackets



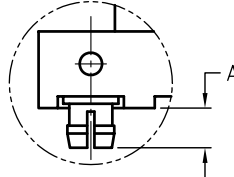
Through Hole (B)

Board Lock (LN)

Specify code B or LN.

Material: Brass with Zinc or Tin plating.

Push-on Fastener



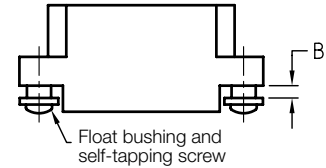
Goldfish "A"

02/435	3.17 [0.124]
109/624	3.42 [0.134]
928	3.37 [0.132]
89	3.34 [0.131]

Specify code N.

Material: Copper Alloy with Tin plating.

Float Mounting Hardware



Code Goldfish "B"

82	02/435/928	2.00 [0.078]
82	109/624	2.13 [0.083]
82	89	1.52 [0.060]
83	02/435/928	2.70 [0.106]
83	109/624	2.84 [0.111]
83	89	2.79 [0.110]

Specify code 82 or 83.

Material: Steel with Zinc or Tin plating.

Note: For GFSH89 with code 83, consult factory for availability.

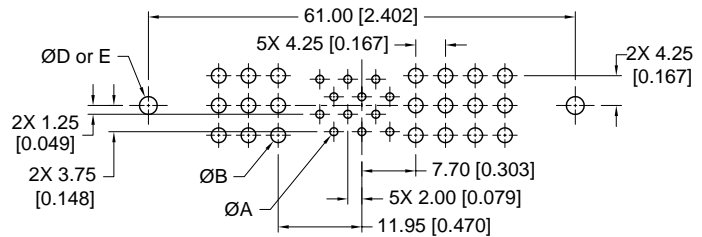
Contact Hole Patterns for Straight PCB Mount

Goldfish 02 Straight PCB Mount

Code 02 in Step 2

Code 3 in Step 4

Code H or N in Step 5

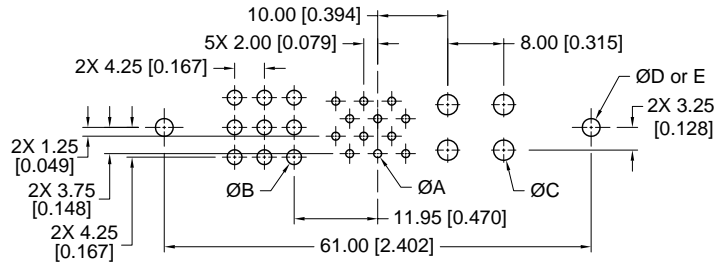


Goldfish 435 Straight PCB Mount

Code 435 in Step 2

Code 3 or 38 in Step 4

Code H or N in Step 5

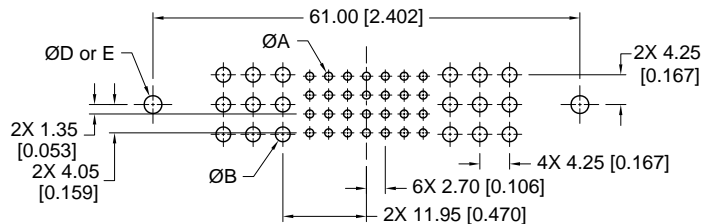


Goldfish 928 Straight PCB Mount

Code 928 in Step 2

Code 3 in Step 4

Code H or N in Step 5



DIM	Suggested size	For use
A	Ø1.14 [0.045]	Size 20 & 22 contact terminals
B	Ø2.11 [0.083]	Size 16 contact terminals
C	Ø2.90 [0.114]	Size 12 contact terminals
D	Ø2.54 [0.100]	Mounting connector with screws
E	Ø3.12±0.08 [0.123±0.003]	Mounting connector using push-on fasteners

(For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, please refer to SK6370 or consult factory for more information.)

Hole pattern shown is for male connector. Use mirror image for female connector.

Goldfish Versions 02, 435 and 928

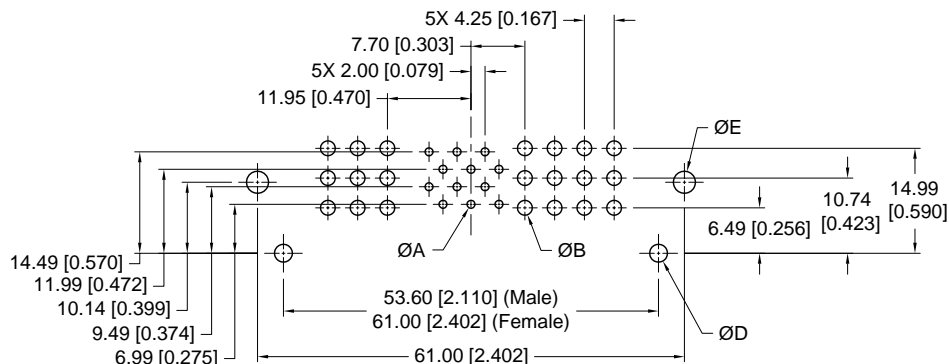
Contact Hole Patterns for PCB Mount



Goldfish 02

Right Angle (90°) Mount

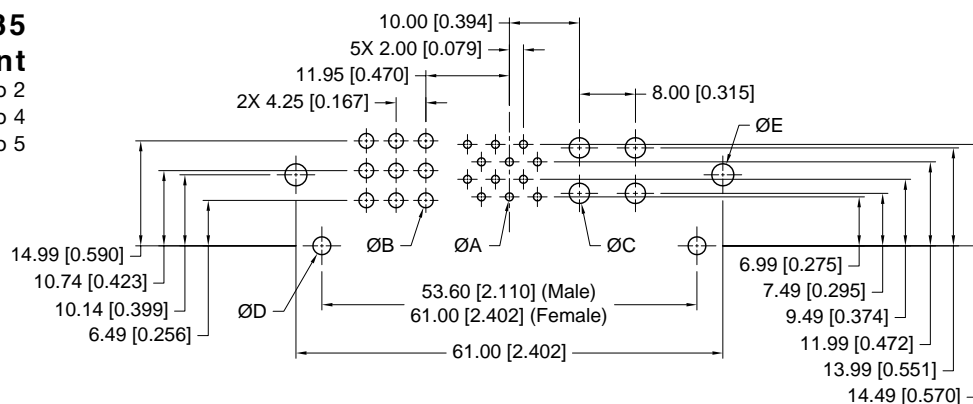
Code 02 in Step 2
Code 4 in Step 4
Code H, B or LN in Step 5



Goldfish 435

Right Angle (90°) Mount

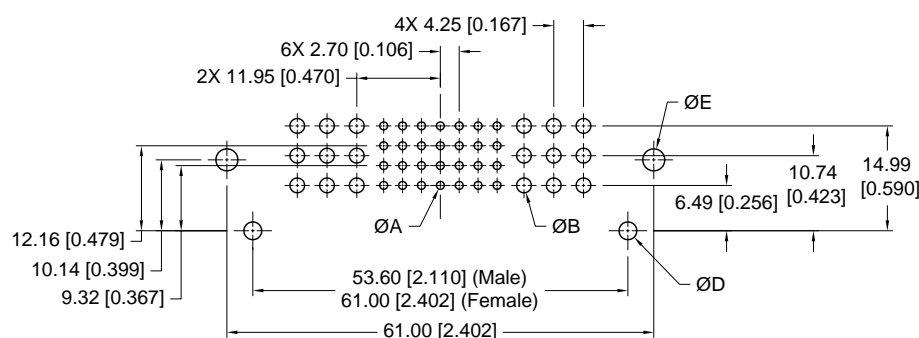
Code 435 in Step 2
Code 4 or 48 in Step 4
Code H, B or LN in Step 5



Goldfish 928

Right Angle (90°) Mount

Code 928 in Step 2
Code 4 in Step 4
Code H, B or LN in Step 5



DIM	Suggested size	For use
A	Ø1.14 [0.045]	Size 20 & 22 contact terminals
B	Ø2.11 [0.083]	Size 16 contact terminals
C	Ø2.90 [0.114]	Size 12 contact terminals
D	Ø2.54 [0.100]	Mounting connector with screws
E	Ø3.12 [0.123]	Mounting connector using angle brackets

(For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, please refer to SK6370 or consult factory for more informations.)
Hole pattern shown is for male connector. Use mirror image for female connector.

Goldfish Versions 109 and 624

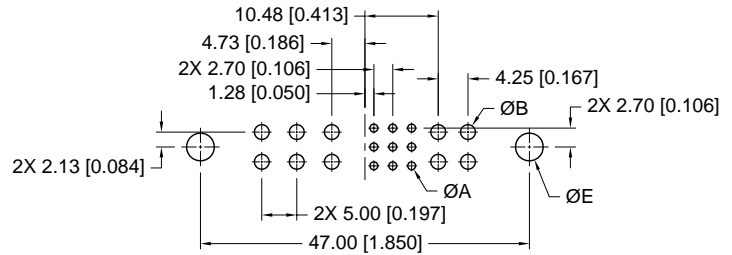
Contact Hole Patterns for PCB Mount



Goldfish 109

Straight PCB Mount

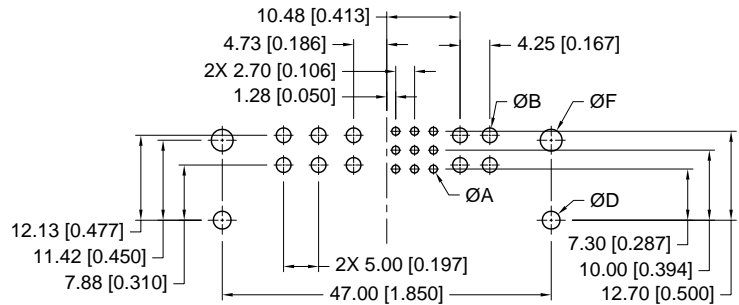
Code 109 in Step 2
Code 3 or 37 in Step 4
Code H or N in Step 5



Goldfish 109

Right Angle (90°) Mount

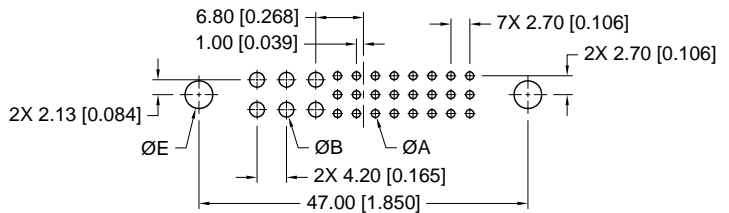
Code 109 in Step 2
Code 4 or 47 in Step 4
Code H, B or LN in Step 5



Goldfish 624

Straight PCB Mount

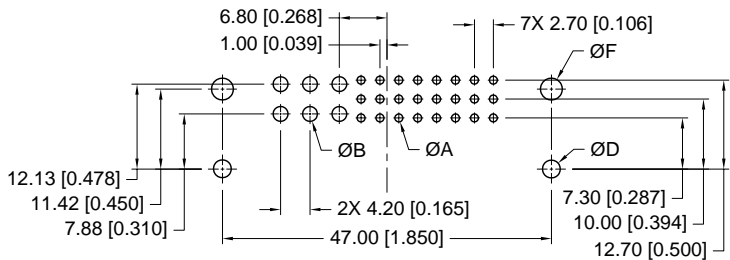
Code 624 in Step 2
Code 3 in Step 4
Code H or N in Step 5



Goldfish 624

Right Angle (90°) Mount

Code 624 in Step 2
Code 4 in Step 4
Code H, B or LN in Step 5



DIM	Suggested size	For use
A	Ø1.14 [0.045]	Size 20 & 22 contact terminals
B	Ø2.11 [0.083]	Size 16 contact terminals
C	Ø2.90 [0.114]	Size 12 contact terminals
D	Ø2.54 [0.100]	Mounting connector with screws
E	Ø3.96±0.08 [0.156±0.003]	Mounting connector using push-on fasteners
	Ø2.49±0.08 [0.098±0.003]	Mounting connector with jackscrew system
F	Ø3.12 [0.123]	Mounting connector using angle brackets

(For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, please refer to SK6370 or consult factory for more informations.)

Hole pattern shown is for male connector. Use mirror image for female connector.

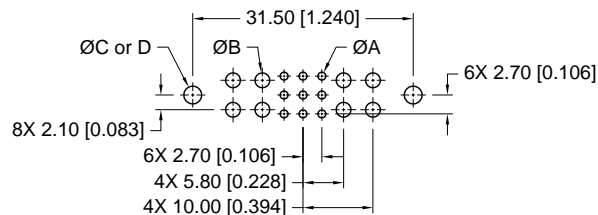
Contact Hole Patterns for PCB Mount (Version 89) and Removable, Solder, Straight PCB Mount Contacts



Contact Hole Patterns for PCB Mount

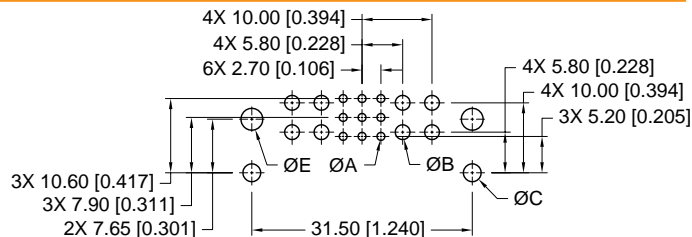
Goldfish 89 Straight PCB Mount

Code 89 in Step 2
Code 3 or 37 in Step 4
Code H or N in Step 5



Goldfish 89 Right Angle (90°) Mount

Code 89 in Step 2
Code 4 or 47 in Step 4
Code H or LN in Step 5



DIM Suggested size For use

A	Ø1.14 [0.045]	Size 22 contact terminals
B	Ø2.11 [0.083]	Size 16 contact terminals
C	Ø2.54 [0.100]	Mounting connector with screws
D	Ø3.12±0.08 [0.123±0.003]	Mounting connector with push-on fasteners

DIM Suggested size For use

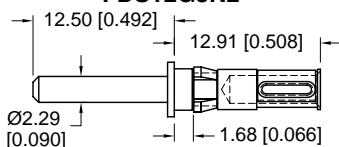
E	Ø3.12 [0.123]	Mounting connector using angle brackets
---	---------------	---

(For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, please refer to SK6370 or consult factory for more informations.)

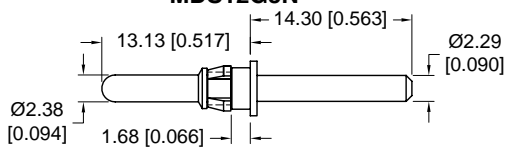
Removable, Solder, Straight PCB Mount Contacts

Size 12

FDS12G3N2



MDS12G3N



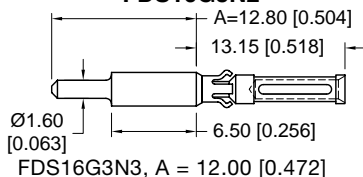
Material and Finishes: Precision machined copper alloy with gold flash over nickel. Other finishes are available.

Now you can easily mix crimp terminations and PCB mount solder terminations within one connector!

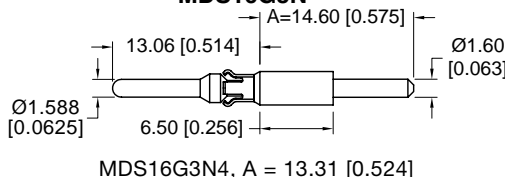
For use in crimp version connectors.

Size 16

FDS16G3N2

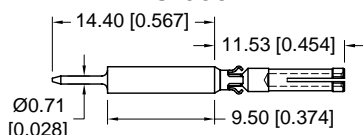


MDS16G3N

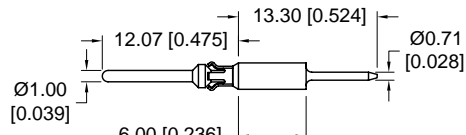


Size 20

FDS20G3N2

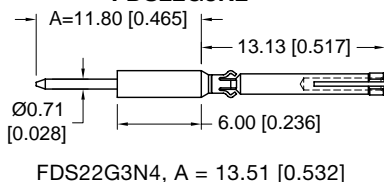


MDS20G3N

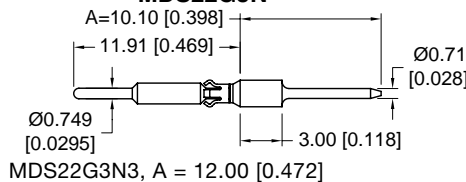


Size 22

FDS22G3N2



MDS22G3N



Contact Ordering Information

Connector Variant	Power Contact	Signal Contact
GFSH02F1H	FDS16G3N2	FDS20G3N2
GFSH02M1H	MDS16G3N	MDS20G3N
GFSH109/624F1H	FDS16G3N3	FDS22G3N2
GFSH109/624M1H	MDS16G3N4	MDS22G3N
GFSH435F1H	FDS16G3N5	FDS20G3N5
	FDS12G3N2	
GFSH435M1H	MDS16G3N	MDS20G3N
	MDS12G3N	
GFSH89F1H	FDS16G3N2	FDS22G3N3
GFSH89M1H	MDS16G3N4	MDS22G3N
GFSH928F1H	FDS16G3N2	FDS22G3N4
GFSH928M1H	MDS16G3N	MDS22G3N3

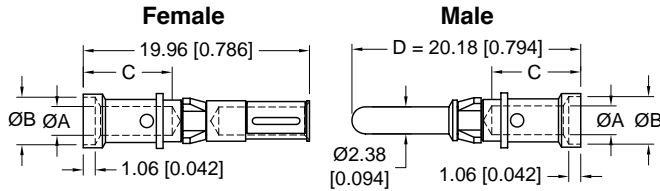
Reference contact tail length is 4.50 [0.177] beyond insulator.

Consult factory for other contact sizes.

Removable Crimp Contacts & Sequential Mating System



Size 12

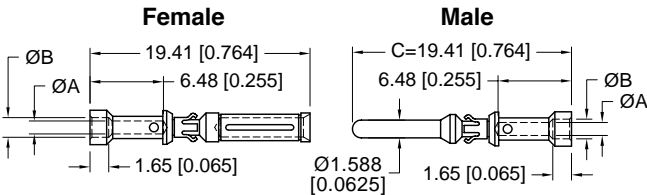


* First mate contact,
D=23.18 [0.913]

Female Contact	Male Contact	** Wire Size AWG [mm²]	ØA	ØB	C
FC610N2	MC610N	10 [6.0]	3.73 [0.147]	N/A	6.45 [0.254]
	MC610N-228.1*				
FC610N2S	MC610NS	12 [4.0]	2.54 [0.100]	4.19 [0.165]	7.90 [0.311]
	MC612N				
FC612N2	MC612N-228.1*				
	MC612NS				

***High conductivity material: High conductive copper alloy.

Size 16



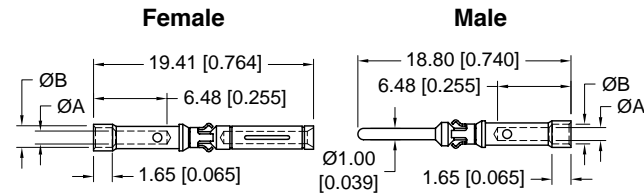
* First mate contact,
C=21.74 [0.856]

Note: For the first mate contact, it does not apply for GFSH89 version. Consult factory for sequential mating length.

Female Contact	Male Contact	** Wire Size AWG [mm²]	ØA	ØB
FC112N2	MC112N	12 [4.0]	2.49 [0.098]	N/A
	MC112N-133.5*			
FC112N2S	MC112NS			
FC114N2	MC114N	14-16 [2.5-1.5]	2.06 [0.081]	2.64 [0.104]
	MC114N-133.5*			
FC116N2	MC116N	16-18 [1.5-1.0]	1.70 [0.067]	2.36 [0.093]
	MC116N-133.5*			
FC120N2	MC120N	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]
	MC120N-133.5*			

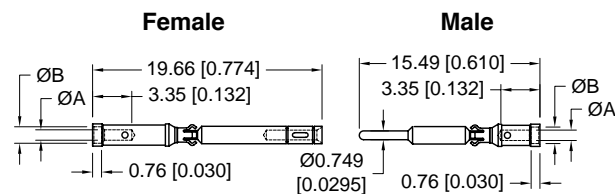
***High conductivity material: High conductive copper alloy.

Size 20



Female Contact	Male Contact	** Wire Size AWG [mm²]	ØA	ØB
FC720N2	MC720N	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]

Size 22



Female Contact	Male Contact	** Wire Size AWG [mm²]	ØA	ØB
FC420N6	MC420N	20 [0.5]	1.14 [0.045]	N/A
FC422N6	MC422N	22 [0.3]	0.89 [0.035]	1.63 [0.064]

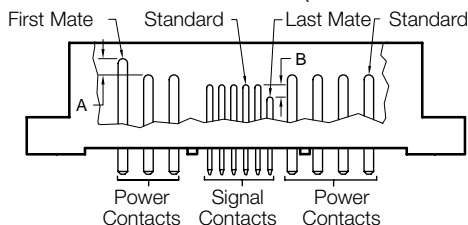
Material and Finishes (standard contact): Precision machined copper alloy with gold flash over nickel. Other finishes available.

** Note: Please use correct wire size and it should be smaller than ØA of the contact.

Consult factory for sequential mating and high conductivity material options.

Sequential Mating Systems

(Available in both PCB and Crimp Version Connectors)



Length of A = 2.69 [0.106]

Length of B = 2.03 [0.080]

Contact factory for ordering information.

Dimensions valid for Goldfish 02 PCB mount versions only.

Contact factory for other versions.

Connector Ordering Information and Automatic Crimp Machine



Specify complete connector by following step 1 through step 6.
Include step 7 for customized connectors.

STEP	1	2	3	4	5	6	7
EXAMPLE	GFSH	02	F	4	LN	/AA	XXXXX
STEP 1: Basic Series GFSH : Goldfish Series							STEP 7: Special Options Consult factory for customization of Goldfish Power Connectors. E.g. selective loading, sequential mating, etc.
STEP 2: Connector Versions 02 : Connector with 21 size 16 power contacts and 12 size 20 signal contacts. 89 : Connector with 8 size 16 power contacts and 9 size 22 signal contacts. 109 : Connector with 10 size 16 power contacts and 9 size 22 signal contacts. 435 : Connector with 9 size 16 power contacts. 4 size 12 power contacts and 12 size 20 signal contacts. 624 : Connector with 6 size 16 power contacts and 24 size 22 signal contacts. 928 : Connector with 18 size 16 power contacts and 28 size 22 signal contacts.							
STEP 3: Connector Gender F : Female M : Male							STEP 6: Environmental Compliance options /AA : Compliant per EU Directive 2002/95/EC (RoHS) Note: If no environmental options are required, this step will not be used. Examples: GFSH02F4LN
STEP 4: Type of Contact 1 : Removable contact, panel/ float mount/ cable version. (contacts ordered separately). 3 : Solder, straight PCB mount. 4 : Solder, right angle (90°) PCB mount. 37 : Solder, straight PCB mount. (high conductivity size 16 power contacts). 38 : Solder, straight PCB mount, GFSH435 only. (high conductivity size 12 power contacts). 47 : Solder, right angle (90°) PCB mount. (high conductivity size 16 power contacts). 48 : Solder, right angle (90°) PCB mount, GFSH435 only. (high conductivity size 12 power contacts). 93 : Press-fit compliant terminations. 94 : Press-fit compliant terminations.							
STEP 5: Mounting Style H : No hardware. For mounting connector with self-tapping screws. (Order screws separately.) N : Straight PCB mount push-on fasteners. B : Right angle (90°) PCB mount through hole angle brackets. LN : Right angle (90°) PCB mount board lock angle brackets. 82 : Panel/ float mount for 1.5 mm thick panel. 83 : Panel/ float mount for 2.3 mm thick panel. E : Turnable male jackscrews. (Not available in GFSH624 male panel.) T : Fixed female jackscrews. (Not available in GFSH89 PCB, GFSH624 Female PCB.) TB : Fixed female jackscrews with Right angle (90°) PCB mount through hole angle brackets. TLN : Fixed female jackscrews with Right angle (90°) PCB mount board lock angle brackets. *W : Hood. *WE : Turnable Male Jackscrew with Hood. Notes: *: Not available in GFSH89, 109 and 624.							

Automatic Crimp Machine

Part No. 9550-0

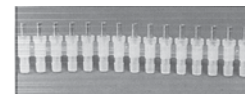
This fast cycling and reliable automatic crimp machine produces a four double-indent crimp, meeting Military Standard and proprietary specifications on wire sizes 12 AWG (4.0mm²) through 30 AWG (0.05mm²).

The tool is a bench mount pneumatic unit of compact size and weight. Contacts must be ordered separately and are supplied on a reel in quantities of 2000.

To order, specify part number 9550-0. Foot pedal control valve is supplied as a standard accessory.

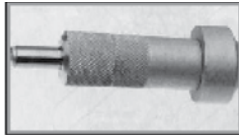
CONTACT CARRIERS

Molded thermoplastic carriers in a continuous belt feed contacts to the crimp station of the automatic feed tool. They also locate the contacts in respect to the tool's indenters. The carriers are color coded white and natural for contact identification for both MS and proprietary applications. Part number for contacts supplied in reels ends with a 'R', example, FC114N2R.

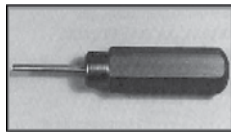


Machine not sold;
for rent only.

Recommended Tools for Crimp Contacts and GG (Giant Goldfish) Series


Contact Extraction Tool


Shown for reference only

Contact Insertion Tool


Shown for reference only

Cycle-Controlled Step Adjustable Hand Tool


Shown for reference only

Contact Size	Contact Extraction Tool	Contact Insertion Tool	Hand Crimp Tool	Semi-Automatic Crimp Machine
Size 12	2711-0	9099-3	9509-6 (MC/FC610) 9501-0 with 9502-19 positioner (MC/FC612)	-
Size 16	9081-0	9099-0	9501-0 with 9502- 1 positioner 9501-0 with 9502-17 positioner (male first mate contacts)	9550-0
Size 20	9081-2	9099-4	9507-0 with 9502-21 positioner (male contacts) 9507-0 with 9502-22 positioner (female contacts)	9550-1
Size 22	9081-3	9099-1	9507-0 with 9502-12 positioner (male contacts) 9507-0 with 9502-20 positioner (female contacts)	

GG SERIES CONNECTORS

MODULAR TOOLING ALLOWS DELIVERY OF A MULTITUDE OF VARIANTS!



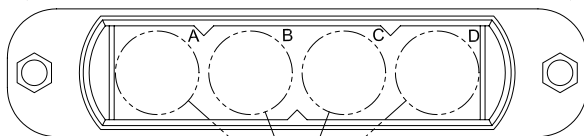
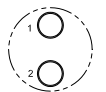
Contact sales for complete GG series catalog information

CONTACT VARIANT & DIMENSIONS

Variants shown are not actual size.

Total of 256 Variants

4.638 [117.80]


 Four (4) modules
Any combination of modules is possible

 Two (2) size
8 power contact
(Consult factory
for availability)

 One (1) size 0
power contact

 Four (4) size 12
power contacts

 Twelve (12) size 16
power contacts

 Nineteen (19) size 20
signal contacts

CONTACT SIZE	CONTACT MATERIAL	CONTACT CURRENT RATING	CONTACT RESISTANCE	WORKING VOLTAGE
Size 0	Standard	175 amps	0.00038 ohms	250 V r.m.s
	HC**	200 amps	0.00012 ohms	
Size 12	Standard	35 amps	0.0016 ohms	500 V r.m.s
	HC**	45 amps	0.0005 ohms	
Size 16	Standard	20 amps	0.0024 ohms	500 V r.m.s
	HC**	28 amps	0.0012 ohms	
Size 20	Standard	5 amps	0.0036 ohms	333 V r.m.s

** HC = High Conductivity Contact Material

Insulators:

Contacts:

Electrical characteristics:

Contact resistance:

Voltage proof:

Mechanical operations:

Termination types:

Features:

glass filled nylon, UL 94 V-0, gold color.

precision machined copper alloy. Plated gold flash over nickel. Other finishes available upon request.

contact current ratings to 200 amps per contact in accordance to UL 1977.

as low as 0.00012 ohms, per IEC 512-2, test 2b.

up to 3,000 V r.m.s.

1,000 cycles.

cable and panel mount – crimp, solder or buss bar. Contact Technical Sales for PCB solder type.

Excellent blind mating; sequential mating options

NORTH AMERICAN SALES OFFICES

United States, Springfield, Missouri
Factory and Sales Office
Puerto Rico Sales Office
Mexico Sales Office
Canada Sales Office

800 641 4054
800 641 4054
800 872 7674
800 327 8272

info@connectpositronic.com
info@connectpositronic.com
info@connectpositronic.com
info@connectpositronic.com

EUROPEAN SALES OFFICES

France, Auch Factory and Sales
Northern France Sales Office
Southern France Sales Office
Italy Sales Office
Germany Sales Office
United Kingdom Sales Office

33 (0) 5 6263 4491
33 (0) 1 4588 1388
33 (0) 6 8648 4023
39 (0) 2 5411 6106
49 (0) 23 5163 4739
44 (0) 7975 682 488

contact@connectpositronic.com
jchalaux@connectpositronic.com
plafon@connectpositronic.com
rmagni@connectpositronic.com
cbouche@connectpositronic.com
lbridwell@connectpositronic.com

Europe & Middle East Technical Agents:

Finland, United Kingdom, Scotland, Israel, Norway, Sweden, Turkey and the Ukraine.

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices

+65 6842 1419

singapore@connectpositronic.com

ASIA, Direct Sales Offices

China

Factory - Zhuhai
Shenzhen
Shanghai
Xian Sales Office
Beijing Sales Office

+86 756 3626 466
+86 158 2907 9779
+86 158 2907 9779
+86 029 8839 5306
+86 10 8203 7718
+81 3 6310 5830

zhuhai@connectpositronic.com
shenzhen@connectpositronic.com
shanghai@connectpositronic.com
xian@connectpositronic.com
beijing@connectpositronic.com
japan@connectpositronic.com

Japan Sales and Engineering Offices

India

Factory Sales and Engineering Offices
Bangalore Sales Office
New Delhi Sales Office

+91 20 2469 9910
+91 94 4907 3251
+91 80107 11175

india@connectpositronic.com
bangalore@connectpositronic.com
delhi@connectpositronic.com

Korea Sales Office

+82 31 909 8047

korea@connectpositronic.com

Taiwan Sales Office

+886 2 2937 8775

taiwan@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Australia, Hong Kong, Malaysia, New Zealand, Philippines, Thailand and Vietnam.

POSITRONIC INDUSTRIES, INC

423 N Campbell Avenue, P O Box 8247,
Springfield, MO 65801, USA
Telephone: 1 417 866 2322
Fax: 1 417 866 4115
Email: info@connectpositronic.com

POSITRONIC INDUSTRIES, SAS

Zone Industrielle Est, 46 Route d'Engachies,
F32020, Auch Cedex 9, France
Telephone: 33 (0) 5 62 63 44 91
Telecopieur: 33 (0) 5 62 63 51 17
Email: contact@connectpositronic.com

POSITRONIC ASIA PTE LTD

3014A Ubi Road 1 # 07-01 Singapore 408703
Telephone: 65 6842 1419 Fax: 65 6842 1421
Email: singapore@connectpositronic.com

www.connectpositronic.com



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS



DRAGONFLY Interconnection Systems

High Density Signal and Power Connectors



Positronic Industries
www.connectpositronic.com

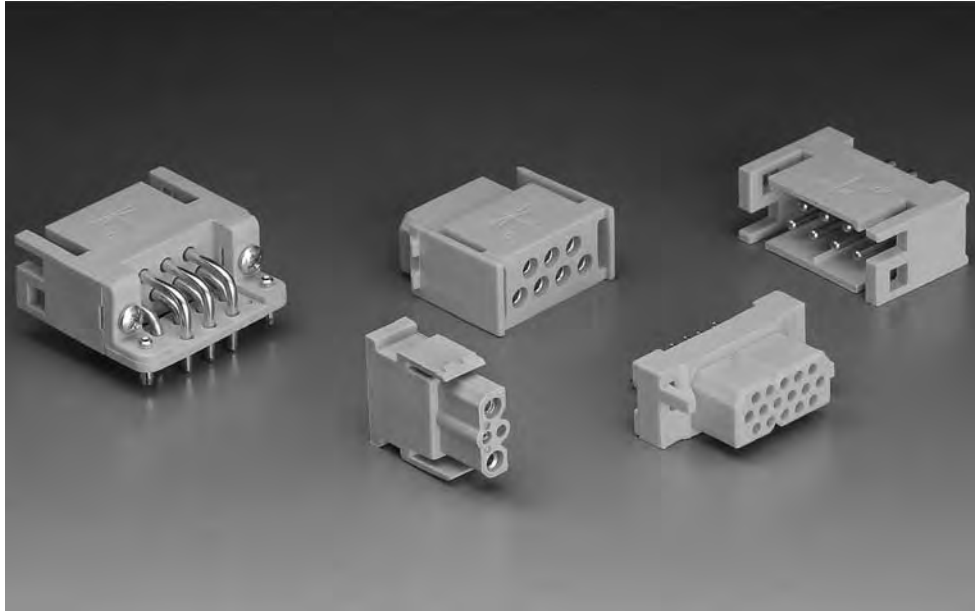


High Density Signal and Power Interconnection Systems



Dragonfly

High Density Signal/ Power Interconnection Systems



Unless otherwise specified, dimensional tolerances are:

- 1) Male contact mating diameters : ± 0.03 [0.001]
- 2) Contact termination diameters : ± 0.08 [0.003]
- 3) All other diameters : ± 0.13 [0.005]
- 4) All other dimensions : ± 0.38 [0.015]

Dimensions are in millimeters [inches]. All dimensions are subject to change.

CATALOG NUMBER: A-002 rev. B2

Products described within this catalog may be protected by one or more of the following U.S. patents:

#4,721,472 #4,900,261 #5,255,580 #5,329,697 #6,260,268

Patented in Canada, 1992

Other Patents pending.

Unless otherwise stated, Positronic code and part number are marked on each connector. The contents of the code are subjected to the discretion of Positronic and it is for internal use only. Marking may be done on either side or both sides of the connector.

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.



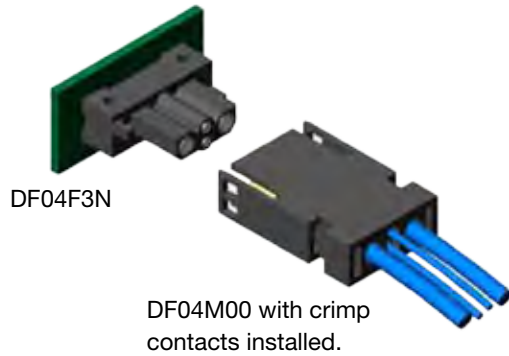
Positronic Industries, Inc
www.connectpositronic.com
www.positronicasia.com



Typical Connection Systems

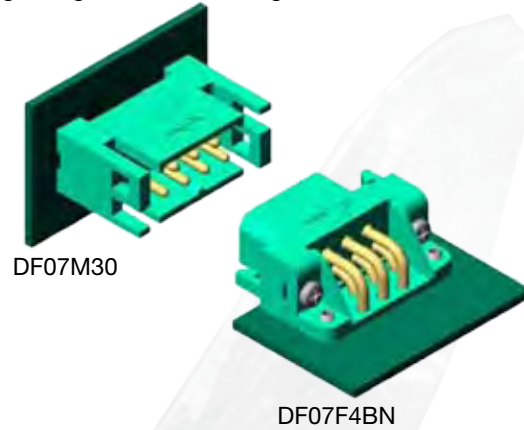
System 1

Straight Board Mounting to Cable



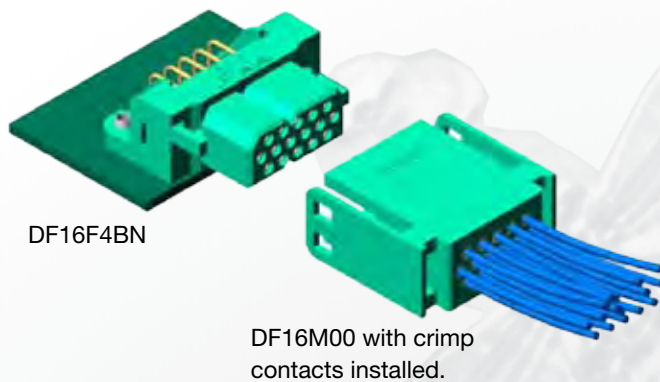
System 2

Straight Board Mounting to Right Angle Board Mounting



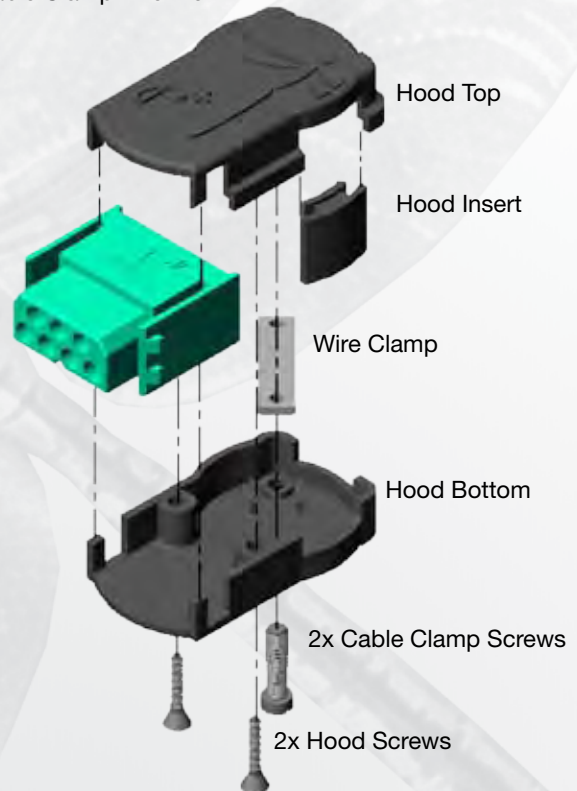
System 3

Right Angle Board Mounting to Cable



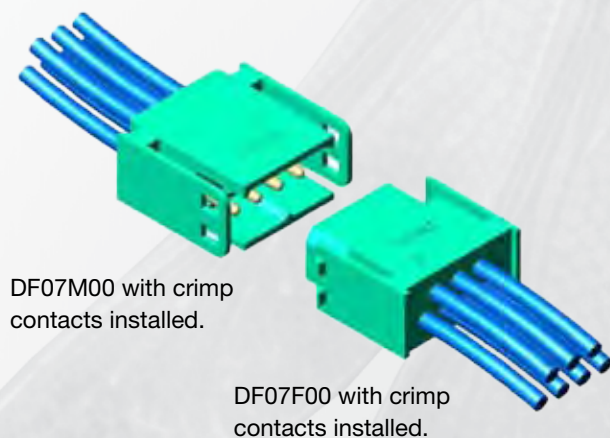
System 5

Cable Connector and Hood with Cable Clamp DF07F0W1



System 4

Cable to Cable





Connector Versions and Technical Characteristics



Coming Soon!

Connector Versions



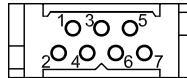
Version 03 Power Contact Connector

Three (3) Size 16
Power Contacts



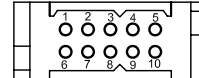
Version 04 Mixed Density Contact Connector

Two (2) Size 16 Power
Contacts and Two (2)
Size 22 Signal Contacts
Specify Code 04 in Step 2



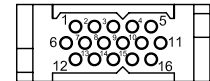
Version 07 Power Contact Connector

Seven (7) Size 16
Power Contacts
Specify Code 07 in Step 2



Version 10 Signal/ Power Contact Connector

Ten (10) Size 20 Signal/
Power Contacts
Specify Code 10 in Step 2



Version 16 High Density Signal Contact Connector

Sixteen (16) Size 22
Signal Contacts
Specify Code 16 in Step 2

Technical Characteristics

Materials and Finishes:

Insulator:	Glass-filled nylon, UL 94V-0, green for versions 07, 10 and 16. Black color for version 04.
Hood (W1):	Polypropylene, UL 94V-0. Black color.
Hood (W2):	Glass-filled nylon, UL 94V-0. Black color.
Contacts:	Precision machined copper alloy with gold over nickel plate.
Push-on fasteners:	Copper alloy with tin plate.
Screws:	Steel with zinc plate and chromate seal.

Electrical Characteristics:

Contact Current Rating:	
Size 16 Contacts:	20.0 amperes, continuous.
Size 20 Contacts:	7.5 amperes, nominal. 12.0 amperes, continuous with AWG 18 wires.
Size 22 Contacts:	3.0 amperes, nominal.
Initial Contact Resistance	
Max (per IEC 512-2, Test 2b) :	
Size 16 Contacts:	0.003 ohms
Size 20 Contacts:	0.005 ohms.
Size 22 Contacts:	0.005 ohms.
Insulator Resistance:	
5 G ohms (per IEC 512-2, Test 3a).	
Voltage Proof:	
Size 16 Contacts:	1500 V r.m.s.
Size 20 Contacts:	1000 V r.m.s.
Size 22 Contacts:	1000 V r.m.s.
Working Voltage:	
Size 16 Contacts:	500 V r.m.s.
Size 20 Contacts:	333 V r.m.s.
Size 22 Contacts:	333 V r.m.s.

Climatic Characteristic:

Working temperature: -55°C to +105°C.

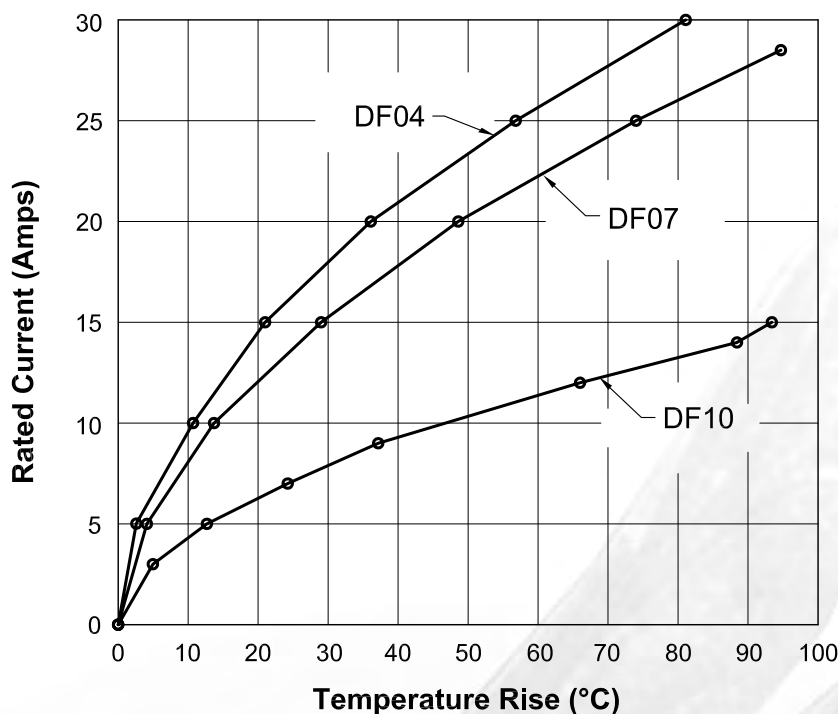
Mechanical Characteristics:

Connection Systems:	Connector provides cable to cable, cable to printed board and printed board to printed board mating systems.
Locking Systems:	Insulators provide locking between cable to cable and cable to printed board applications.
Polarization:	Provided in insulator design.
Removable Contacts:	Install contact from rear of insulator, release with extraction tool from front of insulator. Female contacts feature "closed entry" 1,000 cycle design. (Size 16 contact tested to 10,000 cycles. See page 3.) "Open entry" 500 cycle design also available.
Fixed Contacts:	Size 16 female contact features "closed entry" 1,000 cycles design for both straight and right angle (90°) PCB mount. Size 22 female contact features "open entry" design. "Closed entry" available on request. Size 20 female contact features both "closed entry" and "open entry" design options. See ordering informations.
Removable Contact Retention in Insulator	
Size 16 Contacts:	45 N [10 lbs.] Min.
Size 20 Contacts:	27 N [6 lbs.] Min.
Size 22 Contacts:	27 N [6 lbs.] Min.
Fixed Contact Retention in Insulator	
Size 16 Contacts:	45 N [10 lbs.] Min.
Size 20 Contacts:	27 N [6 lbs.] Min.
Size 22 Contacts:	27 N [6 lbs.] Min.
Sequential Mating:	Consult factory for details.
Recognized:	UL File E49351.



Temperature Rise Curve

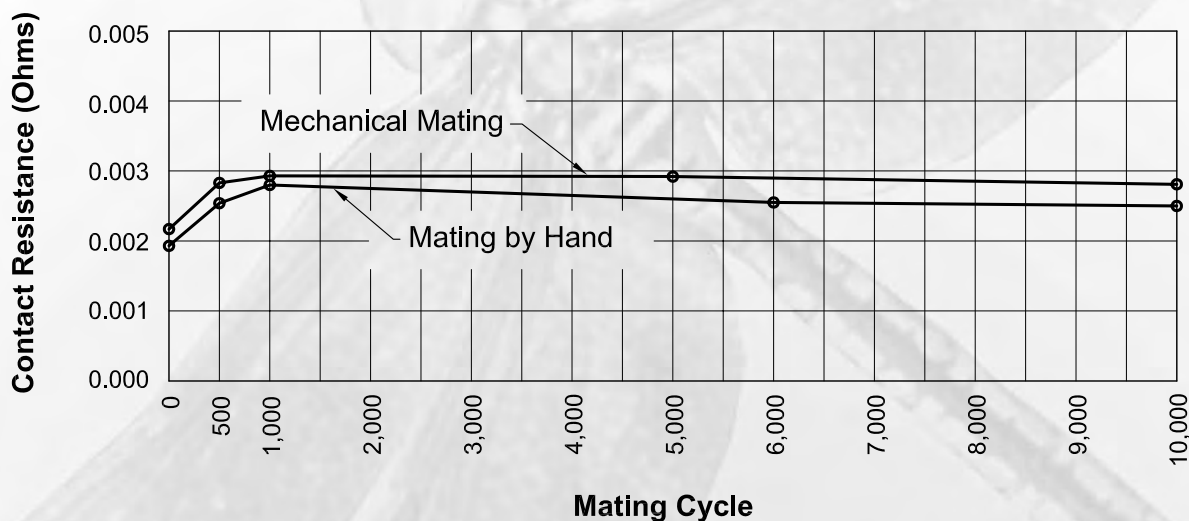
Tested per IEC 512-3, Test 5a



Above curves developed separately using (a) DF04 connectors and AWG 12 wires, and (b) DF07 connectors and AWG 12 wires and (c) DF10 connectors and AWG 18 wires. All power contacts under load.

10,000 Cycles Contact Performance

Contact resistance tested per IEC 512-2, Test 2b



Above curves developed using DF07 connectors fully populated with size 16 contacts. This information is supplied for reference. Contact wear and change in contact resistance may vary from one application to another. Contact technical sales to discuss details.



Dragonfly Version 03 Female Cable Connector



ASK21162-* SHEET 1 OF 1

POSITRONIC ASIA PTE. LTD. RELEASES THE DATA ON THE DRAWING TO BE RELIABLE. SINCE THE TECHNICAL INFORMATION IS GIVEN FREE OF CHARGE, THE USER EMPLOYS SUCH INFORMATION AT HIS OWN DISCRETION. POSITRONIC ASIA PTE. LTD. ASSUMES NO RESPONSIBILITY FOR RESULTS OBTAINED OR DAMAGES INCURRED FROM USE OF SUCH INFORMATION IN WHOLE OR IN PART.

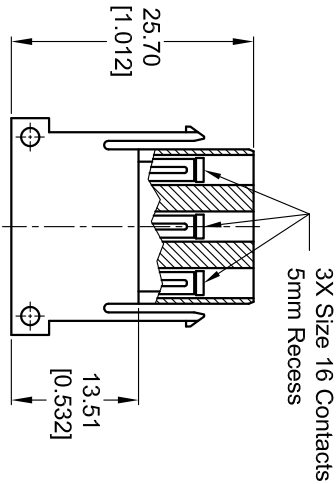
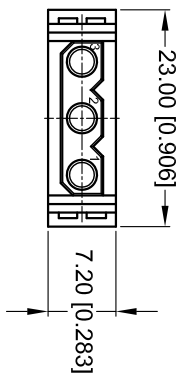
NOTES:

1. MATERIALS AND FINISHES:

INSULATOR: GLASS FILLED NYLON, UL 94V-0 OR EQUIVALENT. COLOR: GREEN.

CONTACTS: PRECISION MACHINED COPPER ALLOY WITH GOLD FLASH OVER NICKEL.

REMOVABLE CONTACTS ARE TO BE ORDERED SEPARATELY



DATE	REV	REVISION RECORD	DRN	CKD	APR
25 MAY 07	NC	PA ECO 07126	NK	KM	KS
30 MAY 07	A	PA ECO 07129	NK	KM	KS
18 AUG 09	B	PA ECO 09159	RG	EH	NK

DRAWING NO.	PART NUMBER	REMARKS
ASK21162-1	DF03F00	-
ASK21162-2	DF03F00/AA	RoHS COMPLIANT PER RoHS DIRECTIVE 2002/95/EC OF 27 JAN 2003.

POSITRONIC ASIA PTE. LTD.	
3014A UBI ROAD 1, #07-01, SINGAPORE 408703.	
Tel: (65) 6842-1419 / Fax: (65) 6842-1421 / Email: singapore@connectpositronic.com	
GENERAL TOL.	LINEAR : ±0.38 [0.015]
ANGULAR : ±5°	
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS (INCHES)	
SERIES	DF
SCALE	NTS
DRAWN	NK
CHECKED	KM
APPROVED	KS
TITLE	DF03F00
DRAWING NUMBER	DF03F00/AA
DATE	25 MAY 07
DRAWING NUMBER	ASK21162-*
SHEET	1 OF 1
REV.	B





Dragonfly Version 03 Male Panel Connector

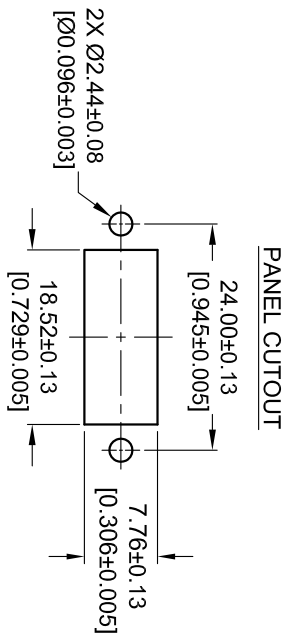
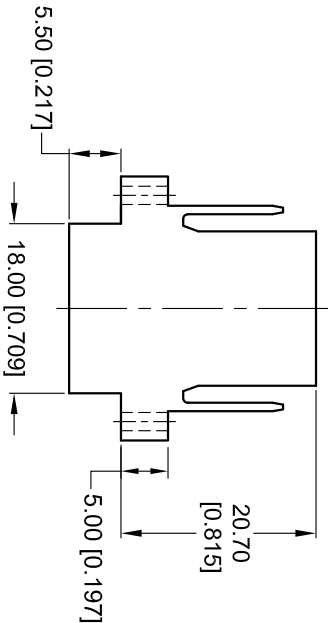
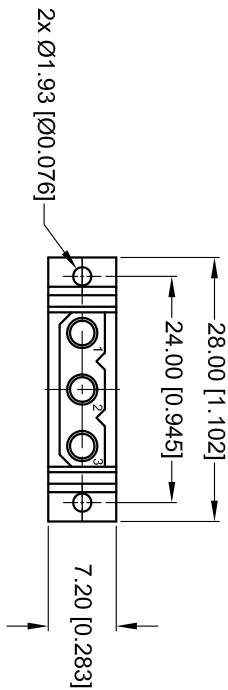


ASK21161-* SHEET 1 OF 1

POSTRONIC ASIA PTE. LTD. BELIEVES THE DATA ON THE DRAWING TO BE RELIABLE. SINCE THE TECHNICAL DRAWING IS THE PROPERTY OF POSTRONIC ASIA PTE. LTD., EMPLOYEES SUCH INFORMATION AT HIS OWN DISCRETION AND RISK. POSTRONIC ASIA PTE. LTD. ASSUMES NO RESPONSIBILITY FOR RESULTS OBTAINED OR DAMAGES INCURRED FROM USE OF SUCH INFORMATION IN WHOLE OR IN PART.

NOTES:

- MATERIALS AND FINISHES:**
INSULATOR: GLASS FILLED NYLON, UL 94V-0 OR EQUIVALENT. COLOR: GREEN.
CONTACTS: PRECISION MACHINED COPPER ALLOY WITH GOLD FLASH OVER NICKEL.
REMOVABLE CONTACTS ARE TO BE ORDERED SEPARATELY



DATE	REV	REVISION RECORD	DRN	CKD	APF
25 MAY 07	NC	PA ECO 07126	NK	KM	KS
30 MAY 07	A	PA ECO 07129	NK	KM	K2
02 NOV 07	B	PA ECO 07231	EH	RG	KS
18 AUG 09	C	PA ECO 09159	RG	EH	NK

DRAWING NO.	PART NUMBER	REMARKS
ASK21161-1	DF03M0P	-
ASK21161-2	DF03M0P/AA	RoHS COMPLIANT PER RoHS DIRECTIVE 2002/95/EC OF 27 JAN 2003.

POSITRONIC ASIA PTE. LTD.	
3014A UBI ROAD 1, #07-01, SINGAPORE 408703.	
Tel: (65) 6842-1419 / Fax: (65) 6842-1421 / Email: singapore@connectpositronic.com	
GENERAL TOL.	SERIES
LINEAR : ±0.38 [0.015]	DF
ANGULAR : ±5°	SCALE
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS (INCHES)	NTS
DATE	DRAWING NUMBER
25 MAY 07	ASK21161-*
REV.	REV.
C	C

Unless otherwise stated, Positronic code and part number are marked on each connector. The contents of the code are subjected to the discretion of Positronic Asia Pte Ltd and it is for internal use only. Marking may be done on either side or both sides of the connector.

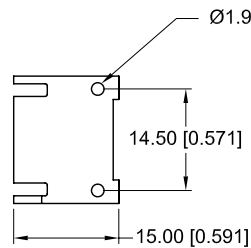
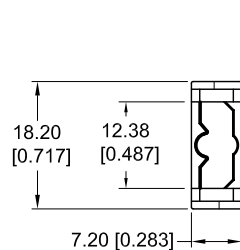




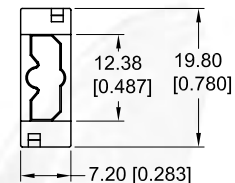
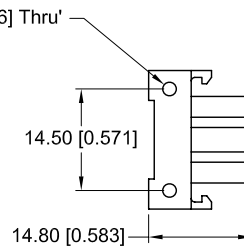
DF04 Outline Dimensions

PCB Mount Connector

Male



Female



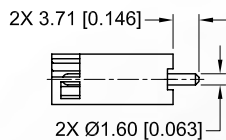
Contact Termination Dimensions

See Step 4 of Ordering Information

Straight PCB Mount

Specify Code 3 in Step 4

Male

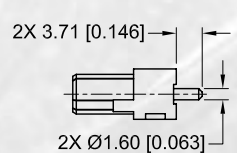


Power contacts

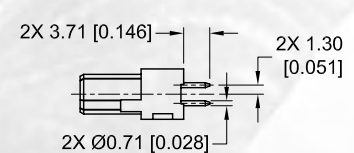


Signal contacts

Female



Power contacts

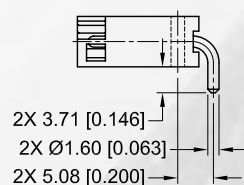


Signal contacts

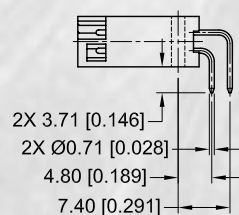
Right Angle (90°) PCB Mount

Specify Code 4 in Step 4

Male

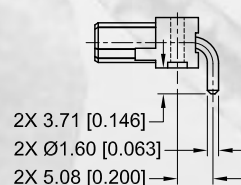


Power contacts

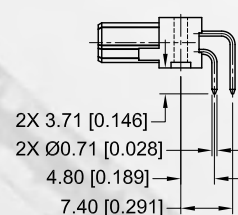


Signal contacts

Female



Power contacts



Signal contacts

Not supplied with alignment bar

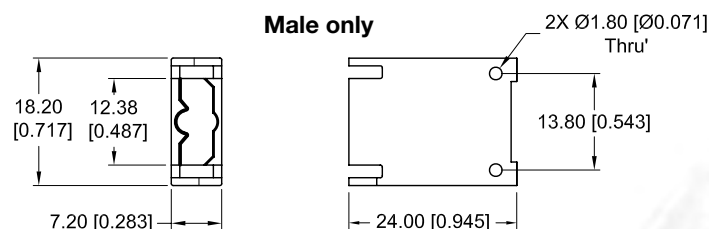


Dragonfly Version 04 Right Angle (90°) PCB Mount (Longer Insulator Version) and Removable Contact Cable Connectors



DF04 Outline Dimensions

PCB Mount Connector (Longer Insulator)

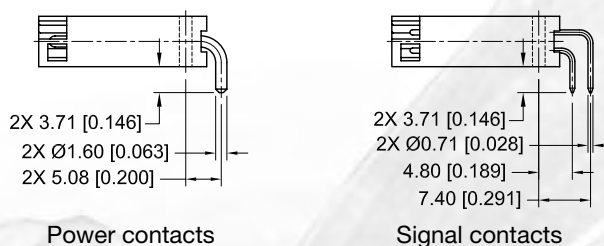


Contact Termination Dimensions

See Step 4 of Ordering Information

Right Angle (90°) PCB Mount

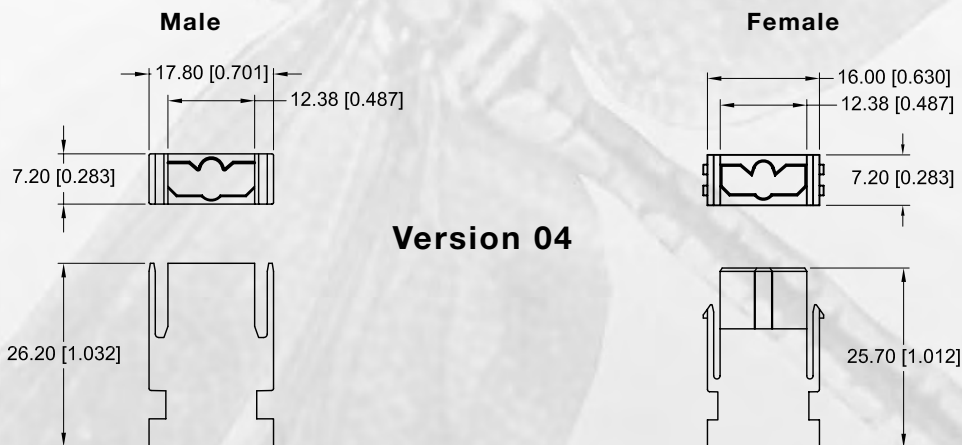
Specify Code 42 in Step 4



Removable Contact Cable Connectors

Specify Code 0 in Step 4 of Ordering Information

Outline Dimensions

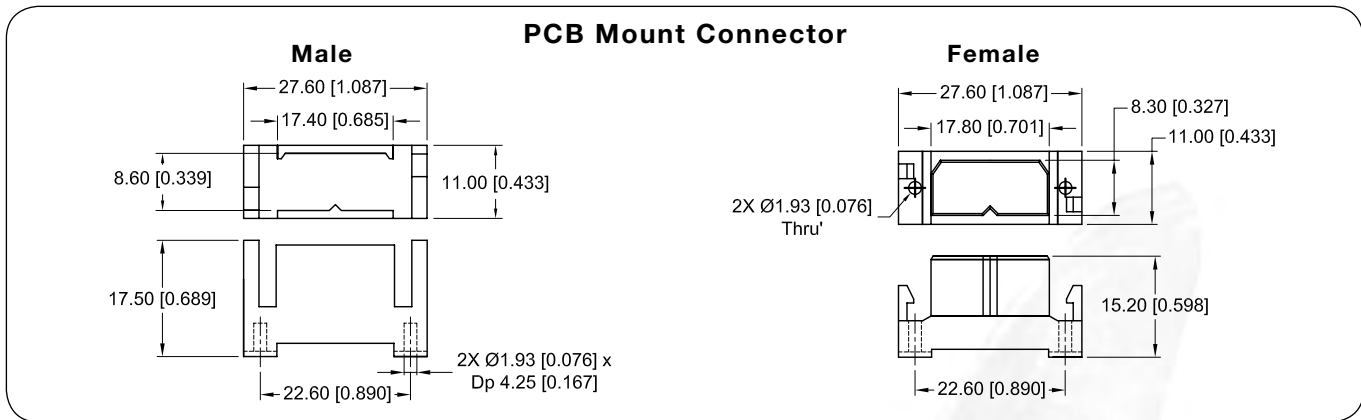


Removable contacts should be allowed to float after terminated and installed in connector body. This enables superior mating performance. Consult factory if alignment insert for male contacts is desired.



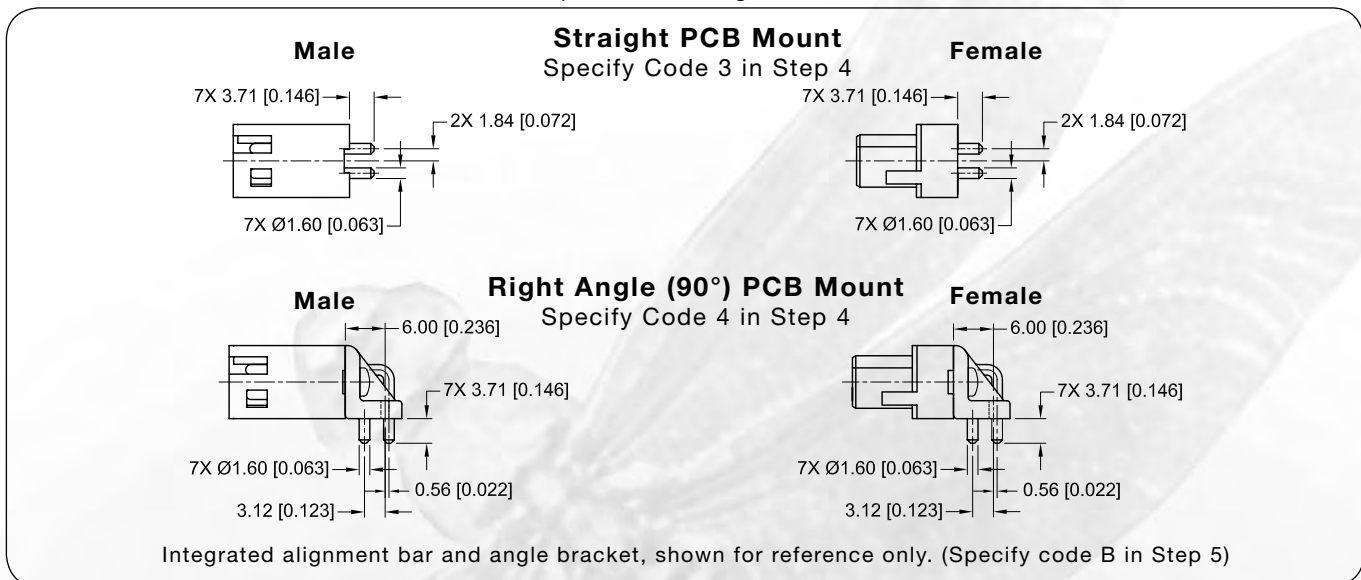


DF07 Outline Dimensions



Contact Termination Dimensions

See Step 4 of Ordering Information



Removable Contact Cable Connectors

Specify Code 0 in Step 4 of Ordering Information

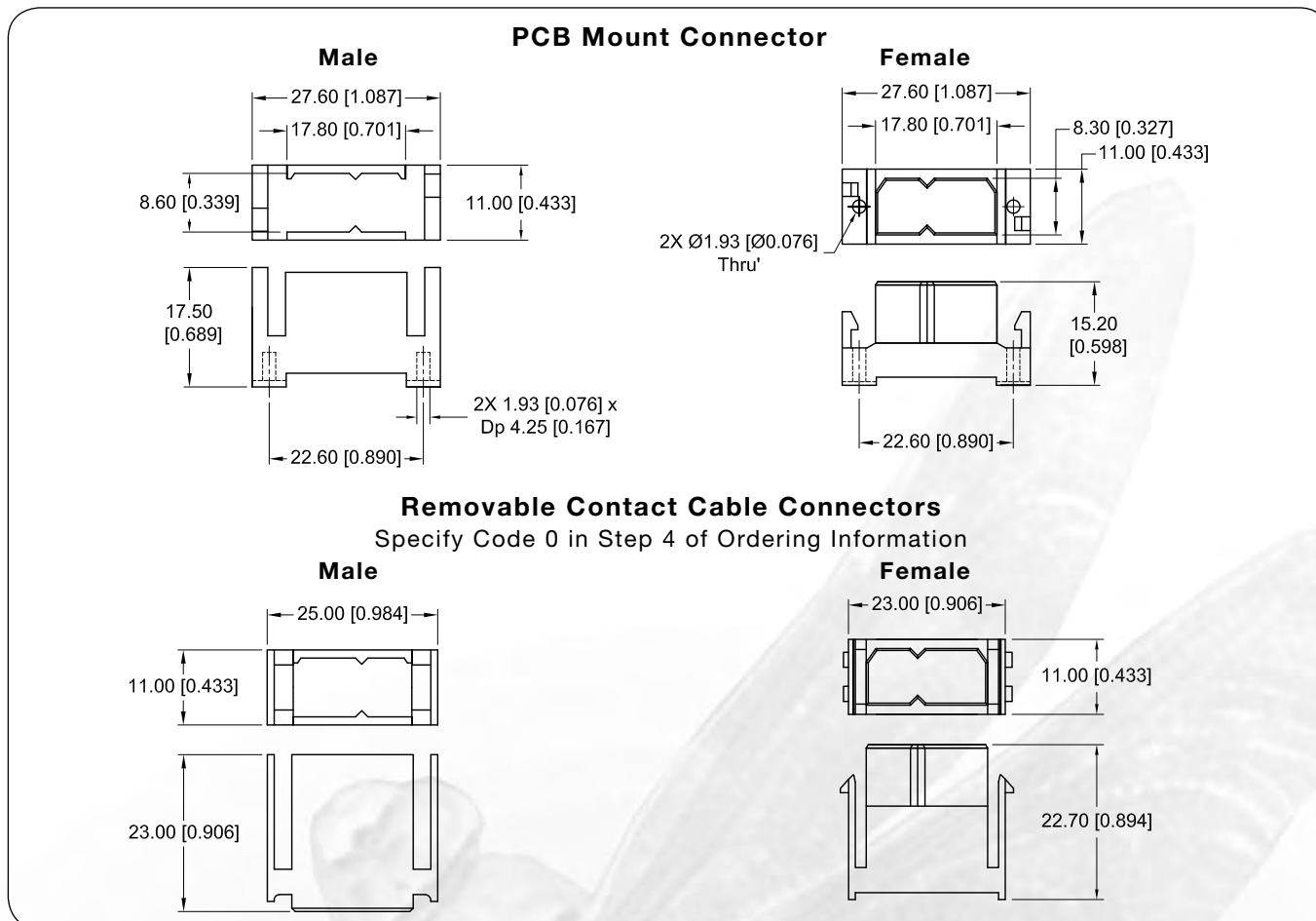
Outline Dimensions



Removable contacts should be allowed to float after terminated and installed in connector body. This enables superior mating performance. Consult factory if alignment insert for male contacts is desired.

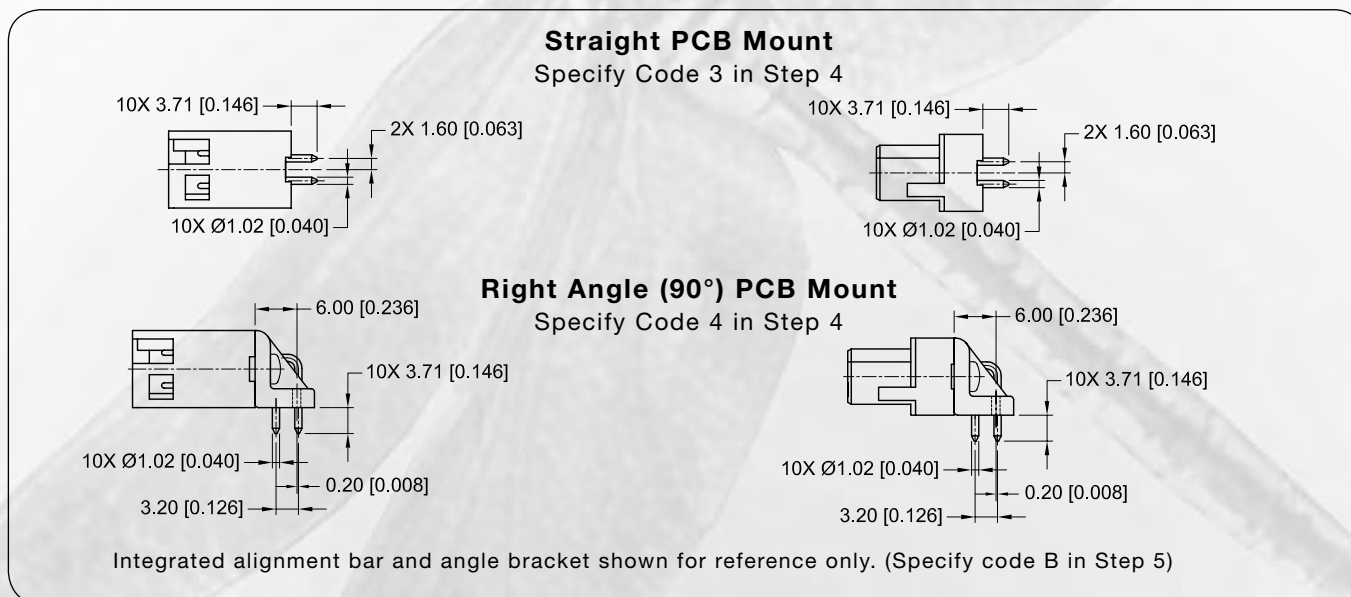


DF10 and DF16 Outline Dimensions



Removable contacts should be allowed to float after terminated and installed in connector body. This enables superior mating performance. Consult factory if alignment insert for male contacts is desired.

Version 10 PCB Mount Contact Termination Dimensions





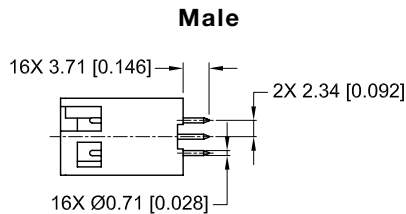
Contact Termination Dimensions and Contact Hole Patterns for PCB Mount



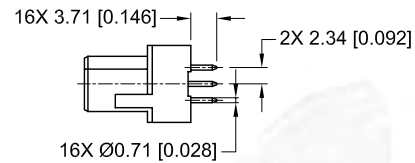
Version 16 PCB Mount Contact Termination Dimensions

Straight PCB Mount

Specify Code 3 in Step 4

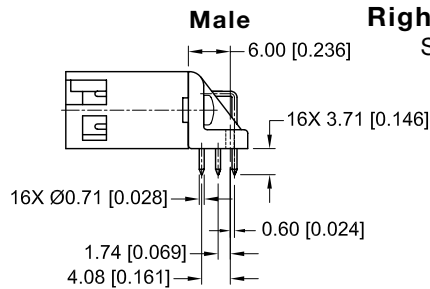


Female

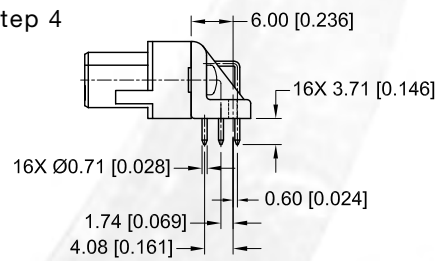


Right Angle (90°) PCB Mount

Specify Code 4 in Step 4



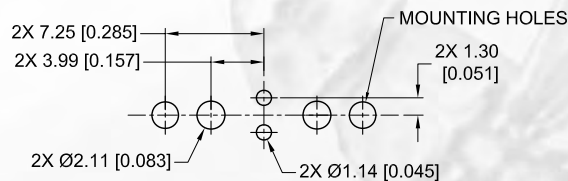
Female



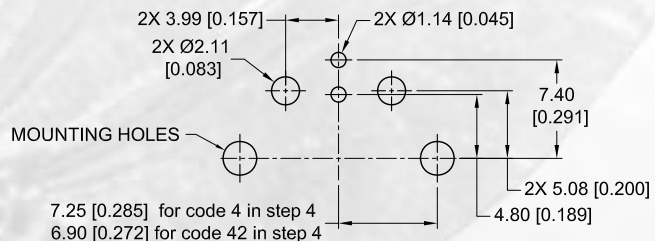
Integrated alignment bar and angle bracket shown for reference only.
(Specify code B in Step 5)

Version 04 PCB Mount - Contact Hole Patterns

Contact Hole Pattern for Straight PCB Mount



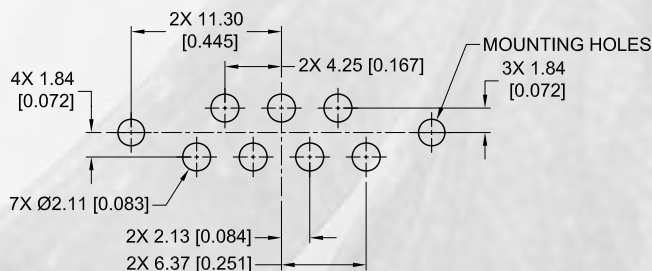
Contact Hole Pattern for Right Angle (90°) PCB Mount



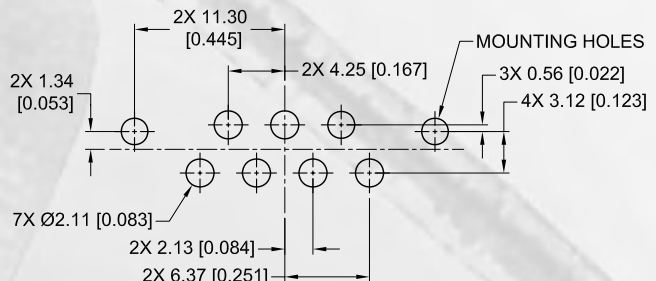
For both male and female connectors.

Version 07 PCB Mount - Contact Hole Patterns

Contact Hole Pattern for Straight PCB Mount



Contact Hole Pattern for Right Angle (90°) PCB Mount



For both male and female connectors.

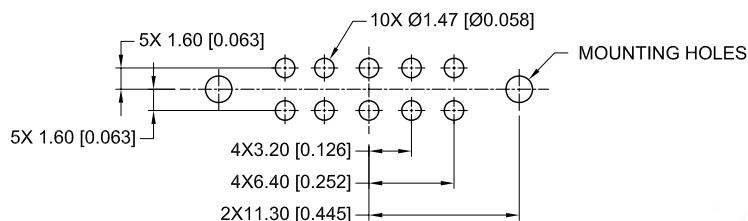
Suggested Ø2.00±0.08 [0.079±0.003] holes for mounting connector with push-on fasteners.
Suggested Ø2.54 [0.100] holes for mounting connector with screws.



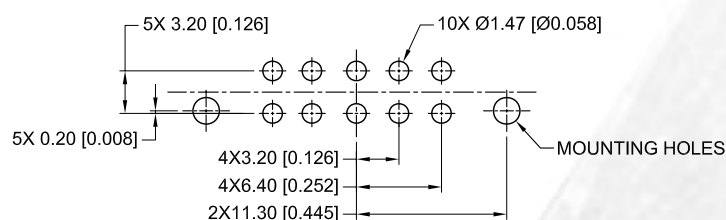


Version 10 PCB Mount - Contact Hole Patterns

Contact Hole Patterns for Straight PCB Mount



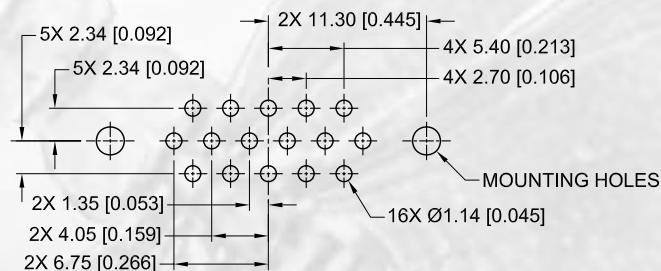
Contact Hole Pattern for Right Angle (90°) PCB Mount



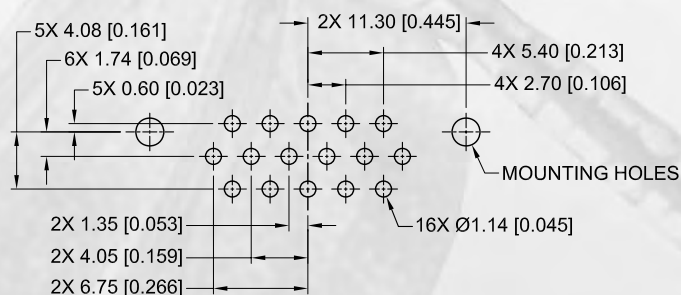
For both male and female connectors.

Contact Hole Patterns for Version 16 PCB Mount

Contact Hole Pattern for Straight PCB Mount



Contact Hole Pattern for Right Angle (90°) PCB Mount



For both male and female connectors.

Suggested $\text{Ø}2.00 \pm 0.08$ [0.079 \pm 0.003] holes for mounting connector with push-on fasteners.
Suggested $\text{Ø}2.54$ [0.100] holes for mounting connector with screws.



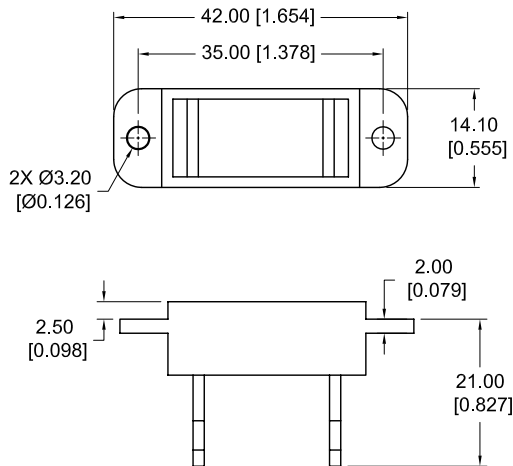
Panel Mount Option, Mounting Hardware and Installation Tools



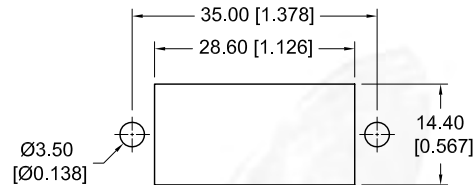
Panel Mount Option

For Male Crimp Connectors of Versions 07, 10 and 16 only
(Specify Code P in Step 5)

Flange Dimensions

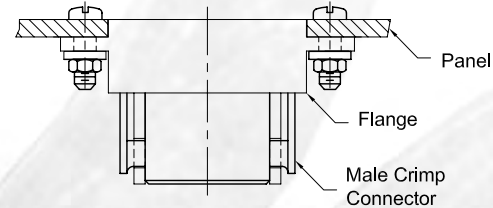


Panel Cutout



Suggested Installation to Panel:

Suggested installation of connector to panel with screws and nuts.
(Screws and nuts shown for reference only)



Materials and Finishes:

Flange: Glass-filled nylon, UL 94V-0.

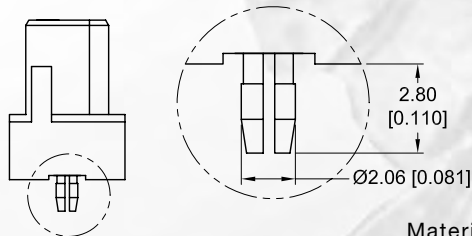
Flange supplied factory installed to connector

Push-on Fasteners

Available on all connectors except Version 04 code 42 contacts

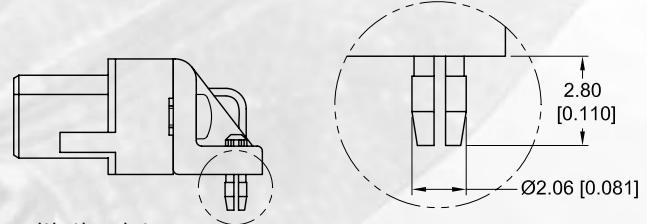
Straight PCB mount version

Specify code N in Step 5



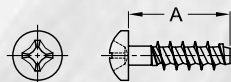
Right Angle (90°) PCB mount version

Specify code BN in Step 5



Material: Copper alloy with tin plate.

Mounting Screws Ordering Information



Connector Variant	Screw Part Number	Screw Length "A"	Recommended PCB Thickness
DF04*3/93*	4546-7-1-16	6.35 [0.250]	2.20 [0.087] to 3.50 [0.138]
	4546-7-2-16	7.93 [0.312]	3.60 [0.142] to 4.50 [0.177]
DF04*4/42*	4546-32-1-16	8.00 [0.315]	1.40 [0.055] to 4.00 [0.157]
	4546-32-2-16	10.00 [0.393]	3.00 [0.118] to 6.00 [0.236]
DF07*3/93*	4546-7-1-16	6.35 [0.250]	1.40 [0.055] to 3.00 [0.118]
DF10*3/98*	4546-7-2-16	7.93 [0.312]	3.00 [0.118] to 4.00 [0.157]
DF16*3/98*			
DF07/10/16*4*	4546-7-0-16	4.78 [0.188]	2.00 [0.079] maximum

Compliant Press-Fit Terminations

PCB Straight Mount Connector Installation Tools Ordering Information

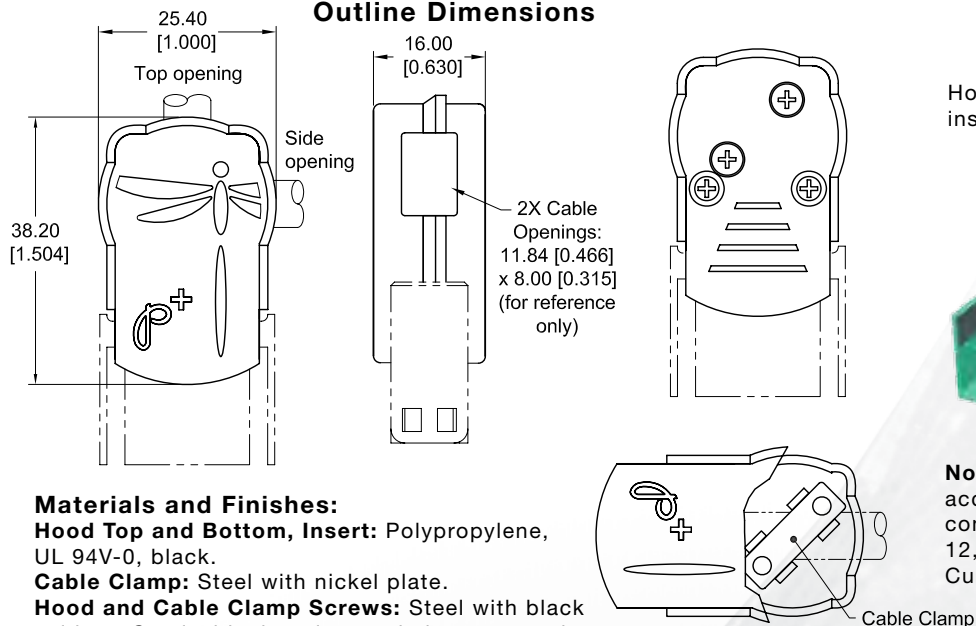
Catalog Part Number	Seating Tool Part Number	Support Tool Part Number
DF04F930	9513-309-21	9513-404-4
DF04M930	9513-309-22	
DF07F930	9513-309-25	9513-404-5
DF07M930	9513-309-24	
DF10F980	9513-309-26	9513-404-6
DF10M980	9513-309-27	
DF16F980	9513-309-20	9513-404-3
DF16M980	9513-309-23	



Hood - Top and Side Opening

For Versions 07, 10 and 16 only
Specify code W1 in Step 5

Outline Dimensions



Hood comes supplied with extra insert for unused opening.



Note: "W1" Hood may not accommodate fully populated connector using thick insulation 12, 14 and 16 AWG wires. Customer review recommended

Materials and Finishes:

Hood Top and Bottom, Insert: Polypropylene, UL 94V-0, black.

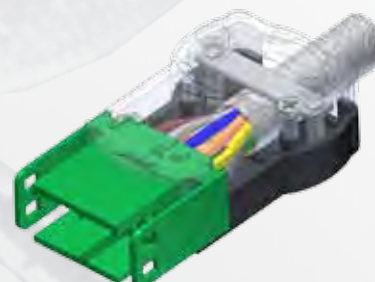
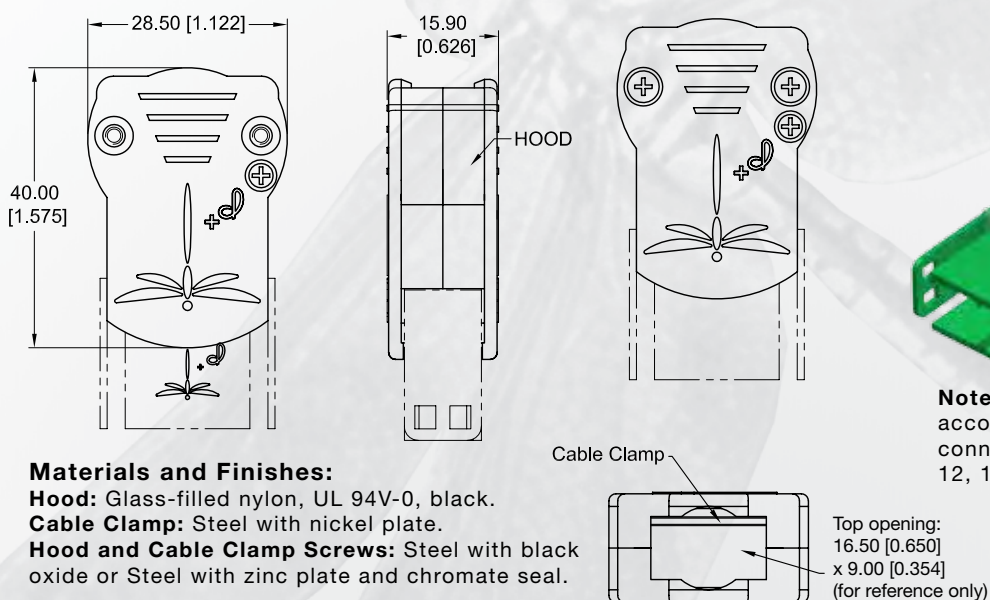
Cable Clamp: Steel with nickel plate.

Hood and Cable Clamp Screws: Steel with black oxide or Steel with zinc plate and chromate seal.

Hood - Top Opening - Wide Body

For Versions 07, 10 and 16 only (for partially and fully populated connector)
Specify code W2 in Step 5

Outline Dimensions



Note: "W2" Hood are able to accommodate fully populated connector using thick insulation 12, 14 and 16 AWG wires.

Materials and Finishes:

Hood: Glass-filled nylon, UL 94V-0, black.

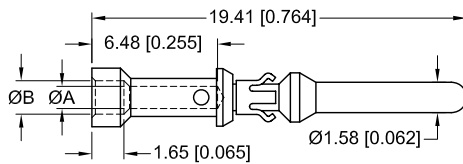
Cable Clamp: Steel with nickel plate.

Hood and Cable Clamp Screws: Steel with black oxide or Steel with zinc plate and chromate seal.

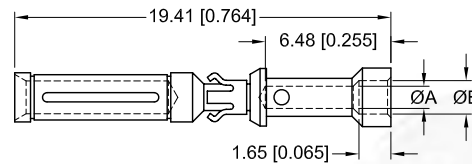


Size 16 contact Rated 20.0 amperes ("Closed entry" 1,000 cycles minimum)

Male Contact



Female Contact (Closed entry)

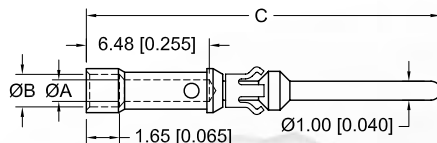


Male Contact	Female Contact	Wire Size AWG [mm ²]	ØA	ØB
MC112N	FC112N2	12 [4.0]	2.49 [0.098]	N/A
MC114N	FC114N2	14-16 [2.5-1.5]	2.06 [0.081]	2.67 [0.105]
MC116N	FC116N2	16-18 [1.5-1.0]	1.70 [0.067]	2.36 [0.093]
MC120N	FC120N2	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]

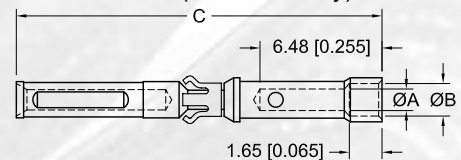
Note: Size 16 contacts tested to 10,000 cycles performance as shown in graph on page 3. This does not insure similar performance under different conditions. Wear in mating area of contacts does occur. Customer review recommended.

Size 20 contact Rated up to 12.0 amperes ("Closed entry" 1,000 cycles minimum)

**Male Contact
MC718N / MC720N**

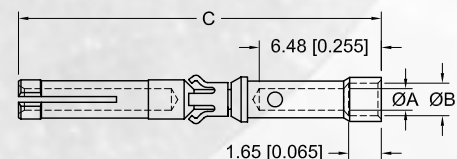


**Female Contact
FC718N2 / FC720N2
(Closed entry)**



Contact Part Number	Wire Size AWG [mm ²]	ØA	ØB	C
MC718N	18 [1.0]	1.40 [0.055]	N/A	18.80 [0.740]
FC718N2		1.40 [0.055]		18.24 [0.718]
FC718N7		1.37 [0.054]		18.80 [0.740]
*MC720N	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]	18.80 [0.740]
*FC720N2				19.41 [0.764]
*FC720N7				18.80 [0.740]

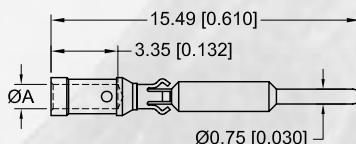
**Female Contact
FC718N7 / FC720N7
(Open entry, 500 cycles)**



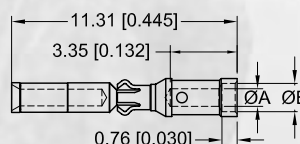
* Contact rated 7.5 amperes

Size 22 contact Rated 3.0 amperes ("Closed entry" 1,000 cycles minimum)

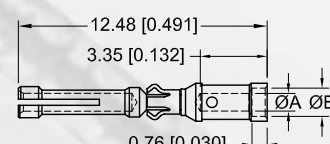
MC422N



**FC422N2
(Closed entry)**



**FC422N7
(Open entry, 500 cycles)**



Male Contact	Female Contact	Wire Size AWG [mm ²]	ØA	ØB
MC422N	FC422N2	22 [0.3]	0.89 [0.035]	1.42 [0.056]
	FC422N7			

Please use correct wire size and it should be smaller than ØA of the contact.
Consult factory for other contact sizes, materials and termination styles.

Connector Ordering Information

Specify complete connector by following step 1 to 5



Step	1	2	3	4	5	6		7
Example	DF	07	M	3	N	/AA	-	XXX
STEP 1 : Basic Series DF : Dragonfly Series							STEP 7 : Special Options Consult factory for customization of connectors. Example: Selective loading, sequential mating, etc.	
STEP 2 : Connector Versions 04 : Mixed density contact connector two (2) size 16 power contacts and two (2) size 22 signal contacts 07 : Power contact connector seven (7) size 16 power contacts 10 : Signal/ power contact connector ten (10) size 20 signal/ power contacts 16 : High density signal contact connector sixteen (16) size 22 signal contacts							STEP 6: Environmental Compliance Options /AA : Compliant per EU Directive 2002/95/EC (RoHS) Note: If compliance to environmental legislation is not required, this step will not be used. Example: DF16F30	
STEP 3 : Connector Gender M : Male F : Female							STEP 5 : Mounting Style, Hoods, Panel Mount 0 : No hardware. For mounting connector with self-tapping screws. (Order screws separately.) N : Push-on fasteners. B : Plastic 90° Mounting Bracket. For versions 07, 10 and 16 only. BN : Plastic 90° mounting bracket with push-on fasteners. For versions 07, 10 and 16 only. W1 : Top and side opening hood. For versions 07, 10 and 16 only. W2 : Top opening hood-wide body For versions 07, 10 and 16 only. P : Panel mount adaptor for male crimp connectors of versions 07, 10 and 16 only. Note: For suggested straight mount pcb holes sizes of compliant press-fit connectors, please consult factory.	
STEP 4: Type of Contact 0 : Removable contact. (contacts ordered separately). *3 : Solder, straight PCB mount. 31 : Solder, open-entry, straight PCB mount. (For female connectors of version 10 only.) *4 : Solder, right angle (90°) PCB mount. 41 : Solder, open-entry, right angle PCB mount. (For female connectors of version 10 only.) 42 : Solder, right angle (90°) PCB mount. (For version 04 male only. Using Longer Insulator.) 93 : Press-fit, compliant termination straight pcb mount. (For versions 04 and 07 only.) 98 : Press-fit, compliant termination straight pcb mount. (For versions 10 and 16 only.) *Standard female contact is closed-entry for Versions 07 and 10. *Standard female contact is open-entry for Version 16.								

Recommended Tools for Crimp Contacts

Contact Extraction Tool



Contact Insertion Tool



Cycle-Controlled Step
Adjustable Hand Crimp Tool



Contact Size	Contact Extraction Tool	Contact Insertion Tool	Hand Crimp Tool	Semi-Automatic Crimp Machine
Size 16	9081-0	9099-0	9501-0 with 9502- 1 positioner	9550-0
Size 20	9081-2	9099-4	9507-0 with 9502-21 positioner (Male) 9507-0 with 9502-22 positioner (Female)	9550-1
Size 22	9081-3	9099-1	9507-0 with 9502-12 positioner (Male) 9507-0 with 9502-13 positioner (FC422N2) 9507-0 with 9502-23 positioner (FC422N7)	

Consult factory for details on semi-automatic crimp machine. Above tools were shown for reference only.



COMPLIANT PRESS-FIT CONNECTORS FOR CONNECTOR VERSIONS 04, 07, 10 AND 16



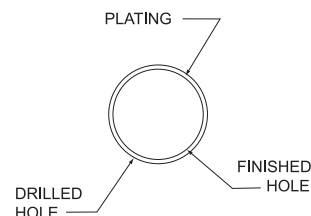
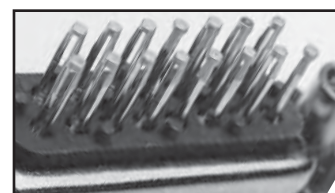
SUGGESTED PRINTED BOARD HOLE SIZES COMPLIANT PRESS-FIT CONNECTORS

Traditionally, tin-lead has been a popular plating for PCB holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE

BOARD TYPE	CONTACT SIZE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	16	$\phi 1.750 \pm 0.025$ [$\phi 0.0689 \pm 0.001$]	15 μ [0.0006] minimum solder over 25 μ [0.0010] min. copper	$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	16	$\phi 1.750 \pm 0.025$ [$\phi 0.0689 \pm 0.001$]	25 μ [0.0010] min. copper	$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION TIN PCB	16	$\phi 1.750 \pm 0.025$ [$\phi 0.0689 \pm 0.001$]	0.85 $\pm 0.15\mu$ [0.000033 ± 0.000006] immersion tin over 25 μ [0.0010] min. copper	$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION SILVER PCB	16	$\phi 1.750 \pm 0.025$ [$\phi 0.0689 \pm 0.001$]	0.34 $\pm 0.17\mu$ [0.000013 ± 0.000007] immersion silver over 25 μ [0.0010] min. copper	$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
ELECTROLESS NICKEL/IMMERSION GOLD PCB	16	$\phi 1.750 \pm 0.025$ [$\phi 0.0689 \pm 0.001$]	0.05 μ [0.000002] min. immersion gold over [4.5 $\pm 1.5\mu$ [0.000177 ± 0.000059] electroless nickel per IPC-4552 over 25 μ [0.0010] min. copper	$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]

“Bi-Spring” Termination



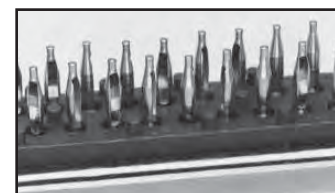
PRESS-FIT CONTACT HOLE

Note: For PCB plating compositions not shown, consult Technical Sales.

OMEGA COMPLIANT PRESS-FIT CONTACT HOLE

BOARD TYPE	CONTACT SIZE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	20 22	$\phi 1.150 \pm 0.025$ [$\phi 0.0453 \pm 0.001$]	15 μ [0.0006] minimum solder over 25 μ [0.0010] min. copper	$\phi 1.000 \pm 0.090 - 0.060$ [$\phi 0.0394 \pm 0.0035 - 0.0024$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	20 22	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
IMMERSION TIN PCB	20 22	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.85 $\pm 0.15\mu$ [0.000033 ± 0.000006] immersion tin over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
IMMERSION SILVER PCB	20 22	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.34 $\pm 0.17\mu$ [0.000013 ± 0.000007] immersion silver over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
ELECTROLESS NICKEL/IMMERSION GOLD PCB	20 22	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.05 μ [0.000002] min. immersion gold over 4.5 $\pm 1.5\mu$ [0.000177 ± 0.000059] electroless nickel per IPC-4552 over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]

“Omega” Termination



Note:

DF04 - uses size 16 bi-spring press-fit and size 22 omega press-fit contacts.

DF07 - uses size 16 bi-spring press-fit contacts.

DF10 - uses size 20 omega press-fit contacts.

DF16 - uses size 22 omega press-fit contacts.



NORTH AMERICAN SALES OFFICES

United States, Springfield, Missouri

Factory and Sales Office	417 866 2322
Puerto Rico Sales Office	800 641 4054
Mexico Sales Office	800 872 7674
Canada Sales Office	800 327 8272

info@connectpositronic.com

EUROPEAN SALES OFFICES

France, Auch Factory and Sales	335 6263 4491
Northern France Sales Office	331 4588 1388
Southern France Sales Office	335 6263 4491
Italy Sales Office	3902 5411 6106
Germany Sales Office	4923 5163 4739
United Kingdom Sales Office	44 1993 831 939

contact@connectpositronic.com
jchalaux@connectpositronic.com
plafon@connectpositronic.com
rmagni@connectpositronic.com
cbouche@connectpositronic.com
lbridwell@connectpositronic.com

Europe & Middle East Technical Agents:

Finland, United Kingdom, Scotland, Israel, Norway, Sweden, Turkey and the Ukraine.

ASIA / PACIFIC SALES OFFICES

Singapore Factory, Sales and Engineering Office

Singapore	+65 6842 1419
Japan	+813 5812 7720
South Korea	+82 31 909 8047
India	+91 20 2439 4810
Taiwan	+886 2 2937 8775
China	

Zhuhai (Factory)	+86 756 362 6466
Beijing & Xian	+86 29 8839 5306
Shenzhen	+86 755 2643 7578
Shanghai	+86 158 2907 9779

Malaysia	+60 4 644 9688
New Zealand	+64 3 358 5154
Australia	+61 2 4362 3477

singapore@connectpositronic.com
japan@connectpositronic.com
korea@connectpositronic.com
india@connectpositronic.com
taiwan@connectpositronic.com

china@connectpositronic.com
xian@connectpositronic.com
shenzhen@connectpositronic.com
shanghai@connectpositronic.com

newzealand@connectpositronic.com
australia@connectpositronic.com

POSITRONIC INDUSTRIES, INC

423 N Campbell Avenue, P O Box 8247,
Springfield, MO 65801, USA
Telephone: 1 417 866 2322
Fax: 1 417 866 4115
Email: info@connectpositronic.com

POSITRONIC INDUSTRIES, SAS

Zone Industrielle Est, 46 Route d'Engachies,
F32020, Auch Cedex 9, France
Telephone: 335 62 63 44 91
Télécopieur: 335 62 63 51 17
Email: contact@connectpositronic.com

POSITRONIC ASIA PTE LTD

3014A Ubi Road 1 # 07-01 Singapore 408703
Telephone: 65 6842 1419 Fax: 65 6842 1421
Email: singapore@connectpositronic.com

www.connectpositronic.com



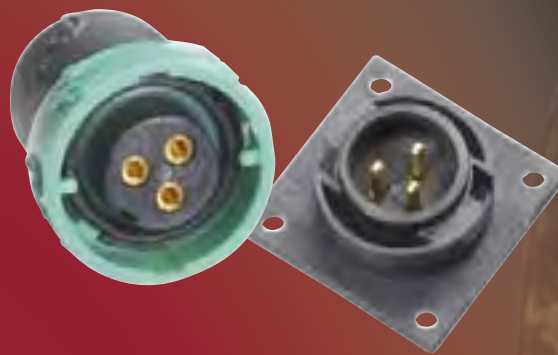
Positronic Industries
www.connectpositronic.com



DRAAGONFLY

KING COBRA

Rugged & Economical Circular Connector Systems

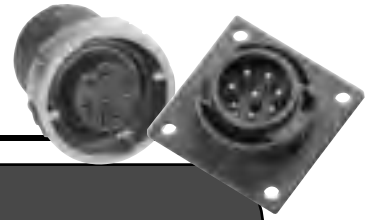


PROFESSIONAL-QUALITY IP65 - RATED CIRCULAR CONNECTORS



- IP65 Environmental Rating
- Cable, Panel And PC Mount Options
- Solid Machined Contacts
- Unique "Twist-Lock" Mechanism

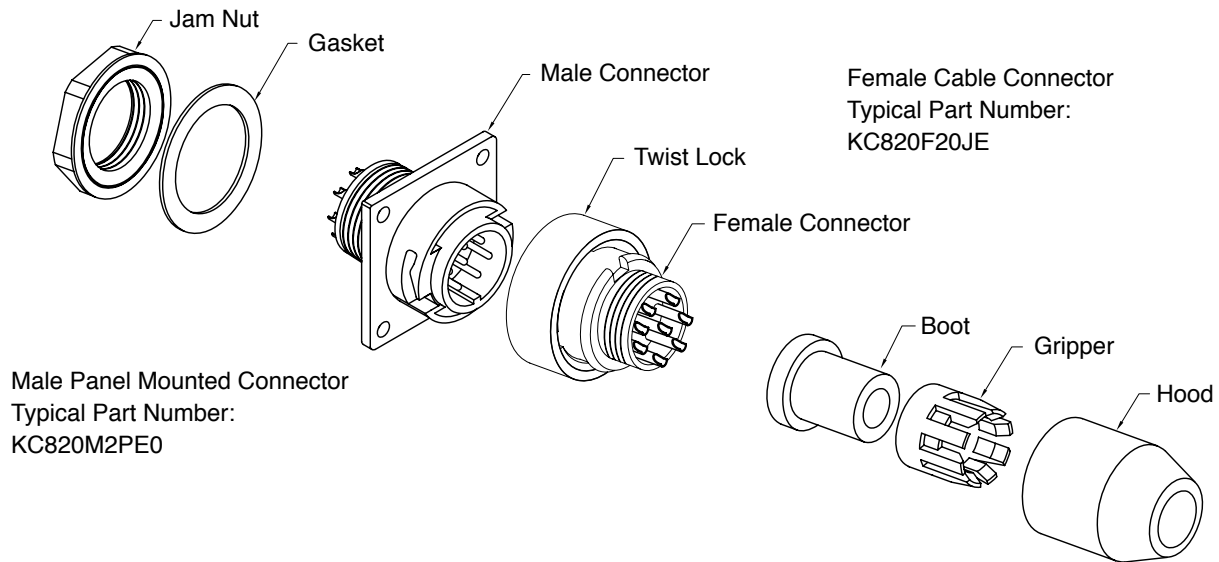
Positronic Industries
www.connectpositronic.com



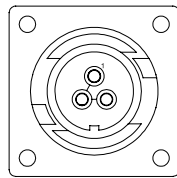
FEATURES:

- Circular “Twist-Lock” connectors with competitive pricing!
- Dust and water ingress protection to IP65 per IEC 60529.
- High reliability power and signal solid machined contacts.
- High mating cycle life and vibration-resistant capabilities!

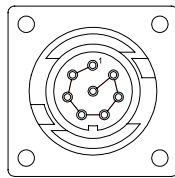
Typical Connector Assembly



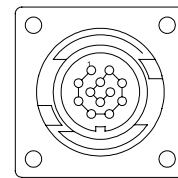
Connector Versions



KC316:
Three (3) Size 16
Power Contacts



KC820:
Eight (8) Size 20
Signal Contacts



KC1222:
Twelve (12) Size 22
Removable Signal Contacts

Unless otherwise specified, dimensional tolerances are:

- | | |
|----------------------------------|----------------------|
| 1) Male contact mating diameters | : ± 0.03 [0.001] |
| 2) Contact termination diameters | : ± 0.08 [0.003] |
| 3) All other diameters | : ± 0.13 [0.005] |
| 4) All other dimensions | : ± 0.38 [0.015] |

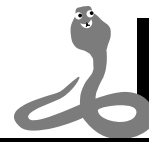
Dimensions are in millimeters [inches]. All dimensions are subject to change.

Catalog A-004 rev. NC

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.



Positronic Industries, Inc
www.connectpositronic.com
www.positronicasia.com



Technical Characteristics

Materials and Finishes

Insulator:	Glass-filled nylon, UL 94V-0.
Contacts:	Precision machined copper alloy with gold over nickel plate.

Electrical Characteristics

Contact Current Ratings

Size 16 Contacts:	20.0 amperes.
Size 20 Contacts:	7.5 amperes.
Size 22 Contacts:	3.0 amperes.

Initial Contact Resistance per IEC 512-2, Test 2b.

Size 16 Contacts:	0.003 ohms, maximum.
Size 20/22 Contacts:	0.005 ohms, maximum.

Insulator Resistance per IEC 512-2, Test 3a.

Insulator:	5 G ohms, minimum.
------------	--------------------

Proof Voltage

Size 16 Contacts:	1300 V r.m.s.
Size 20/22 Contacts:	1000 V r.m.s.

Working Voltage

Size 16 Contacts:	433 V r.m.s.
Size 20/22 Contacts:	333 V r.m.s.

Climatic Characteristics

Working temperature:	-55°C to +125°C
----------------------	-----------------

Dust and Water Ingress Protection:	IP65 per IEC 60529 in mated condition (when jacketed cable is used). Degree of protection is dust-tight (no ingress of dust) and protected against water projected in jets from any direction.
------------------------------------	--

Mechanical Characteristics

Polarization:	Provided in insulator design.
---------------	-------------------------------

Removable Contacts:	Insert contact in rear face of insulator; release from front face of insulator. Size 22 Female contacts feature "Open Entry" 500 cycles design and "Closed Entry" 1000 cycles minimum design options.
---------------------	---

Fixed Contacts:	Size 16 female contacts feature "Closed Entry" 1000 cycles minimum design. (Consult factory for higher cycle options.) Size 20 female contacts feature "Open Entry" 500 cycles design. (Consult factory for "Closed Entry" options.)
-----------------	--

Contact Retention in Insulator:

Size 16 Contacts:	45 N [10 lbs.] minimum.
Size 20/22 Contacts:	27 N [6 lbs.] minimum.

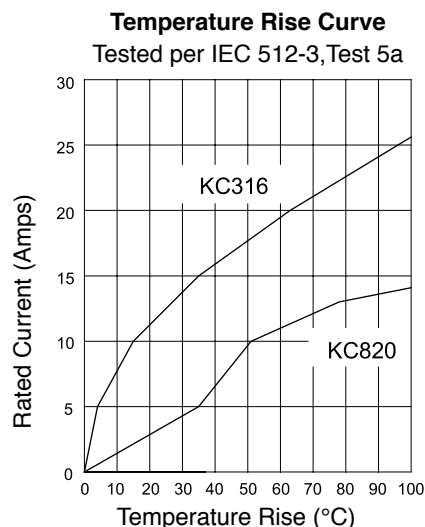
Coupling System:	Twist lock.
------------------	-------------

Shock and Vibration:	Pending. (Consult factory)
----------------------	----------------------------

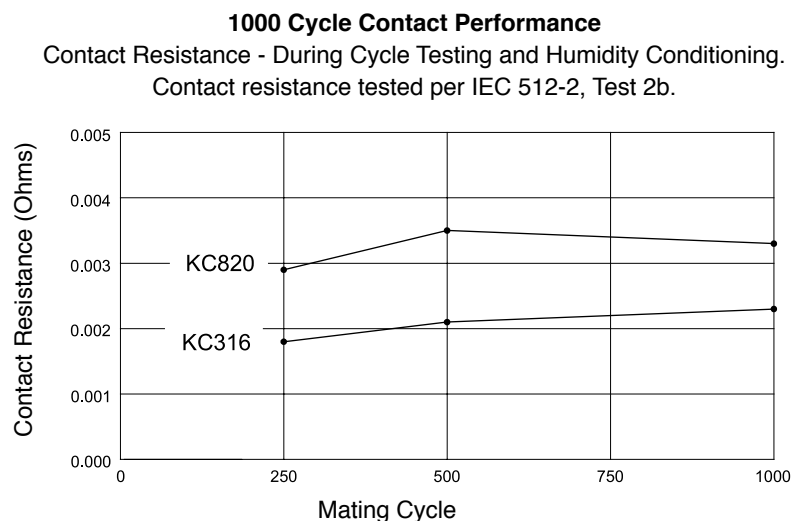
Recognized

UL certification in process.
Consult factory for TÜV recognition.

Temperature Rise Curve and Contact Performance



Above curves developed separately using (a) KC316 connectors and 16 AWG wires, and (b) KC820 connectors and 20 AWG wires. All contacts under load.



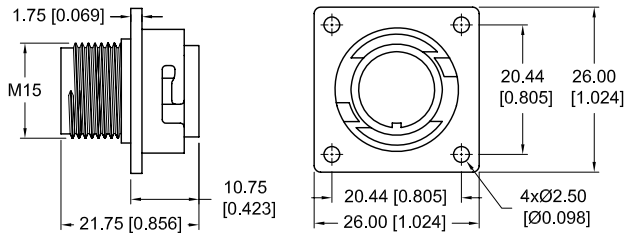
Humidity conditioning per EIA-364-31B, Method II (Condition A) after 250, 500 and 1000 mating cycles. Above curves developed separately using (a) KC316 connectors, and (b) KC820 connectors.



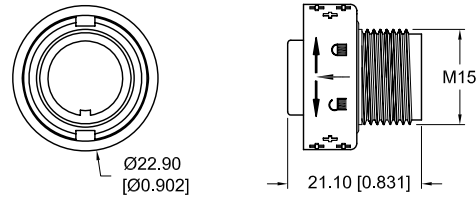


Outline Dimensions

Male Connector



Female Connector

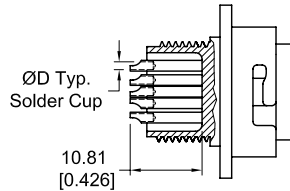


Solder Cup Contacts

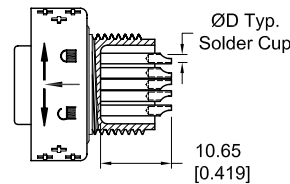
Available in versions KC316 and KC820 only

Male Connector Typical Part Number: KC820M200

Specify code M2 in Step 2



Version	ØD
KC316	1.40 mm [0.055 inch]
KC820	1.19 mm [0.047 inch]



Female Connector Typical Part Number: KC820F200

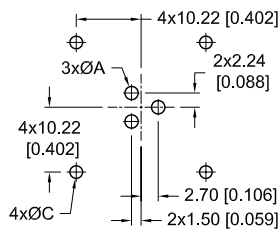
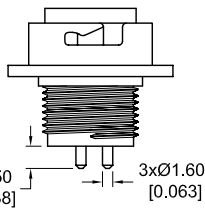
Specify code F2 in Step 2

PCB Mount Contact Dimensions and PCB Hole Patterns Straight and Right Angle (90°) PCB Mount Male Connectors

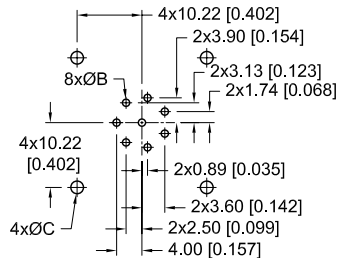
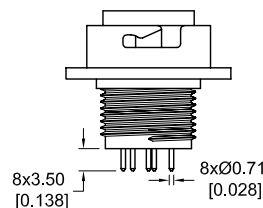
Straight PCB Mount

(Available in male connectors only)
Specify code M3 in Step 2

Version 316



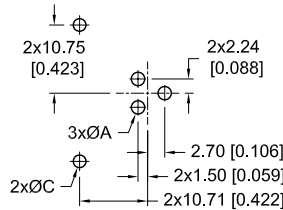
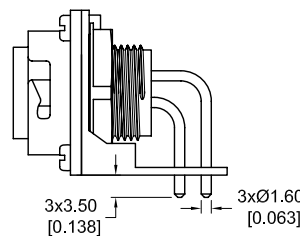
Version 820



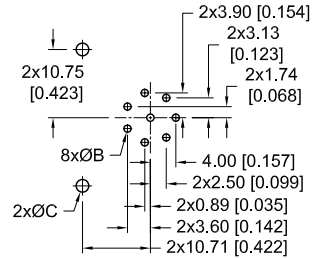
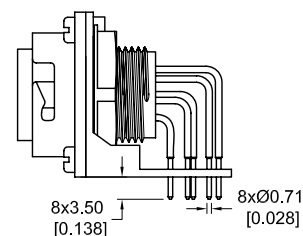
Right Angle (90°) PCB Mount

(Available in male connectors only)
Specify code M4 in Step 2

Version 316



Version 820



Note: Contact factory for availability of Female PCB Mount versions.

Suggested PCB Hole Sizes and Mounting Screw:

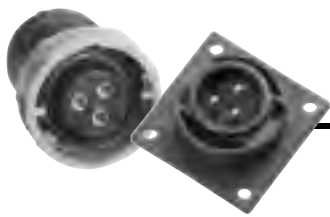
Suggested ØA = Ø2.03 [0.080] holes for size 16 contact termination holes. (Version 316).

Suggested ØB = Ø1.14 [0.045] holes for size 20 contact termination holes. (Version 820).

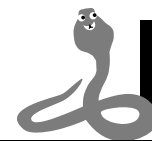
Suggested ØC = Ø2.00±0.08 [0.079±0.003] holes for use with push-on fasteners.

Suggested ØC = Ø2.54 [0.100] holes for mounting connector with screws. Screws ordered separately. Screw part number 4546-7-1-16 for PCB thickness between 1.00 mm [0.039 inch] and 2.50 mm [0.098 inch]. (Consult factory for other PCB thickness requirements.)





PANEL MOUNT CONNECTORS, ACCESSORIES AND SCREW TERMINATION VERSION



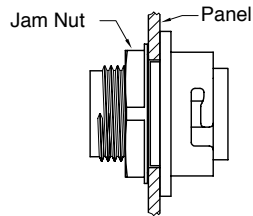
KING COBRA
Circular Connectors

Panel Mounting Options

Available in male connectors only

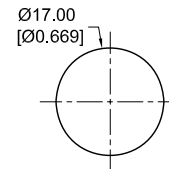
Front Panel Mount Typical Part Number: KC316M2P0

Specify code P in Step 3



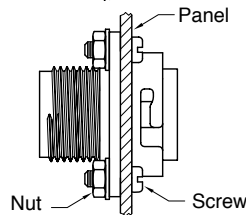
Panel Cutout for Front Panel Mount

Maximum thickness 2.00 mm
[0.079 inch]



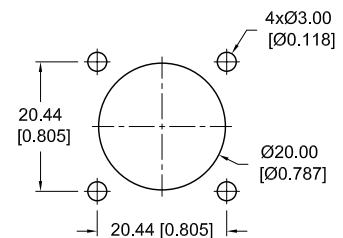
Rear Panel Mount Typical Part Number: KC820M2PR0

Screws, nuts and washers
supplied seperately.



Panel Cutout for Rear Panel Mount

Maximum thickness 2.00 mm
[0.079 inch]



(Screws and nuts shown for reference only)

Accessories

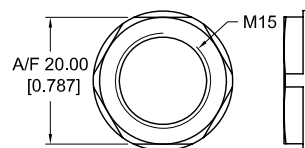
Jam Nut

Supplied factory installed to
connector.

(See ordering information
- code P in step 3)

Material:

Jam nut: Nylon, UL 94V-0.



Spacers

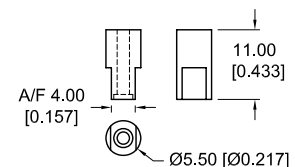
Supplied factory installed to
connector with 4 screws.

Specify code S in step 3

Materials and Finish:

Spacer: Nylon, UL 94V-0.

Screw: Steel with zinc plate



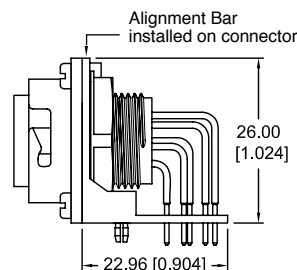
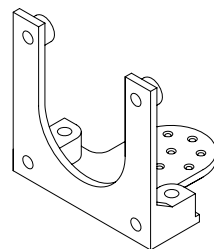
Alignment Bar

Supplied factory installed on
all right angle (90°) PCB mount
connectors with 4 screws.

Materials and Finish:

Alignment Bar: Nylon, UL 94V-0.

Screw: Steel with zinc plate.



See page 3 for
mounting hole details.

Spacers with Push-on Fasteners

Supplied factory installed to connector.

Specify code S6 in step 3

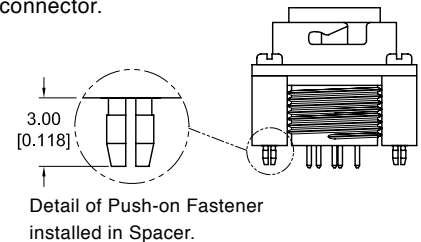
Materials and Finishes:

Push-on Fastener:

Copper alloy with tin plate.

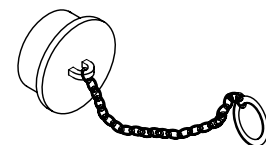
Spacer: Nylon, UL 94V-0.

Screw: Steel with zinc plate.



Dust Cover

Consult factory for availability.



Screw Termination Connector

Typical Part Number: KC316F700

Specify code F7 in Step 2.

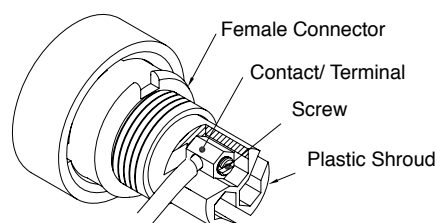
Available in version KC316 female connector only.

Materials and Finish:

Terminal and Screw:

Copper alloy with tin plate

Plastic Shroud: Nylon, UL 94V-0.



Note:

Screw Termination accomodates
maximum wire size AWG 18 [1.0 mm²].



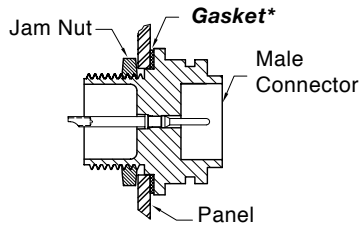


Detail of IP65 Version Connectors and Hood

Male Front Panel Mount Connector

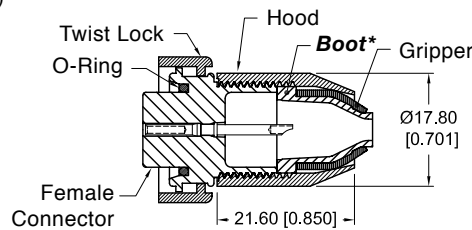
Typical Part Number: KC820M2PE0

(Consult factory for rear panel mount IP65 applications.)



Female Cable Connector

Typical Part Number: KC316F20JE



Materials:

Hood and Gripper: Nylon, UL 94V-0.
Boot and Gasket: Nitrile.
O-Ring: Silicon.

Note:

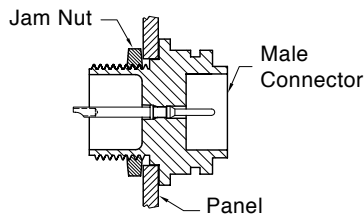
Hood design can accommodate jacketed cable diameters between 4.00mm [0.157 inch] and 7.00mm [0.276 inch].

*** For IP65 version only**

Detail of Non-IP65 Version Connectors and Hood

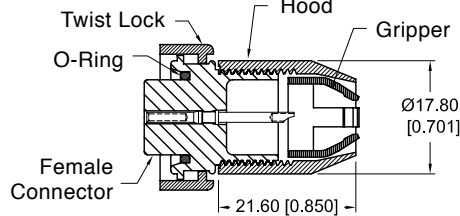
Male Front Panel Mount Connector

Typical Part Number: KC316M2P0



Female Cable Connector

Typical Part Number: KC820F20J



Materials:

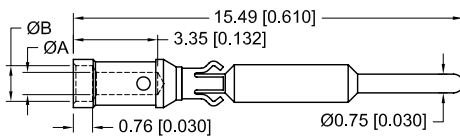
Hood and Gripper: Nylon, UL 94V-0.
O-Ring: Silicon.

Note:

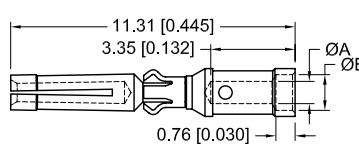
Hood design can accommodate jacketed cable diameters between 4.00mm [0.157 inch] and 7.00mm [0.276 inch].

Removable Crimp Contacts for Version KC1222

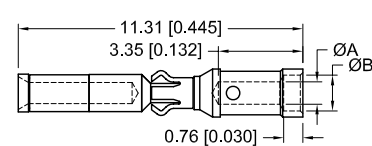
MC422N



FC422N4 (Open Entry)



FC422N2 (Closed Entry)



Male Contact	Female Contact	Wire Size AWG [mm²]	ØA	ØB
MC422N	FC422N4 FC422N2	22 [0.3] - 24 [0.25]	0.89 [0.035]	1.42 [0.056]

Please use correct wire size and it should be smaller than ØA of the contact
(Consult factory for solder style removable contacts.)

Recommended Tools for Crimp Contacts

Contact Extraction Tool
Shown for reference only



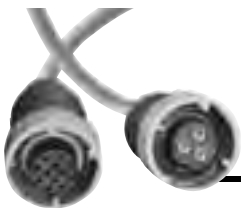
Contact Insertion Tool
Shown for reference only



Cycle-Controlled Step
Adjustable Hand Crimp Tool
Shown for reference only

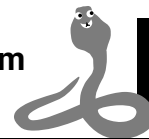


Contact Size	Contact Extraction Tool	Contact Insertion Tool	Hand Crimp Tool	Semi-Automatic Crimp Machine
Size 22	9081-3	9099-1	9507-0 with 9502-12 positioner (male contacts) 9507-0 with 9502-23 positioner (female contacts)	9550-1



Ordering Information - Code Numbering System

Specify complete connector by following step 1 through step 4



KING COBRA
Circular Connectors

Step	1	2	3	4	5		6	King Cobra Version 316
Example	KC316	M2	PE	JE	/AA	-	XXX	
STEP 1: CONNECTOR VERSION KC316 : King Cobra Series - Three (3) Size 16 Contacts						STEP 6 - SPECIAL OPTIONS Consult factory.		
STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS M2 : Male panel mount, solder cup, fixed contacts. M3 : Male straight PCB mount, solder. M4 : Male right angle (90°) PCB mount, solder. F2 : Female cable connector, solder cup, fixed contacts. (Select 0 in Step 3) F7 : Female cable connector, screw termination. Supplied with contacts. (Select 0 in Step 3) Note : Consult factory for other connector versions.						STEP 5: RoHS COMPLIANCE OPTIONS /AA : Compliance per EU Directive 2002/95/EC (RoHS) Note : If RoHS legislation is not required, this step will not be used.		
						STEP 4: HOODS 0 : None. J : Hood with gripper, non-IP65. JE : Hood with gripper and boot, IP65.		
		STEP 3: MOUNTING STYLES 0 : None. S : Spacer for straight PCB mount connectors. S6 : Spacer with push-on fastener for straight PCB mount connectors. N : Push-on fastener for use with alignment bar and right angle (90°) PCB mount connectors. P : Front panel mount male connectors with jam nut, non-IP65. PE : Front panel mount male connectors with jam nut and gasket, IP65. PR : Rear panel mount male connectors, non-IP65. PRE : Rear panel mount male connectors with gasket, IP65.						

Step	1	2	3	4	5		6	King Cobra Version 820
Example	KC820	F2	0	JE	/AA	-	XXX	
STEP 1: CONNECTOR VERSION KC820 : King Cobra Series - Eight (8) Size 20 Contacts						STEP 6 - SPECIAL OPTIONS Consult factory.		
STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS M2 : Male panel mount, solder cup, fixed contacts. M3 : Male straight PCB mount, solder. M4 : Male right angle (90°) PCB mount, solder. F2 : Female cable connector, solder cup, fixed contacts. (Select 0 in Step 3)						STEP 5: RoHS COMPLIANCE OPTIONS /AA : Compliance per EU Directive 2002/95/EC (RoHS) Note : If RoHS legislation is not required, this step will not be used.		
						STEP 4: HOODS 0 : None. J : Hood with gripper, non-IP65 JE : Hood with gripper and boot, IP65.		
		STEP 3: MOUNTING STYLES 0 : None. S : Spacer for straight PCB mount connectors. S6 : Spacer with push-on fastener for straight PCB mount connectors. N : Push-on fastener for use with alignment bar and right angle (90°) PCB mount connectors. P : Front panel mount male connectors with jam nut, non-IP65. PE : Front panel mount male connectors with jam nut and gasket, IP65. PR : Rear panel mount male connectors, non-IP65. PRE : Rear panel mount male connectors with gasket, IP65.						

Step	1	2	3	4	5		6	King Cobra Version 1222
Example	KC1222	M1	P	J	/AA	-	XXX	
STEP 1: CONNECTOR VERSION KC1222 : King Cobra Series - Twelve (12) Size 22 Contacts						STEP 6 - SPECIAL OPTIONS Consult factory.		
STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS M1 : Male panel mount, removable crimp contacts. F1 : Female cable connector, removable crimp contacts. (Select 0 in Step 3) Note: Contacts ordered separately.						STEP 5: RoHS COMPLIANCE OPTIONS /AA : Compliance per EU Directive 2002/95/EC (RoHS) Note : If RoHS legislation is not required, this step will not be used.		
						STEP 4: HOODS 0 : None. J : Hood with gripper, non-IP65 JE : Hood with gripper and boot, IP65.		
		STEP 3: MOUNTING STYLES 0 : None. P : Front panel mount male connectors with jam nut, non-IP65. PE : Front panel mount male connectors with jam nut and gasket, IP65. PR : Rear panel mount male connectors, non-IP65. PRE : Rear panel mount male connectors with gasket, IP65.						



ASIA / PACIFIC SALES OFFICES

Singapore Factory, Sales and Engineering Office

Singapore	+65 6842 1419
Japan	+813 5812 7720
South Korea	+82 31 909 8047
India	+91 20 2439 4810
Taiwan	+886 2 2937 8775
China	+86 755 2643 7578
Shanghai	+86 21 5078 2096
Shenzhen	+86 755 2643 7578
Malaysia	+60 4 644 9688
New Zealand	+64 3 358 5154
Australia	+61 2 4362 3293

singapore@connectpositronic.com

japan@connectpositronic.com

korea@connectpositronic.com

india@connectpositronic.com

taiwan@connectpositronic.com

shanghai@connectpositronic.com

shenzhen@connectpositronic.com

newzealand@connectpositronic.com

australia@connectpositronic.com

NORTH AMERICAN SALES OFFICES

United States, Springfield, Missouri

Factory and Sales Office 800 641 4054

Puerto Rico Sales Office 787 841 0920

Mexico Sales Office 800 872 7674

Canada Sales Office 800 327 8272

EUROPEAN SALES OFFICES

France, Auch Factory and Sales 33 (0) 5 6263 4491

Northern France Sales Office 33 (0) 1 4588 1388

Southern France Sales Office 33 (0) 4 6772 8028

Italy Sales Office 39 (0) 2 5411 6106

Germany Sales Office 49 (0) 23 5163 4739

Europe & Middle East Technical Agents:

Austria, Benelux, Denmark, Finland, Greece,

United Kingdom, Ireland, Scotland, Slovenia,

Spain, Sweden, Switzerland, Israel and Turkey

POSITRONIC INDUSTRIES, INC

423 N Campbell Avenue, P O Box 8247,

Springfield, MO 65801, USA

Telephone: 1 417 866 2322

Fax: 1 417 866 4115

Email: info@connectpositronic.com

POSITRONIC INDUSTRIES, SA

Zone Industrielle Est, 46 Route d'Engachies,

F32020, Auch Cedex 9, France

Telephone: 33 05 62 63 44 91

Telecopieur: 33 (0) 5 62 63 51 17

Email: contact@connectpositronic.com

POSITRONIC ASIA PTE LTD

3014A Ubi Road 1 # 07-01 Singapore 408703

Telephone: 65 6842 1419 Fax: 65 6842 1421

Email: singapore@connectpositronic.com

www.connectpositronic.com



KING COBRA
Rugged & Economical Circular Connector Systems



Positronic Industries
www.connectpositronic.com

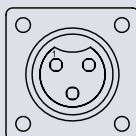


BABY KING COBRA

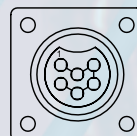


Miniature, Economical & Rugged Circular Connector Systems

Connector Versions



BKC320:
Three (3) Size 20
Contacts



BKC620:
Six (6) Size 20
Contacts

Technical Characteristics

Materials and Finishes

Insulator: Glass-filled nylon, UL 94V-0.

Contacts: Precision machined copper alloy with gold over nickel plate.

'O' Ring: Silicon, UL 94V-0

Electrical Characteristics

Contact Current Ratings

Size 20 Contacts: 7.5 amperes nominal.

Initial Contact Resistance per IEC 512-2, Test 2b.

Size 20 Contacts: 0.005 ohms, maximum.

Insulator Resistance per IEC 512-2, Test 3a.

Insulator: 5 G ohms, minimum.

Proof Voltage

Size 20 Contacts: 1000 V r.m.s.

Working Voltage

Size 20 Contacts: 250 V r.m.s.

Climatic Characteristics

Working temperature: -55°C to +125°C

Dust and

Water Ingress: IP65 with overmolded Assemblies (Consult Factory for details)

Mechanical Characteristics

Polarization: Provided by insulator.

Fixed Contacts: Size 20 female contacts feature "Open Entry" 500 cycles design.

Contact Retention
in Insulator:

Size 20 Contacts: 27 N [6 lbs.] minimum.

Locking System:

Threaded or Twist
Locking Shroud

UL :

File E220614



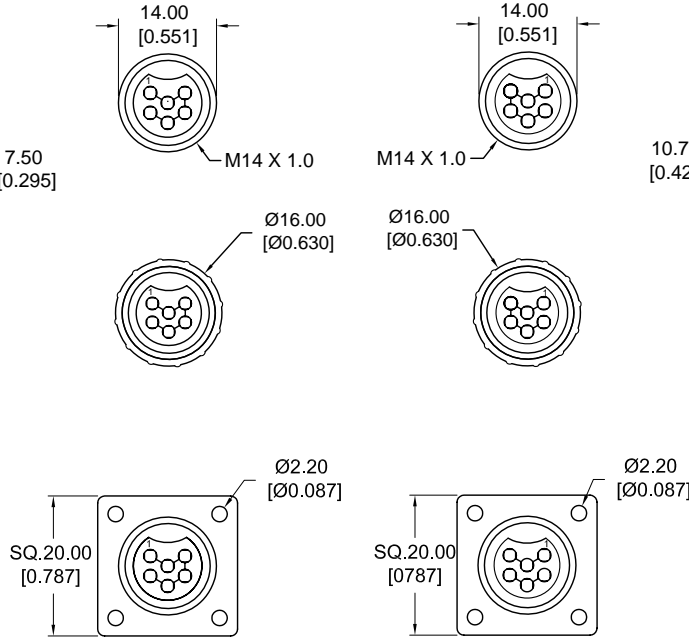
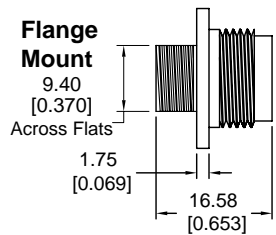
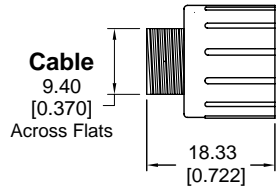
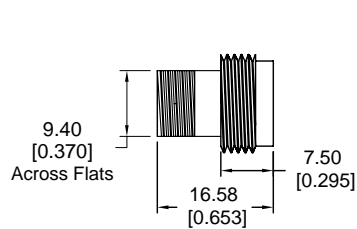
POSITRONIC
GLOBAL *Connector* SOLUTIONS

www.connectpositronic.com

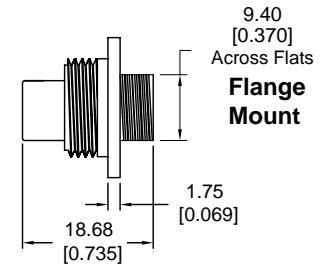
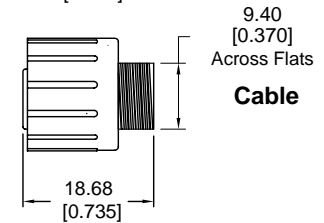
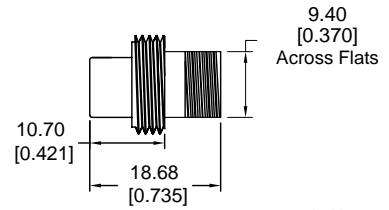


THREADED LOCKING SYSTEM

Male Connector

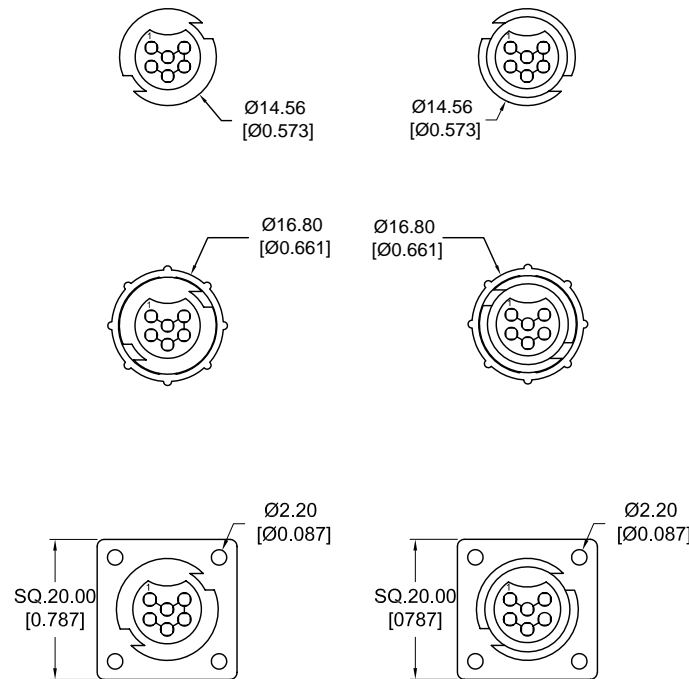
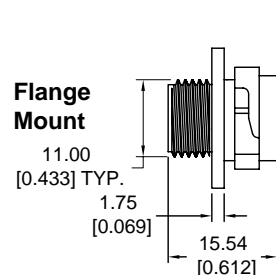
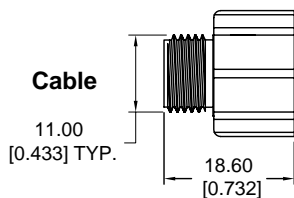
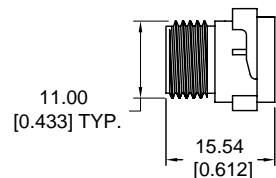


Female Connector

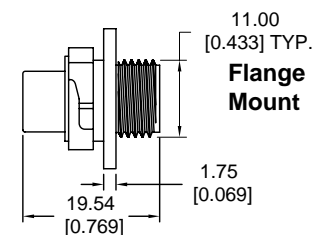
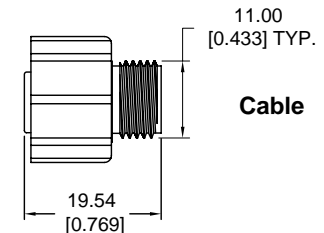
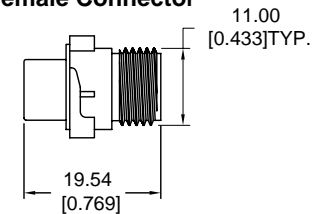


TWIST LOCKING SYSTEM

Male Connector

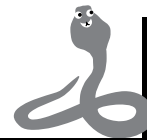


Female Connector



Above Dimensions are same for both BKC320 and BKC620 versions.

Solder Cup Contacts / Accessories

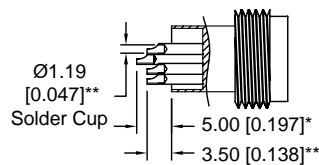


**BABY KING
COBRA**
Circular Connectors

Solder Cup Contacts

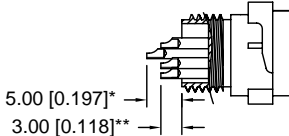
Male Connector

Typical Part Number:
BKC620M2T10

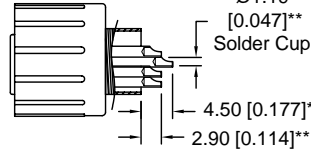


Typical Part Number:
BKC620M2TW10

Specify code M2TW
in Step 2



$\varnothing 1.19$
[0.047]**
Solder Cup

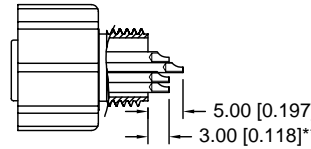


Female Connector

Typical Part Number:
BKC620F2T20

Typical Part Number:
BKC620F2TW30

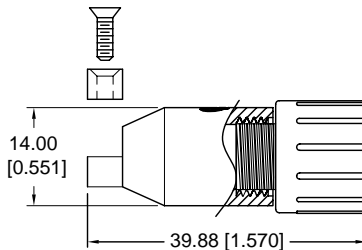
Specify code F2TW in
Step 2



* applicable for BKC620 only.
** applicable for BKC620 and BKC320.

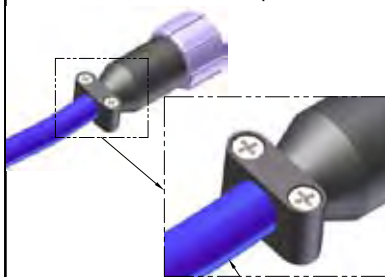
ACCESSORIES

Connector with Hood Male or Female



Materials:

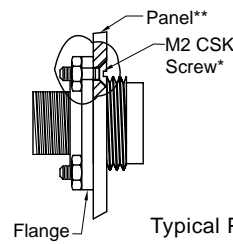
Hood & Clamp: Nylon, UL 94V-0.
Screws: Steel with zinc plate.



Note: Hood design can accommodate
jacketed cable \varnothing between 4.50mm
[0.177] to 6.00mm [0.236]

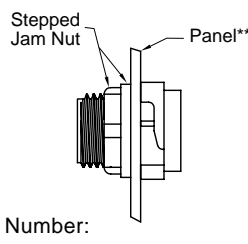
Panel Mounting Option

Rear Panel Mount

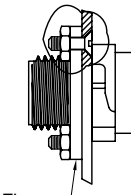


Typical Part Number:
BKC320M2T1FT
BKC620M2T1PF

Front Panel Mount



Typical Part Number:
BKC320M2TW1P
BKC620M2TW1P



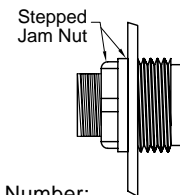
Typical Part Number:
BKC320M2T1P
BKC620M2T1P

Materials:

Screws and Nuts: Steel with zinc plate.

*Screw and nut shown for reference only.

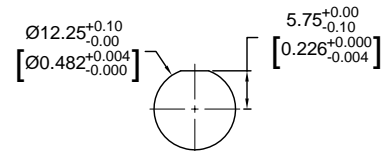
**Panel thickness 1.50 [0.059] max only.



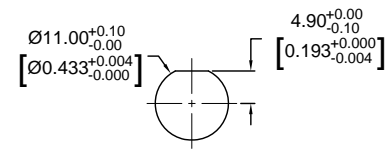
Panel Cutout

Front Mount (Jam Nut)

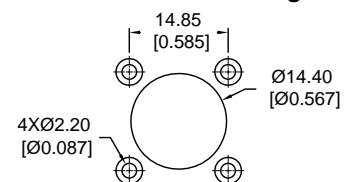
Twist Lock Cutout



Threaded Lock Cutout



Rear Mount Cutout for Threaded Lock or Twist Lock Connector with Flange

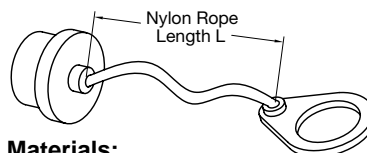


Dust Cover

Panel Mount



Cable



Materials:

Dust Cover: Glass-Filled Nylon, UL 94V-0.

Ordering Part Numbers:
(Female Dust Cover Part Number)

5132-19-1 L=100[3.937]

5132-19-2 L=35[1.378]

For Male Dust Cover, please consult factory.
The above part numbers to be ordered separately.

Unless otherwise specified, dimensional tolerances are:

- 1) Male contact mating diameters : ± 0.03 [0.001]
- 2) Contact termination diameters : ± 0.08 [0.003]
- 3) All other diameters : ± 0.13 [0.005]
- 4) All other dimensions : ± 0.38 [0.015]

Dimensions are in millimeters [inches].
All dimensions are subject to change.

**For Overmolded
BKC Series Cable Assemblies.
Please Contact Sales.**



Positronic Industries, Inc
www.connectpositronic.com
www.positronicasia.com

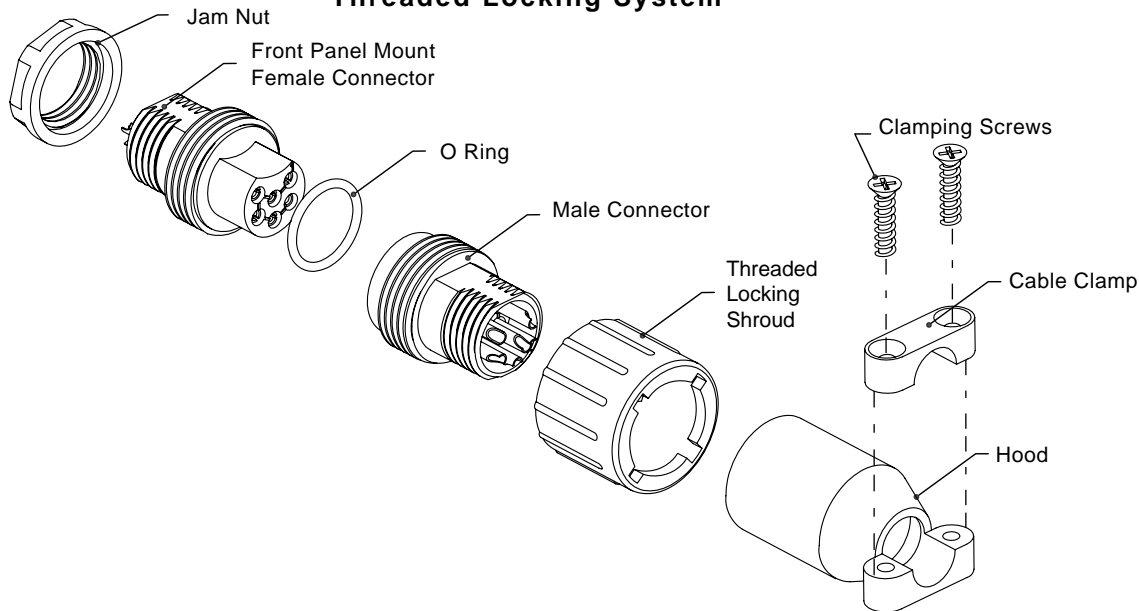




TYPICAL CONNECTOR ASSEMBLY & ORDERING INFORMATION



Typical Connector Assembly Threaded Locking System



Connector Ordering Information

Specify complete connector by following step 1 through step 5.

Step	1	2	3	4	5
Example	BKC620	F2T1	PF	/AA	- XXX

STEP 1: CONNECTOR VERSION

Baby King Cobra Series -
BKC620 : Six (6) size 20 contacts.
BKC320 : Three (3) size 20 contacts.

STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS

M2T1 : Threaded Male, solder cup, fixed contacts.
(Supplied Without Threaded Locking Shroud)
F2T1 : Threaded Female, solder cup, fixed contacts.
(Supplied Without Threaded Locking Shroud)
M2T2 : Threaded Male, solder cup, fixed contacts.
(Supplied With Threaded Locking Shroud)
F2T2 : Threaded Female, solder cup, fixed contacts.
(Supplied With Threaded Locking Shroud)
(M2T1 mates only with F2T2 or F2T1.)
(F2T1 mates only with M2T2 or M2T1.)

M2TW1 : Twist Male, solder cup, fixed contacts.
(Supplied without Twist Locking Shroud)
F2TW1 : Twist Female, solder cup, fixed contacts
(Supplied without Twist Locking Shroud)
M2TW3 : Twist Male, solder cup, fixed contacts.
(Supplied with Twist Locking Shroud)
F2TW3 : Twist Female, solder cup, fixed contacts.
(Supplied with Twist Locking Shroud)
(M2TW1 mates only with F2TW3 or F2TW1.)
(F2TW1 mates only with M2TW3 or M2TW1.)

STEP 6 - SPECIAL OPTIONS

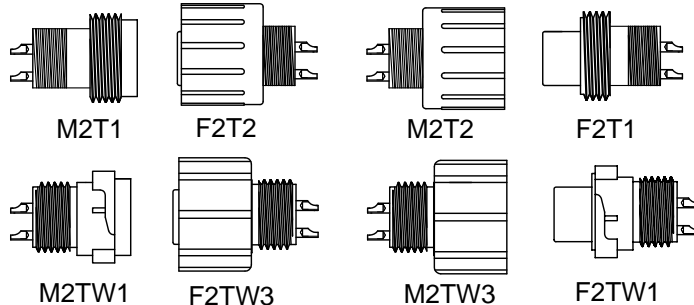
Consult factory for special options.

STEP 4: ENVIRONMENTAL COMPLIANCE OPTION

/AA : Compliance per EU Directive 2002/95/EC (RoHS)
Example: BKC620M2T2P/AA.
Note : If RoHS legislation is not required, this step will not be used.
Example: BKC620M2T2P.

STEP 3: MOUNTING STYLES AND HOOD

0 : None.
P : Panel mount with jam nut and without flange.
(Available in Front Mount version only)
PF : Panel mount with Flange and without jam nut.
(Available in Rear Mount version only)
J : Hood.



Above views applicable for both BKC620 and BKC320 versions.

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

POSITRONIC INDUSTRIES, INC.

423 N Campbell Ave, PO Box 8247
Springfield, MO 65801, USA
Telephone (417) 866-2322
Fax (417) 866-4115
Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies
46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 (0) 5 6263 4491
Fax 33 (0) 5 6263 5117
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

Blk 3014A
Ubi Road 1 #07-01
Singapore 408703
Telephone 65 6842 1419
Fax 65 6842 1421
singapore@connectpositronic.com

GREAT GOLDEN

Power Connectors

GG Series



- Featuring 200 Amp Size 0 Contacts
- Modular - 256 Possible Versions
- Hot Plug-Blind Mating
- "Safety Feature" Contacts

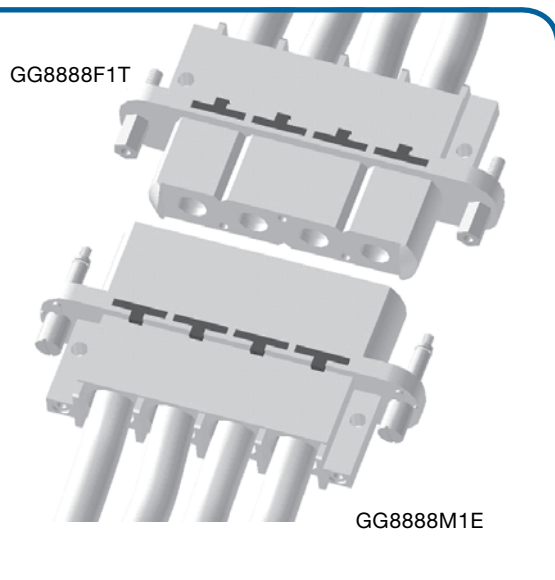


POSITRONIC
GLOBAL *Connector* SOLUTIONS

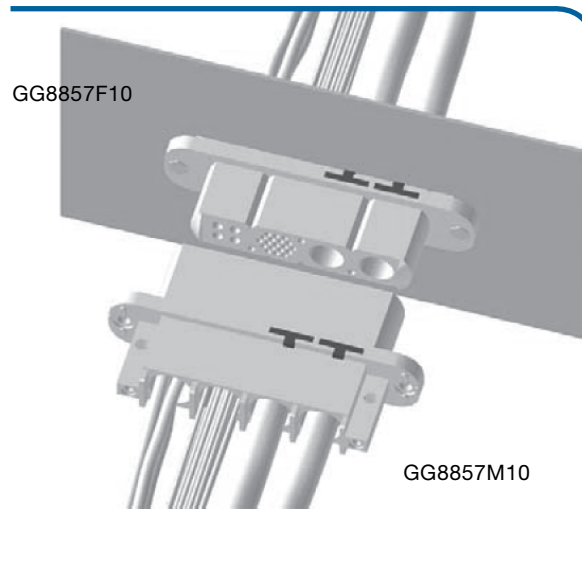


Typical Mating Systems

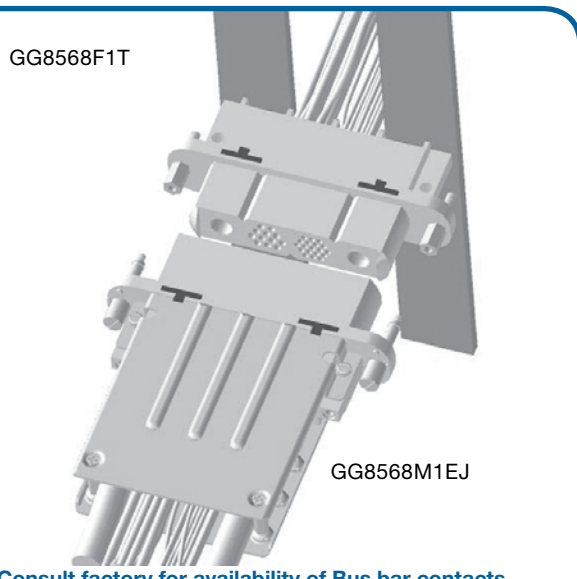
Cable to Cable



Panel Mount to Cable

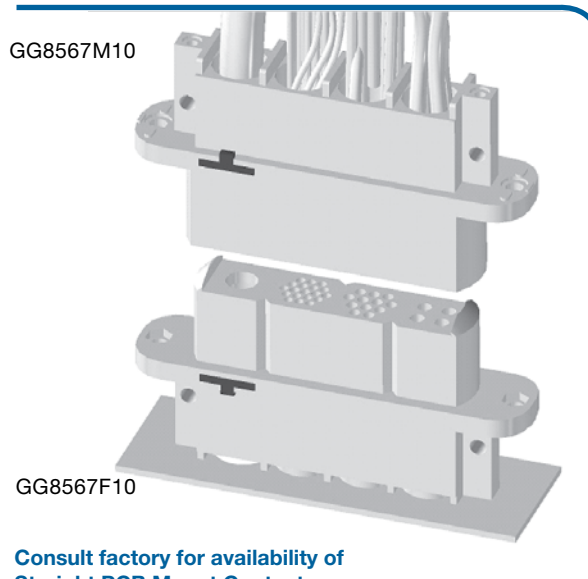


Cable to Bus bar



Consult factory for availability of Bus bar contacts

Cable to Straight PCB Mount



Consult factory for availability of Straight PCB Mount Contacts

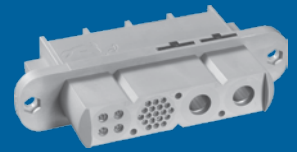
Unless otherwise specified, dimensional tolerances are:

- 1) Male contact mating diameters : ± 0.03 [0.001]
- 2) Contact termination diameters : ± 0.08 [0.003]
- 3) All other diameters : ± 0.13 [0.005]
- 4) All other dimensions : ± 0.38 [0.015]

Dimensions are in millimeters [inches].

All dimensions are subject to change.

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.



Technical Characteristics

Materials and Finishes:

Insulators: Glass-filled nylon, UL 94V-0, Gold color
Consult factory for high performance glass-filled polyester material option.

Contacts: Precision machined copper alloy with gold flash over nickel. Other finishes available upon request.

Electrical Characteristics:

Contact Current Rating (per UL 1977):

***Size 0 Contacts:** 200 amperes, continuous (high conductivity material).
175 amperes, continuous (standard material).
(Size 0 contact with 0 AWG wire)

Size 12 Contacts: 45 amperes, continuous (high conductivity material).
35 amperes, continuous (standard material).

Size 16 Contacts: 28 amperes, continuous (high conductivity material).
20 amperes, continuous (standard material).

Size 20 Contacts: 5 amperes, nominal (standard material).

Initial Contact Resistance Max (per IEC 512-2, Test 2b) :

Size 0 Contacts: 0.00012 ohms (high conductivity material).
0.00038 ohms (standard material).

Size 12 Contacts: 0.0005 ohms (high conductivity material).
0.0016 ohms (standard material).

Size 16 Contacts: 0.0012 ohms (high conductivity material).
0.0024 ohms (standard material).

Size 20 Contacts: 0.0036 ohms (standard material).

Insulator Resistance (per IEC 512-2, Test 3a): 5 G ohms.

Voltage Proof:

Size 0 Contacts: 3000 V r.m.s.

Size 12 Contacts: 1500 V r.m.s.

Size 16 Contacts: 1500 V r.m.s.

Size 20 Contacts: 1000 V r.m.s.

Working Voltage:

Size 0 Contacts: 250 V r.m.s.

Size 12 Contacts: 500 V r.m.s.

Size 16 Contacts: 500 V r.m.s.

Size 20 Contacts: 333 V r.m.s.

Hot Pluggable, Size 12 Contacts: 250 V AC at 25 amperes for 50 cycles.

Mechanical Characteristics:

Blind Mating System: Molded in guides allow for misalignment up to 4.50 mm [0.177 inch]

Polarization: Provided by connector body design.

Removable Contacts (Size 0):

Insert contact in rear face of insulator and secure with locking clip; release from rear face of insulator by, first, removing locking clip. Female contacts feature "Closed Entry" design.

Removable Contacts (Size 12, Size 16 and Size 20):

Insert/remove contacts via rear face of insulator; release contacts via front face of insulator with a contact extraction tool. Female contacts feature "Closed Entry" design.

Removable Contact Retention in Connector Body (per IEC 512-8, Test 15a):

Size 0 Contacts: 132 N [30 lbs.]

Size 12 Contacts: 67 N [15lbs.]

Size 16 Contacts: 67 N [15 lbs.]

Size 20 Contacts: 44 N [10 lbs.]

Sequential Contact Mating System:

Two level systems featured for Size 16 and Size 20 Contacts.

Consult factory for three levels of sequential contact mating option.

Mechanical Operations: 1,000 cycles.

Climatic Characteristic:

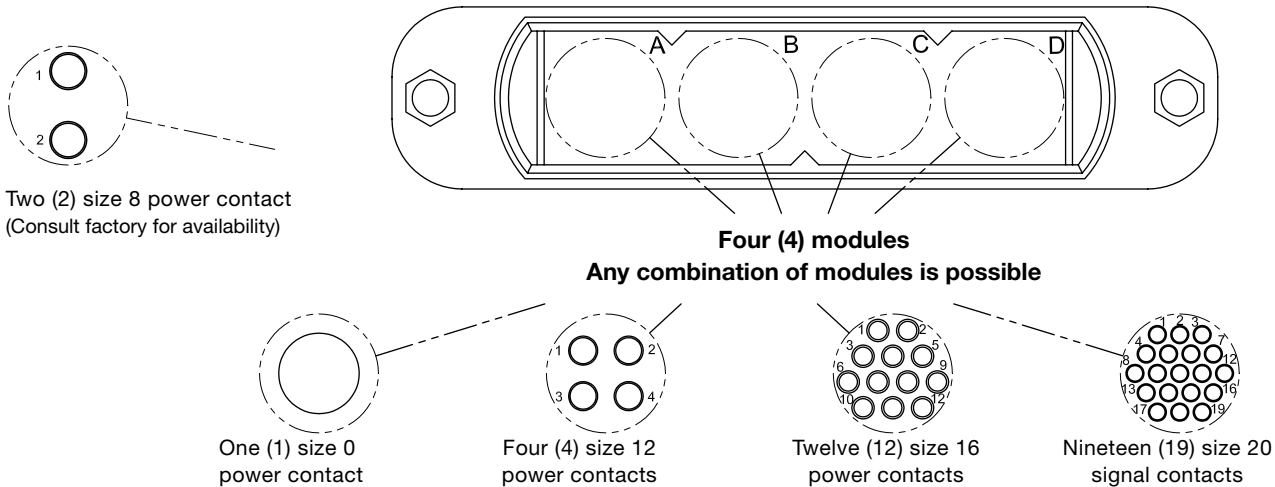
Working temperature: -55°C to +125°C.

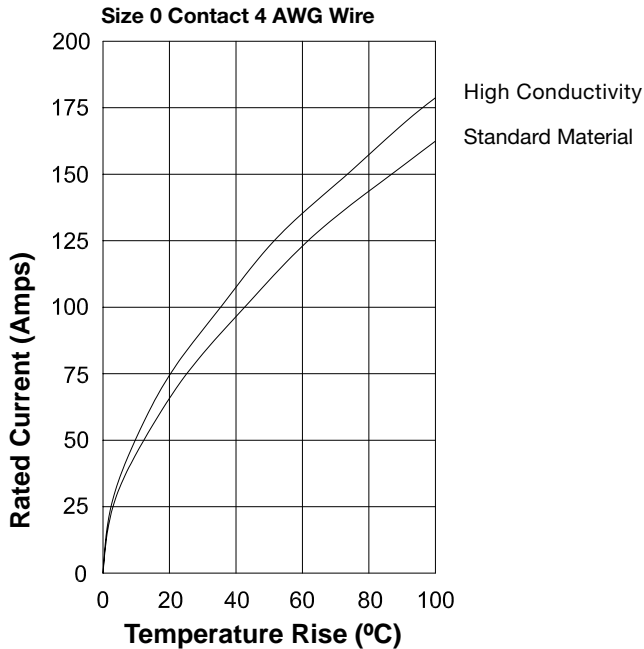
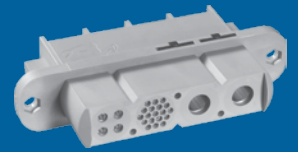
Recognized:

UL: Certification in process.

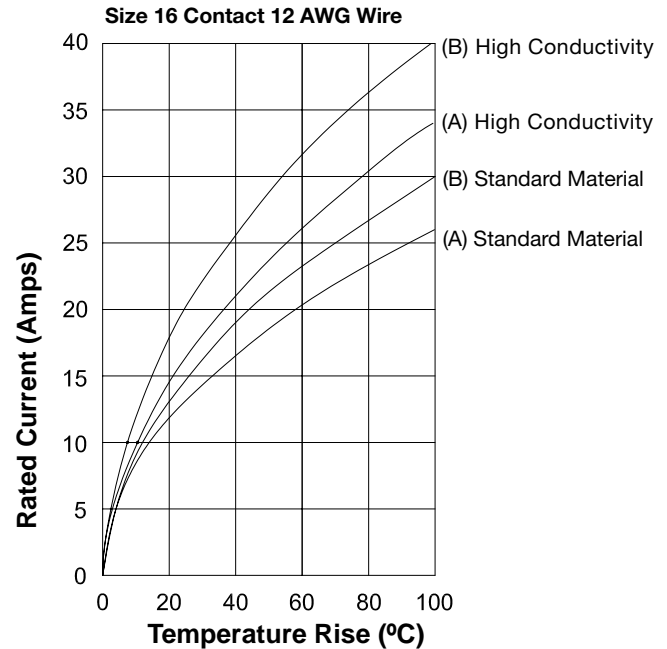
TÜV: Consult factory.

Connector Combination - Total of 256 combinations

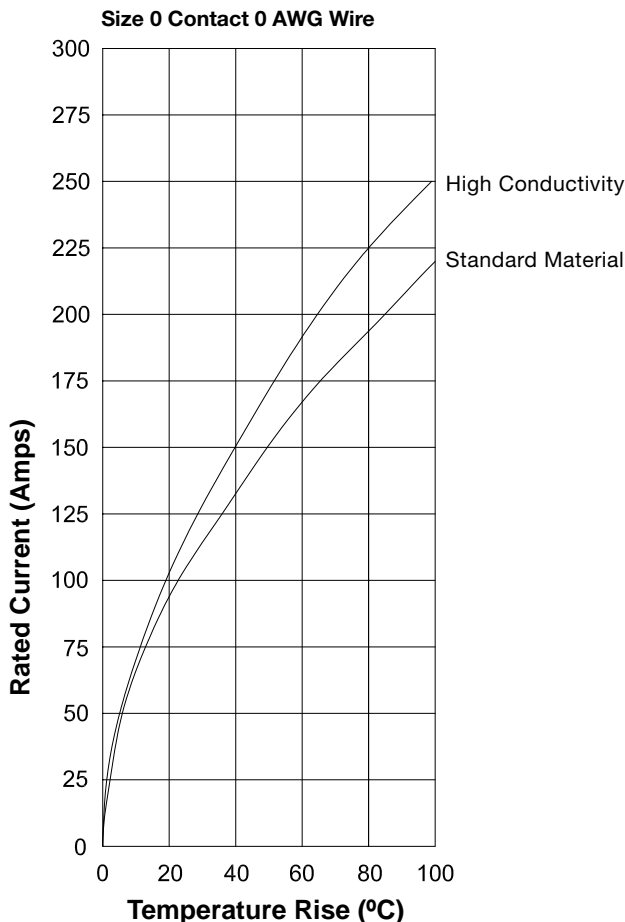




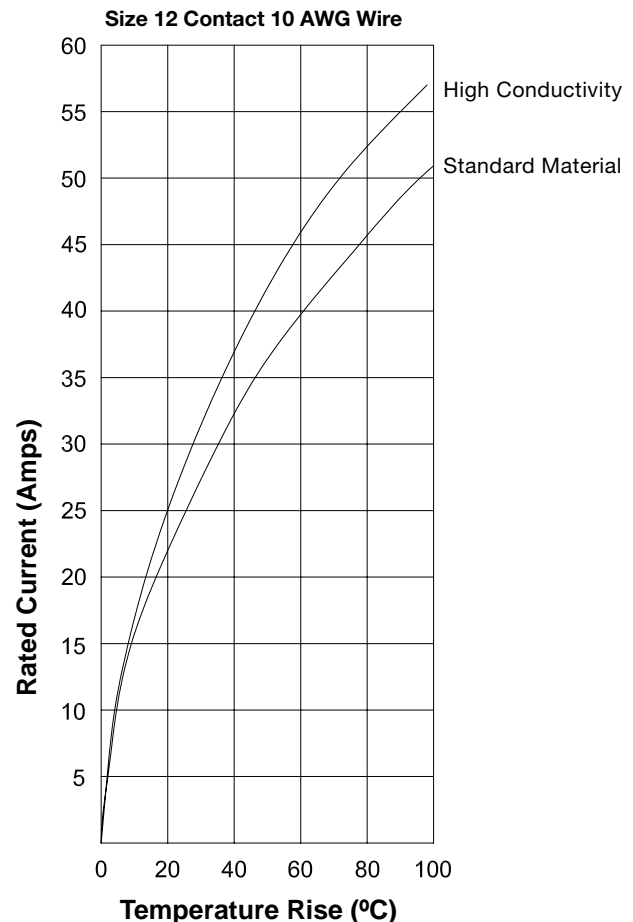
Above curves developed separately using Size 0 contact with 4 AWG wire. Four (4) Size 0 contacts under load.



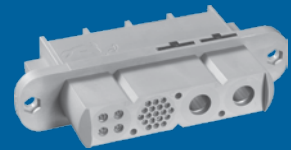
Above curves developed separately using Size 16 contact with 12 AWG wire. (A) Twelve (12) Size 16 contacts under load. (B) Six (6) Size 16 contacts under load.



Above curves developed separately using Size 0 contact with 0 AWG wire. Four (4) Size 0 contacts under load.

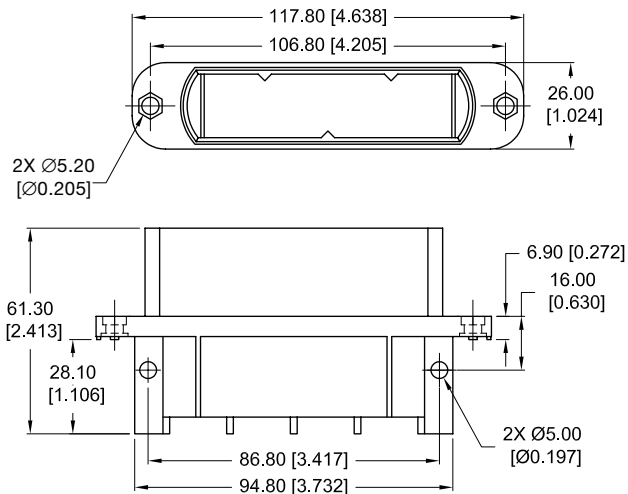


Above curves developed separately using Size 12 contact with 10AWG wire. Four (4) Size 12 contacts under load.

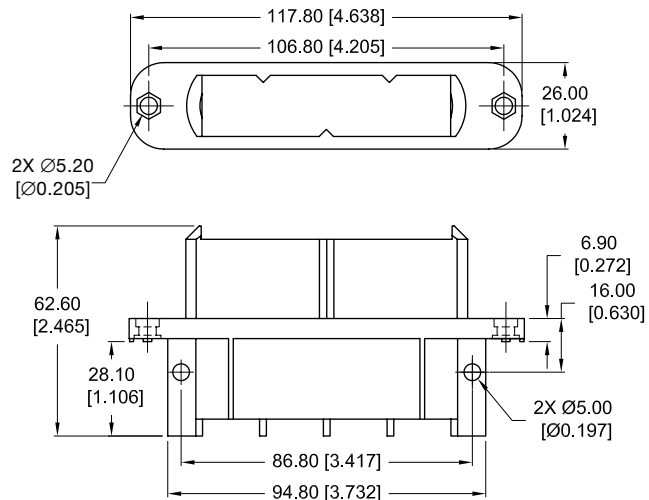


Outline Dimensions

Male Connector

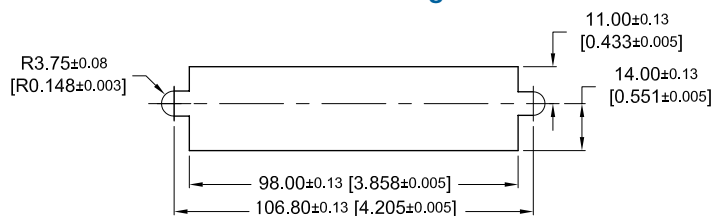
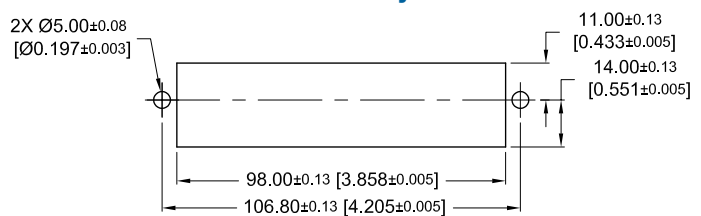


Female Connector



Removable contacts should be allowed to float after installation in the connector body.
 This enables superior mating performance.

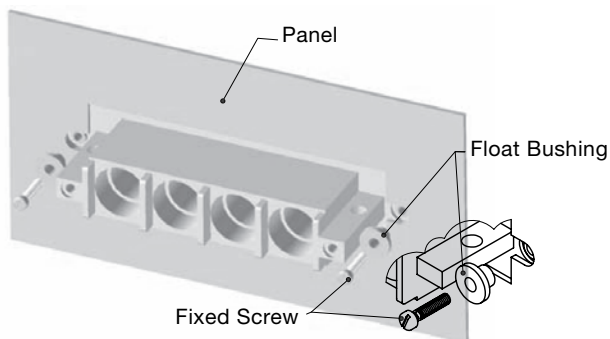
Panel Cutout

Panel Cutout Dimensions
For Float BushingPanel Cutout Dimensions
For Jackscrew System

Accessories

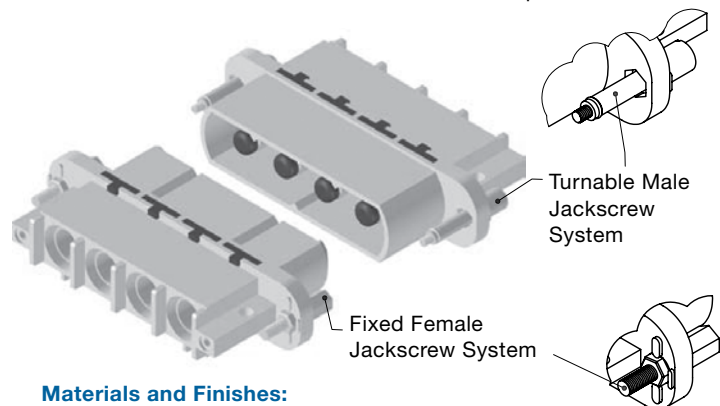
Float Bushing

Specify code 82 or 83 in Step 5.



Jackscrew System

Specify code E for Turnable Male Jackscrew
 or T for Fixed Female Jackscrew in Step 5.



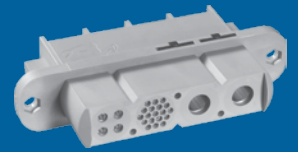
Materials and Finishes:

Float Bushing: Brass, zinc plating.
 Bushing Screw: Brass, zinc plating.

Materials and Finishes:

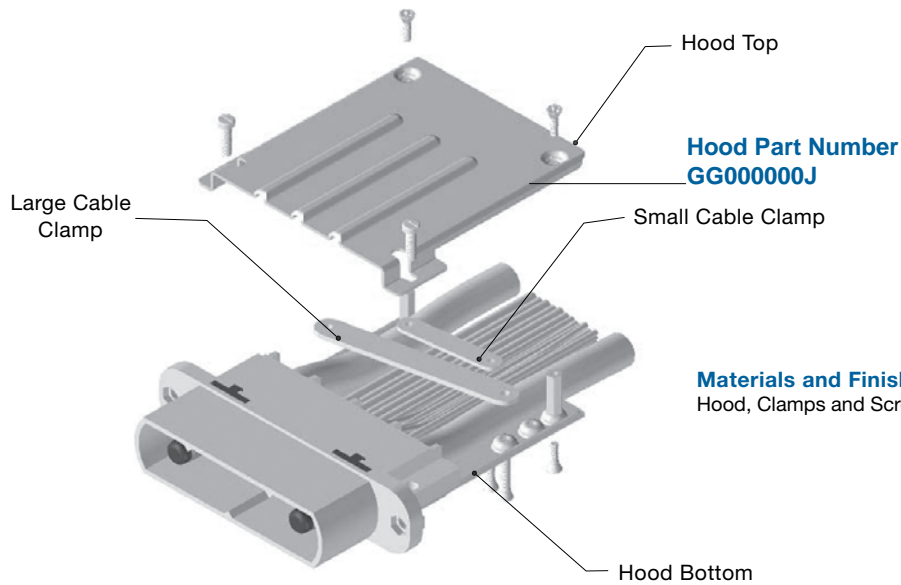
Fixed Female Jackscrew: Brass, zinc plate.
 Turnable Male Jackscrew: Brass, zinc plate.

Contact factory for dimensions and details of accessories.



Hood with Cable Clamp

Designate Code J in step 5 of ordering information.



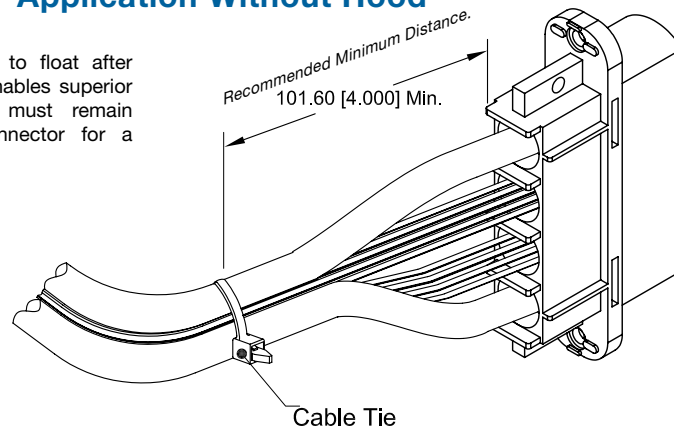
Materials and Finishes:

Hood, Clamps and Screws: Steel, Zinc plating.

Consult factory for availability of Hood

Application Without Hood

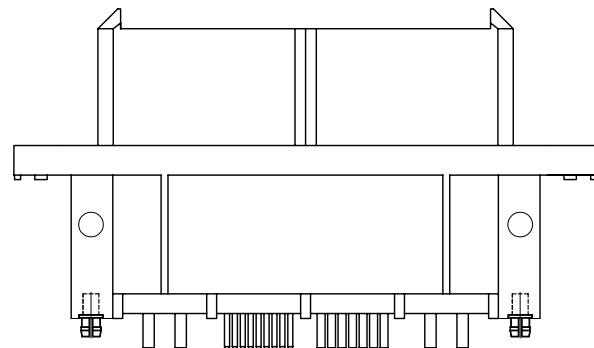
Removable contacts should be allowed to float after installation in the connector body. This enables superior mating performance. Therefore, wires must remain approximately perpendicular to the connector for a recommended minimum distance. See diagram.



Removable, Solder, Straight PCB Mount Contacts

Typical connector installed with removable, solder, straight PCB mount contacts and Push-on Fasteners

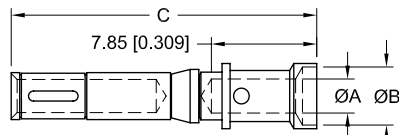
Consult factory for straight PCB mount contacts (size 20, 16, and 12 only), alignment bars and push-on fastener ordering details and availability.



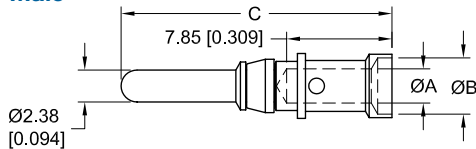


Size 12 Removable Crimp Contacts

Female

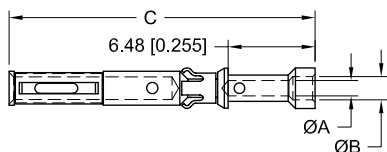


Male

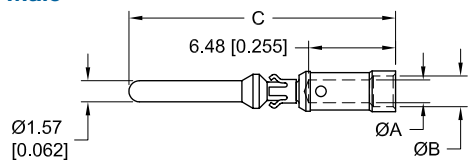


Size 16 Removable Crimp Contacts

Female

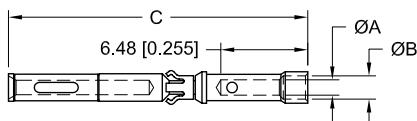


Male

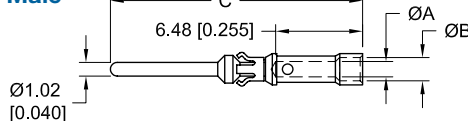


Size 20 Removable Crimp Contacts

Female



Male



Please use correct wire size and it should be smaller than ØA of the contact.
Consult factory for other contact sizes, materials, finishes and termination styles.

Removable contacts should be allowed to float after installation in the connector body.
This enables superior mating performance.

Part Number (Standard Material)	Part Number (High Conductivity Material)	Wire Size AWG [mm²]	ØA	ØB	C
Female Contacts					
SFC1210N2	SFC1210N2S	10[6.0]	3.73[0.147]	N/A*	22.76[0.896]
SFC1212N2	SFC1212N2S	12[4.0]	2.54[0.100]	4.19[0.165]	
Male Contacts					
SMC1210BN	SMC1210BNS	10[6.0]	3.73[0.147]	N/A*	22.70[0.894]
SMC1212BN	SMC1212BNS	12[4.0]	2.54[0.100]	4.19[0.165]	

N/A* - Not applicable

Part Number (Standard Material)	Part Number (High Conductivity Material)	Wire Size AWG [mm²]	ØA	ØB	Sequential Mate	C
Female Contacts						
SFC1612N2	SFC1612N2S	12 [4.0]	N/A*	2.49[0.098]	N/A*	22.80 [0.898]
SFC1614N2	SFC1614N2S	14 [2.5]	2.06 [0.081]	2.64[0.104]		
SFC1616N2	SFC1616N2S	16 [1.5]	1.70 [0.067]	2.36[0.093]		
SFC1620N2	SFC1620N2S	20 [0.5]	1.14 [0.045]	1.73[0.068]		
Male Contacts						
SMC1612AN	SMC1612ANS	12 [4.0]	N/A*	2.49[0.098]	First	23.68 [0.932]
SMC1612BN	SMC1612BNS				Standard	19.87 [0.782]
SMC1614AN	SMC1614ANS	14[2.5]	2.06 [0.081]	2.67[0.105]	First	23.68 [0.932]
SMC1614BN	SMC1614BNS				Standard	19.87 [0.782]
SMC1616AN	SMC1616ANS	16[1.5]	1.70[0.067]	2.36[0.093]	First	23.68 [0.932]
SMC1616BN	SMC1616BNS				Standard	19.87 [0.782]
SMC1620AN	SMC1620ANS	20 [0.5]	1.14 [0.045]	1.73[0.068]	First	23.68 [0.932]
SMC1620BN	SMC1620BNS				Standard	19.87 [0.782]

N/A* - Not applicable

Part Number (Standard Material)	Wire Size AWG [mm ²]	ØA	ØB	Sequential Mate	C
Female Contacts					
SFC2020N2	20[0.5]	1.14[0.045]	1.73[0.068]	N/A*	22.30[0.878]
Male Contacts					
SMC2020AN	20[0.5]	1.14[0.045]	1.73[0.068]	First	23.93[0.942]
SMC2020BN				Standard	20.12[0.792]

N/A* - Not applicable

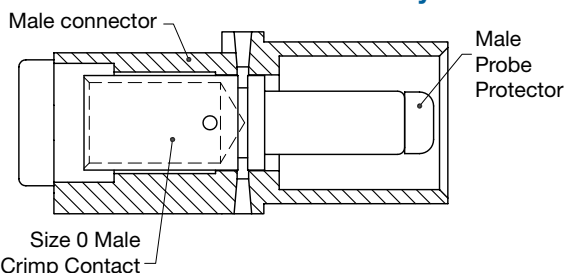
Materials:

Contacts: Copper alloy.
Retention Clips: Beryllium copper.

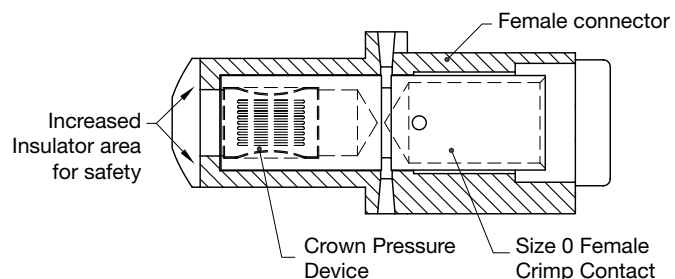
Finishes:

Gold flash over nickel plate.

Safety Features of Insulator and Size 0 Contact



The connector was designed to pass the IEC 60950 (figure 2C) test probe which provides protection from electric shock and energy hazards.

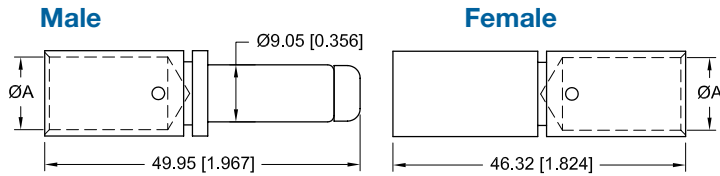


Materials and Finishes:

Male Probe Protector: Nylon, UL 94V-0, black color.
Crown Pressure Device: Beryllium copper, gold flash over nickel plate.

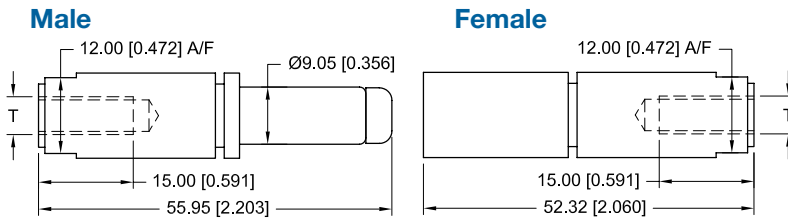


Size 0 Removable Crimp Contacts



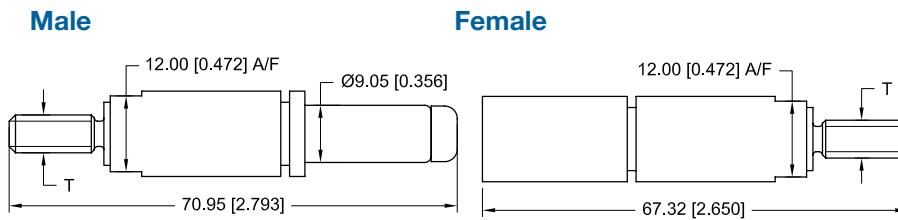
Part Number (Standard Material)	Part Number (High Conductivity Material)	Wire Size AWG [mm ²]	ØA
Female Contacts			
GGFC00N	GGFC00NS	0[55]	10.50 [0.413]
GGFC04N	GGFC04NS	4[25]	7.50 [0.295]
Male Contacts			
GGMC00N	GGMC00NS	0[55]	10.50 [0.413]
GGMC04N	GGMC04NS	4[25]	7.50 [0.295]

Size 0 Removable Contacts, Internal Threads For Typical Ring Terminal



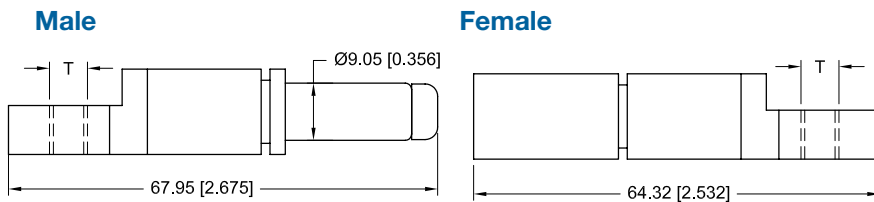
Part Number (Standard Material)	Part Number (High Conductivity Material)	Thread T
Female Contacts		
GGFIT00M	GGFIT00MS	M6 x 1
GGFIT00S	GGFIT00SS	1/4-20 UNC 2B
Male Contacts		
GGMIT00M	GGMIT00MS	M6 x 1
GGMIT00S	GGMIT00SS	1/4-20 UNC 2B

Size 0 Removable Contacts, External Threads For Typical Ring Terminal

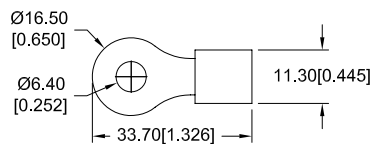


Part Number (Standard Material)	Part Number (High Conductivity Material)	Thread T
Female Contacts		
GGFET00M	GGFET00MS	M6 x 1
GGFET00S	GGFET00SS	1/4-20 UNC 2A
Male Contacts		
GGMET00M	GGMET00MS	M6 x 1
GGMET00S	GGMET00SS	1/4-20 UNC 2A

Size 0 Removable Contacts, Right Angle Threads For Typical Ring Terminal



Part Number (Standard Material)	Part Number (High Conductivity Material)	Thread T
Female Contacts		
GGFRA00M	GGFRA00MS	M6 x 1
GGFRA00S	GGFRA00SS	1/4-20 UNC 2B
Male Contacts		
GGMRA00M	GGMRA00MS	M6 x 1
GGMRA00S	GGMRA00SS	1/4-20 UNC 2B



Ring Terminal
(Shown for reference only.)

Consult factory for BUS bar contacts availability

Materials:

Contacts: Copper alloy.

Locking Clips: Copper alloy and nylon.

Male Probe Plug : Nylon, UL 94V-O, black color

Finish:

Gold flash over nickel plate.

Consult factory for Silver plating option.

Insertion, Extraction, and Retention of Size 0 Contacts

Insertion

STEP 2: Lock the Locking Clip.

STEP 1: Insert the Contact from Rear Side.

Locking Clip

Materials:

Locking clip: Copper alloy with Nylon, UL 94V-O dielectric overmold, black color.

Finishes: Gold flash over nickel plate.

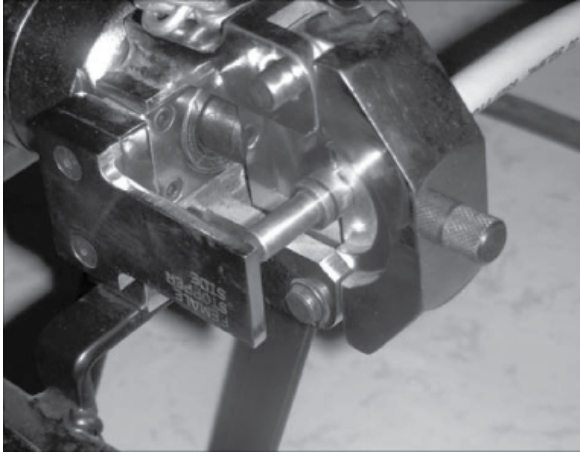
Extraction

STEP 1: Unlock the Locking Clip.

STEP 2: Extract the Contact from Rear Side.



Crimping Tool Part Number 9504 -21 -0



Same crimping tool (9504 -21 -0) is used for crimping '0' AWG wire and '4' AWG wire

Disclosure Statement:

Positronic Industries cannot be held responsible for defective crimps when customer utilizes other vendor's crimp tools. Samples of '0' AWG wire with strands combination of 300/26, 478/28, 292/26 have been crimped and tested at factory and are deemed compatible with our crimp tool. Consult factory prior to utilizing strands combinations not called out above.

Recommended Assembly Procedure For Crimp Termination:

1. Carefully strip back the cable insulation by 20.00mm [0.787] inch without damaging any of the conductor strands.
2. Insert the conductor wire strands into the crimp barrel at the rear of the contact. Ensure that all of the conductor wire strands are captured within the crimp barrel and that the cable conductor wire is visible through the inspection hole.
3. Utilizing the crimping tool, crimp the contact (as shown) making sure that the cable remains straight, for a distance of one meter or the entire length of cable if less than one meter in length from the crimping die, and touches the contact stopper while performing the crimp operation as shown in figure A and B below.

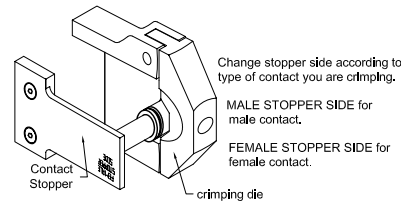


FIGURE 'A' Male contact

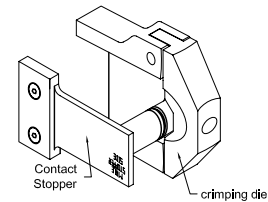
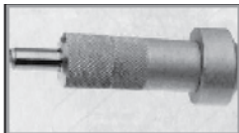


FIGURE 'B' Female contact

4. Examine crimp joints to ensure that the crimp is satisfactory.
5. Insert the crimp contact into the insulator and then visually align the locking clip groove and press in the locking clip. (As shown in Insertion and Extraction of Size 0 contact on page 7)
6. Ensure that the locking clip is flush with insulator.

Recommended Tools for Size 12, Size 16 and Size 20 Contacts

Contact Extraction Tool



Cycle-Controlled Step Adjustable Hand Crimp Tool



Positronic Recommended Conductor Tensile Strength (Pull Test)

To ensure proper crimp

Contact Size	Contact Extraction Tool	Hand Crimp Tool
Size 12	2711-0-0-0	9501 with 9502-19-0-0 positioner
Size 16	9081-6-0-0	9501 with 9502-17-0-0 positioner for Male Contacts 9501 with 9502-26-0-0 positioner for Female Contacts
Size 20	9081-5-0-0	9507 with 9502-21-0-0 positioner for Male Contacts 9507 with 9502-25-0-0 positioner for Female Contacts

Wire Size	Axial Load
0 AWG [55 mm ²]	2803N [630 lbs.]
4 AWG [25 mm ²]	1602N [360 lbs.]
10 AWG [6.0 mm ²]	601N [135lbs.]
12 AWG [4.0 mm ²]	445N [100 lbs.]
14 AWG [2.5 mm ²]	267N [60 lbs.]
16 AWG [1.5 mm ²]	165N [37 lbs.]
20 AWG [0.5 mm ²]	85N [19lbs.]

As per SAE AS 39029

Please see Positronic's SUMO catalog or consult factory for crimping and wire stripping information on Size 12, 16 and 20 contacts



Specify complete connector by following step 1 through step 5.

Step	1	2A	2B	2C	2D	3	4	5	6	7
Example	GG	8	7	6	8	M	1	0	/AA	xxx

STEP 1: Basic Series
GG4 : GG Series

STEPS 2: Connector Version
256 versions available . Specify using Step 2A through Step 2D. Each Step (2A, 2B, 2C, or 2D) can be any module.

Code 8 : One (1) size 0 power contact.

Code 7: Four (4) size 12 power contacts.

Code 6: Twelve (12) size 16 power contacts.

Code 5 : Nineteen (19) size 20 signal contacts.

Part Number Example: GG8568M10

Code 8 = 1ea. Size 0 power contact (Step 2A)

Code 5 = 19ea. Size 20 signal contacts (Step 2B)

Code 6 = 12ea. Size 16 power contacts (Step 2C)

Code 8 = 1ea Size 0 power contact (Step 2D)

MALE FACE FOR REFERENCE ONLY

STEP 7: Special Options
Consult factory for customization.

STEP 6: Environmental Compliance options
/AA : Compliant per EU Directive 2002/95/EC (RoHS)
Example: GG8567F10/AA
Note: If no environmental options are required, this step will not be used.
Example: GG8567F10

STEP 5: Mounting Style
0: No hardware.
82: Float mount 1.5 mm panel thickness.
83: Float mount 2.3 mm panel thickness.
E: Turnable male jackscrews .
T: Fixed female jackscrews.
J: Hood.*
EJ: Turnable male jackscrews with Hood.*
TJ: Fixed female jackscrews with Hood.*
*Consult factory for Hood availability.

STEP 4: Type of Contact
1: Removable contact.
Contacts ordered separately.

STEP 3: Connector Gender
F: Female
M: Male

Part Number Example: GG8767M1E

Code 8 = 1ea Size 0 power contact (Step 2A)

Code 7 = 4ea Size 12 power contacts (Step 2B)

Code 6 = 12ea Size 16 power contacts (Step 2C)

Code 7 = 4ea Size 12 power contacts (Step 2D)

MALE FACE FOR REFERENCE ONLY

Consult factory for the availability of two (2) size 8 power contacts or other contact sizes.
Consult factory for high performance glass-filled polyester material option.

NORTH AMERICAN SALES OFFICES

United States, Springfield, Missouri

Factory and Sales Office	800 641 4054
Puerto Rico Sales Office	800 641 4054
Mexico Sales Office	800 872 7674
Canada Sales Office	800 327 8272

info@connectpositronic.com

EUROPEAN SALES OFFICES

France, Auch Factory and Sales	33 (0) 5 6263 4491
Northern France Sales Office	33 (0) 1 4588 1388
Southern France Sales Office	33 (0) 4 6772 8028
Italy Sales Office	39 (0) 2 5411 6106
Germany Sales Office	49 (0) 23 5163 4739
United Kingdom Sales Office	44 (0) 7975 682 488

contact@connectpositronic.com
jchalaux@connectpositronic.com
plafon@connectpositronic.com
rmagni@connectpositronic.com
cbouche@connectpositronic.com
lbridwell@connectpositronic.com

Europe & Middle East Technical Agents:

Finland, United Kingdom, Scotland, Israel, Norway, Sweden, Turkey and the Ukraine.

ASIA / PACIFIC SALES OFFICES

Singapore Factory, Sales and Engineering Office

Singapore	+65 6842 1419
Japan	+813 5812 7720
South Korea	+82 31 909 8047
India	+91 20 2439 4810
Taiwan	+886 2 2937 8775
China	+86 755 2643 7578

Shanghai

Shenzhen

Malaysia	+60 4 644 9688
New Zealand	+64 3 358 5154
Australia	+61 2 4362 3477

singapore@connectpositronic.com
japan@connectpositronic.com
korea@connectpositronic.com
india@connectpositronic.com
taiwan@connectpositronic.com

shanghai@connectpositronic.com
shenzhen@connectpositronic.com

newzealand@connectpositronic.com
australia@connectpositronic.com

POSITRONIC INDUSTRIES, INC

423 N Campbell Avenue, P O Box 8247,
Springfield, MO 65801, USA
Telephone: 1 417 866 2322
Fax: 1 417 866 4115
Email: info@connectpositronic.com

POSITRONIC INDUSTRIES, SAS

Zone Industrielle Est, 46 Route d'Engachies,
F32020, Auch Cedex 9, France
Telephone: 33 (0) 5 62 63 44 91
Telecopieur: 33 (0) 5 62 63 51 17
Email: contact@connectpositronic.com

POSITRONIC ASIA PTE LTD

3014A Ubi Road 1 # 07-01 Singapore 408703
Telephone: 65 6842 1419 Fax: 65 6842 1421
Email: singapore@connectpositronic.com

www.connectpositronic.com



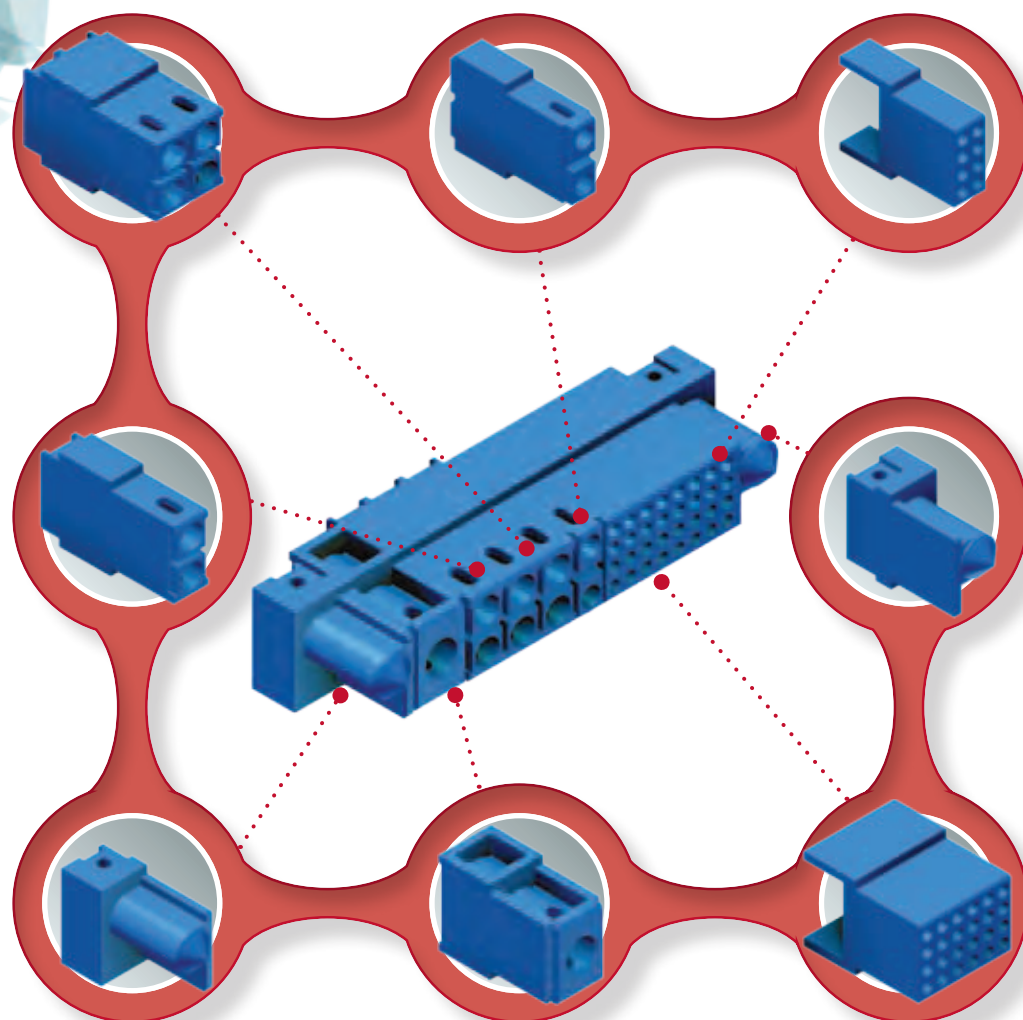
POSITRONIC
GLOBAL Connector SOLUTIONS

GREAT GOLDEN
Power Connectors
GG Series

Modular Power, Signal Connectors



SCORPION Series





SCORPION

TABLE OF CONTENTS

Introduction	02
Overall Length Calculation	03
Part Number Definition	04
Technical Specifications	06
Typical Connector Systems	08
Temperature Rise Curves	10
Guide & Locking Systems	11
Venting Features	11
Dimensions	12
Insulator Dimensions	14
Termination Dimensions	16
Press fit Terminations	17
Mating Dimensions	17
Accessories	17
Jackscrew Systems	19
Modular Hood	20
Strain Relief	21
Contacts	22
Mounting Screws	26
Tooling	27
Locking Clip	28
Keying Module and Plug	28
Crimping Procedure	29
Sales Offices	32

INTRODUCTION - WHY SCORPION?

- ✓ Power contact options: ranging from 16 to 120 amps plus the ability to add signal contacts and a variety of accessories.
- ✓ Blind mating, float mount, panel mount and cable connector options with unique locking system.
- ✓ PC Mount, crimp, and press fit terminations.
Venting option for improved air cooling.
- ✓ Blank modules contact spacing for higher voltage needs.
- ✓ Solid machined, precision formed contacts.
- ✓ Shielded, high voltage and hyperboloid contacts options.

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop™, Positronic Global Connector Solutions®, Global Connector Solutions®, The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

DIMENSIONAL TOLERANCES (unless otherwise specified)

- 1) ± 0.03 [0.001] for male contact mating diameters
- 2) ± 0.08 [0.003] for dimensions
- 3) ± 0.13 [0.005] for all diameters
- 4) ± 0.38 [0.015] for all other dimensions

DIMENSIONS ARE IN MILLIMETER [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

The Positronic
FEDERAL SUPPLY CODE
(Cage Code) FOR
MANUFACTURERS is **28198**

**POSITRONIC® IS AN ITAR
REGISTERED COMPANY**

Products described within this catalog may be protected by one or more of the following US patents:

*#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

*Patented in Canada, 1992
Other Patents Pending

Blue colored connectors shown in this catalog are a trademark of Positronic Industries, Inc, registered in the US. Patent and Trademark Office.





Positronic is proud to participate in PICMG 3.8. The Scorpion series was chosen as the PICMG 3.8 power connector.

PICMG® logo is a registered trademark of the PCI Industrial Computers Manufacturers Group.

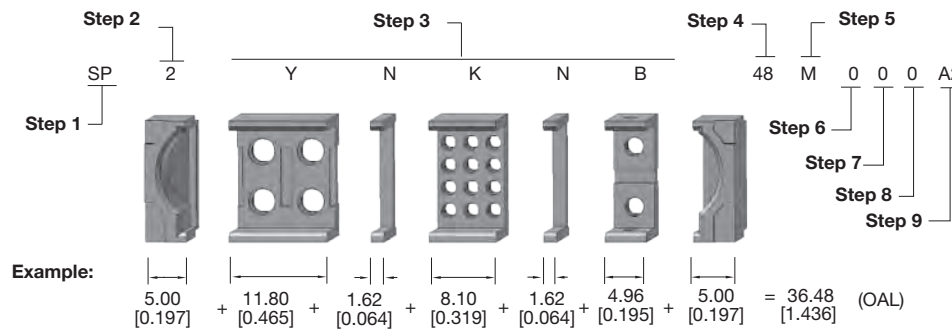
Using existing tooling the maximum length is 101.00mm.

Notes:

- 1 A Scorpion part number can be a maximum of 30 characters. If the connector configuration exceeds this number, please consult sales for a special part number for your unique requirement.
- 2 Pinout sequence may not be continuous. Consult sales for more information.
- 3 Consult sales for connector length exceeding 101.00 mm [3.976 inch].
- 4 Consult sales for connector offering both fixed solder and crimp contacts.
- 5 Alignment bar is only available for size 16, size18, size 22, and hyperboloid 0.60 [0.0236] right angle (90°) contacts.
- 6 PosiBand contacts available for size 12, 16, 18 and 22.

HOW TO CALCULATE THE OVERALL LENGTH (OAL) OF A SCORPION CONNECTOR

Overall Length (OAL) of a connector is the sum of all the modules length. Refer to example below for OAL calculation. See page 12 and 13 for individual module dimensions.
















PART NUMBER DEFINITION

Specify a part number by selecting an option from each step.

STEP	1	2	3	4
Example	SP	2	YNKNB	4
<div>STEP 1 - BASIC SERIES</div> <div>SP – Scorpion Series</div>		<div><div><div><div>Male</div><div>Female</div></div><div>SP1</div></div><div><div><div>Male</div><div>Female</div></div><div>SP2</div></div><div><div><div>Male</div><div>Female</div></div><div>SP3</div></div><div><div><div>Male</div><div>Female</div></div><div>SP4</div></div><div><div><div>Male</div><div>Female</div></div><div>SP5</div></div><div><div><div>Male</div><div>Female</div></div><div>SP6</div></div><div><div><div>Male</div><div>Female</div></div><div>SP7</div></div></div>		
<div>STEP 1 - GUIDE AND LOCKING OPTIONS</div> <div><div>1</div><div>-</div><div>Super Blind Mating System, up to 3.80 [0.150] misalignment.</div></div> <div><div>2</div><div>-</div><div>Blind Mating System, up to 2.00 [0.079] misalignment.</div></div> <div><div>3</div><div>-</div><div>Locking Latch System, for cable to cable connectors only.</div></div> <div><div>4</div><div>-</div><div>Locking Latch System, for male cable to female panel/board connectors only.</div></div> <div><div>5</div><div>-</div><div>Locking Latch System, for female cable to male panel/board connectors only.</div></div> <div><div>6</div><div>-</div><div>End Module, for Use with Jackscrew System.</div></div> <div><div>7</div><div>-</div><div>Blind mating system, 4.50 [0.177] width, up to 2.00 [0.079] misalignment. Use with connectors with code 0, BS, or N in step 7 only.</div></div>				
<div>STEP 3 - CONNECTOR VARIANTS - Face view of male Shown below.</div> <div>Consult sales for availability of other modules. It is recommended signal contacts are positioned at the center of the connector. Additional notes below.</div> <div><div><div>Size 4 power contact module</div><div>Module U</div><div><div></div><div>U</div></div></div><div><div>Size 8 power contact modules</div><div>Module R or S</div><div><div></div><div>R</div><div>S</div></div></div><div><div>Size 12 power contact modules</div><div>Module E or Y or G</div><div><div></div><div>E</div><div>Y</div><div>G</div></div></div><div><div>Size 16 power contact modules</div><div>Module A or B or C or D</div><div><div></div><div>A</div><div>B</div><div>C</div><div>D</div></div><div><div>Size 18 power contact modules</div><div>Module X or Z</div><div><div></div><div>X</div><div>Z</div></div></div><div><div>Size 22 signal contact modules</div><div>Module H or J or K or T</div><div><div></div><div>H</div><div>J</div><div>K</div><div>T</div></div></div><div><div>Size 22 precision formed signal contact modules</div><div>Module L or P or Q</div><div><div></div><div>L</div><div>P</div><div>Q</div><div>(For Female PCB mount only.)</div></div></div><div><div>Hyperboloid 0.60mm [0.0236] Contact modules</div><div>Module V or W</div><div><div></div><div>V</div><div>W</div><div>(Unique high density contact design with machined pin diameter Ø0.60 [0.0236], for straight and right angle (90°) PCB mount only. Consult sales for availability of crimp terminal.)</div></div></div><div><div>Blank modules</div><div>Module N or N2 or N3 or N4 or N5</div><div><div></div><div>N</div><div>N2</div><div>N3</div><div>N4</div><div>N5</div><div>Module N5 (For Hood application, place N5 next to End module)</div></div></div><div><div>Keying Module 0</div><div><div></div><div>0</div></div></div></div></div>				
<div>STEP 4 - CONTACT TERMINATION TYPE</div> <div><div>1</div><div>-</div><div>Crimp contacts, order separately. (for female connector, specify Code F in step 5).</div></div> <div><div>3</div><div>-</div><div>Solder, straight PCB mount. Standard conductivity power contacts.</div></div> <div><div>38</div><div>-</div><div>Solder, straight PCB mount. High conductivity power contacts.</div></div> <div><div>4</div><div>-</div><div>Solder, right angle (90°) PCB mount. Standard conductivity power contacts.</div></div> <div><div>48</div><div>-</div><div>Solder, right angle (90°) PCB mount. High conductivity power contacts.</div></div> <div><div>*93</div><div>-</div><div>Press-fit compliant terminations, straight PCB mount, for use with PCB not thinner than 2.29[0.090].</div></div> <div><div>*938</div><div>-</div><div>Press-fit compliant terminations, straight PCB mount, for use with PCB not thinner than 2.29[0.090]. High conductivity power contacts.</div></div> <div><div>* For contacts size 8, 12, 16 and 22 only. Contact sales for press-fit tooling part number. Sequential mating options are available. Contact sales for availability of mixed contact termination type.</div></div> <div><div><div></div><div>Code 3 or 38</div></div><div><div></div><div>Code 4 or 48</div></div><div><div></div><div>Code 93 or 938</div></div></div>				

Notes:

- For female connectors, the modules are placed right to left when viewed from the mating face.
- For male connectors, the modules are placed left to right.
- This means mating connector part numbers will have the same letters in the same order.

5	6	7	8	9	10	11	
M	0	N	9	A2	/AA	-	
							STEP 11 - SPECIAL OPTIONS, CONSULT SALES FOR SPECIAL OPTIONS.
							<p>STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS</p> <p>/AA - Compliant per EU Directive 2011/65/EU (RoHS). Example: SP2GNKNB4M0N9A1/AA</p> <p>Note:</p> <p>1 - This step will not be used if compliance to environmental legislation is not required. Example: SP2GNKNB4M0N9A1</p> <p>2 - Code A2, C2 and D2 of step 9 will not comply to environmental legislation.</p>
							<p>STEP 9 - CONTACT PLATING</p> <p>1 - Crimp contacts ordered separately.</p> <p>A1 - Gold flash over nickel on mating end termination end.</p> <p>A2 - Gold flash over nickel on mating end and 0.005[0.0002] tin-lead solder coat on termination end. Not available with code 93, 938 in step 4.</p> <p>C1 - 0.00076[0.000030] gold over nickel on mating end and termination end.</p> <p>C2 - 0.00076[0.000030] gold over nickel on mating end and 0.005[0.0002] tin-lead solder coat on termination end. Not available with code 93, 938 in step 4.</p> <p>D1 - 0.00127[0.000050] gold over nickel on mating end and termination end.</p> <p>D2 - 0.00127[0.000050] gold over nickel on mating end and 0.005[0.0002] tin-lead solder coat on termination end. Not available with code 93, 938 in step 4.</p> <p>Consult sales for availability of silver plating.</p>
							<p>STEP 8 - VENT OPTIONS (For power contacts only, except module A of step 3.)</p> <p>0 - Connector body is not vented.</p> <p>9 - Connector body vented for air cooling.</p>
							 Code 0  Code 9
							<p>STEP 7 - MOUNTING STYLE AND JACKSCREW SYSTEM</p> <p>0 - None.</p> <p>B - 90° metal mounting bracket (through hole), for right angle PCB mounted connectors using code 4 or 48, see step 4.</p> <p>LN - 90° metal mounting bracket (board lock), for right angle PCB mounted connectors using code 4 or 48, see step 4.</p> <p>BS - 90° metal mounting bracket (threaded), for right angle PCB mounted connectors using code 4 or 48, see step 4.</p> <p>N - Push-on fastener for PCB mounted connectors using code 3, or 38, or 4, or 48, see step 4.</p> <p>E - Turnable male jackscrew.</p> <p>T - Fixed female jackscrew.</p> <p>TB - Fixed female jackscrew with 90° metal mounting bracket (through hole), for right angle PCB mounted connectors using code 4 or 48, see step 4.</p> <p>TLN - Fixed female jackscrew with 90° metal mounting bracket (board lock), for right angle PCB mounted connectors using code 4 or 48, see step 4.</p> <p>TN - Fixed female jackscrew with push-on fastener for PCB mounted connectors.</p> <p>W - Hood. (for use with Two N5 modules).</p> <p>WE - Hood with Rotating Jackscrew. (for use with Two N5 modules).</p>
							 Code B  Code LN  Code BS  Code N  Code E  Code T  Code TB  Code TLN  Code TN
							<p>STEP 6 - PANEL MOUNT</p> <p>0 - None.</p> <p>6 - Easy release mounting clip for 1.50mm [0.059 inch] thick panel, for male panel mount connector only.</p> <p>82 - Float mount for 1.50 mm [0.059 inch] thick panel.</p> <p>83 - Float mount for 2.30 mm [0.091 inch] thick panel.</p> <p>* Float mount allows 0.60 [0.0236] floating per side. Consult sales for more floating options.</p>
							 Code 6  Code 82 or 83
							<p>STEP 5 - CONNECTOR GENDER</p> <p>M - Male</p> <p>F - Female - Standard contacts</p> <p>S - Female - Posiband contacts</p>

TECHNICAL SPECIFICATIONS

Note:

*Hyperboloid Contacts Modules are not UL recognized as presently configured.

MATERIALS AND FINISHES

Insulators:	Glass-filled polyester, UL 94V-0. Blue color.
Contacts	Precision machined copper alloy with gold flash over nickel plate. Other finishes available upon request. Size 22 PCB straight and right angle (90°) contact also available in precision formed copper alloy with selective gold flash over nickel at mating end and tin over nickel plate at termination end.
Mounting Brackets	Brass with tin plate.
Push-on Fasteners	Copper alloy with tin plate.
Float Mount Bushings	Steel with zinc plate.
Mounting clips	Beryllium copper with nickel plate.
Jackscrew System	Passivated stainless steel.

ELECTRICAL CHARACTERISTICS

Contact Current Rating	(See Page 12 for details of Power Contacts)
Standard Conductivity Contacts	
Size 4 Contacts	100 amperes, continuous.
Size 8 Contacts	50 amperes, continuous.
Size 12 Contacts	40 amperes, continuous.
Size 16 Contacts	26 amperes, continuous.
Size 18 Contacts	16 amperes, continuous.
Size 22 Contacts	3 amperes, nominal.
*Hyperboloid Contacts 0.60mm [0.0236]	4 amperes, nominal.
High Conductivity Contacts	
Size 4 Contacts	120 amperes, continuous.
Size 8 Contacts	80 amperes, continuous.
Size 12 Contacts	60 amperes, continuous.
Size 16 Contacts	40 amperes, continuous.
Size 18 Contacts	23 amperes, continuous.
Initial Contact Resistance (Standard Conductivity Contacts) per IEC 512-2, Test 2b	
Size 4 Contacts	0.0003 ohms, maximum.
Size 8 Contacts	0.0006 ohms, maximum.
Size 12 Contacts	0.001 ohms, maximum.
Size 16 Contacts	0.0016 ohms, maximum.
Size 18 Contacts	0.003 ohms, maximum.
Size 22 Contacts	0.005 ohms, maximum.
*Hyperboloid Contacts 0.60mm [0.0236]	0.005 ohms, maximum.
Initial Contact Resistance (High Conductivity Contacts) per IEC 512-2, Test 2b	
Size 4 Contacts	0.0002 ohms, maximum.
Size 8 Contacts	0.0004 ohms, maximum.
Size 12 Contacts	0.0004 ohms, maximum.
Size 16 Contacts	0.0007 ohms, maximum.
Size 18 Contacts	0.0007 ohms, maximum.
Insulation Resistance per IEC 512-2, Test 3a, Method A	5 G ohms.
Voltage Proof per IEC 512-2, Test 4a, Method C	
For Size 4 contacts	3000 V r.m.s. typical.
For size 8, 12, 16 and 18 contacts.	2200 V r.m.s. typical.
For size 22 contacts.	1600 V r.m.s. typical.
*Hyperboloid Contacts 0.60mm [0.0236]	1200 V r.m.s. typical.
<i>Consult sales for your specific requirements.</i>	
Working Voltage, Clearance and Creepage Distances	Consult factory for information about your specific connector choice.
Hot Pluggable [50 Couplings per UL1977, paragraph 15]	
Size 12 Contacts	250 VAC at 25 amperes. <i>Contact sales for details.</i>
Size 16 Contacts	<i>Contact sales for availability.</i>

MECHANICAL CHARACTERISTICS

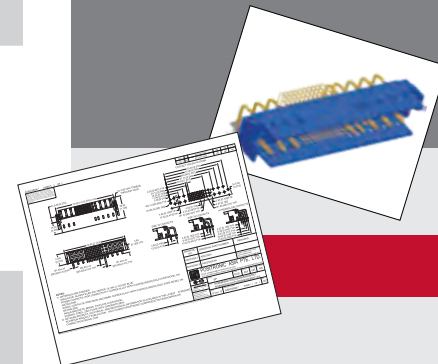
Super Blind Mating System	Integral guide feature allows for misalignment up to 3.80 mm [0.150 inch].
Blind Mating System	Integral guide feature allows for misalignment up to 2.00 mm [0.079 inch].
Locking Latch System	Design of connector body provides locking system for cable to cable, cable to printed board and cable to panel mount applications.
Jackscrew System	Standard threads, 4-40 UNC. <i>Consult sales for other screw sizes</i>
Polarization	Design of connector body provides polarization features.
Removable Contacts	Install contact from rear face of insulator, release from front face of insulator with a contact extraction tool, thereafter extract contact from rear face of insulator. Size 8, Size 12, Size 16, Size 18 and Size 22 female contacts feature "Closed entry" design for highest reliability.
Keying Features	8 different positions are available.
Removable Contact Retention in Connector Body per IEC 512-8, Test 15a	
Size 4 Contacts	134N [30 lbs.] minimum.
Size 8, Size 12 and Size 16 Contacts	67N [15 lbs.] minimum.
Size 18 Contacts	45N [10 lbs.] minimum.
Size 22 Contacts	27N [6 lbs.] minimum.
Non Removable Crimp Contact (Size 22 only):	Install contacts from rear face of insulator. Size 22 female contact has "closed entry" design for highest reliability.
Non Removable Crimp Contact Retention in Connector Body per IEC 512-8, Test 15a	
Size 22 Contacts	27N [6 lbs.] minimum.
Fixed Contacts	Printed board terminations, both straight and right angle. Size 8, 12, 16, 18 and Hyperboloid 0.60mm [0.0236] female contacts feature "Closed entry" design for highest reliability. Size 22 female contact has "Open Entry" design.
Fixed Contact Retention in Connector Body per IEC 512-8, Test 15a	
Size 8 Contacts	67N [15 lbs.] minimum.
Size 12 Contacts and Size 16 Contacts	45N [10 lbs.] minimum.
Size 18 Contacts	45N [10 lbs.] minimum.
Size 22 Contacts	27N [6 lbs.] minimum.
Size 22 Precision Formed Contact	27N [6 lbs.] minimum.
*Hyperboloid Contacts 0.60mm [0.0236]	27N [6 lbs.] minimum.
Sequential Contact Mating System	
Size 4 Contacts	One level.
Size 8 Contacts	Two levels.
Size 12 Contacts	Two levels. <i>Consult sales for three levels.</i>
Size 16 Contacts	Two levels. <i>Consult sales for three levels.</i>
Size 18 Contacts	Two levels. <i>Consult sales for three levels.</i>
Size 22 Contacts	One level.
*Hyperboloid Contacts 0.60mm [0.0236]	Two levels for Printed Board mount connectors. One level.
Printed Board and Panel Mounting Holes	Mounting holes provided in connector body for both printed board and panel mounting. Self-tapping screws or push-on fastener options are available.
Mechanical Operations per IEC 512-5	
Size 4, Size 8, Size 12, Size 16 and Size 18 Contacts	1000 cycles minimum.
Size 22 Contacts	500 cycles minimum.
Size 22 Precision Formed Contact	250 cycles minimum.
*Hyperboloid Contacts 0.60mm [0.0236]	Up to 100,000 cycles.
Recognized	(UL File E49351) Partial UL certification only. Consult sales for your specific connector configuration. Consult sales for TÜV.

CLIMATIC CHARACTERISTICS

Temperature Range	-55°C to +105°C
--------------------------	-----------------

2-D DRAWINGS & 3-D MODELS

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, visit www.connectpositronic.com and use the search function.



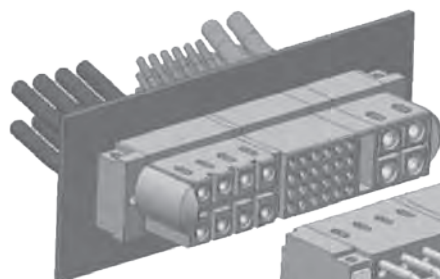
Note:

*Hyperboloid Contacts Modules are not UL recognized as presently configured.

TYPICAL CONNECTION SYSTEMS

BOARD TO PANEL WITH BLIND MATING SYSTEM

FEMALE CONNECTOR

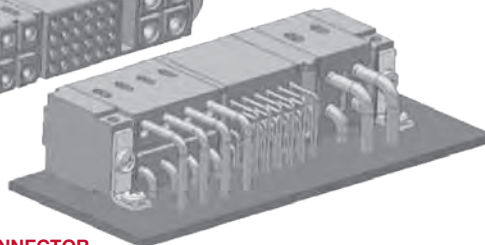


Female Panel Mount Connector

Typical part number:
SP2YN4TND1F0091

(Contacts ordered separately)

MALE CONNECTOR

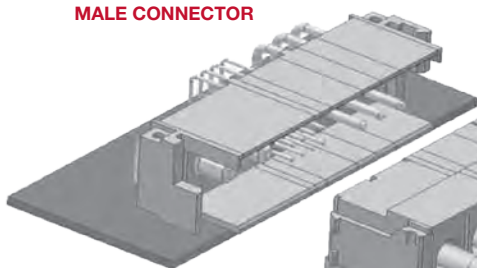


Male Right Angle (90°)
PCB Mount Connector

Typical part number:
SP2YN4TND4M0B9A1

CABLE TO BOARD WITH LOCKING LATCH SYSTEM

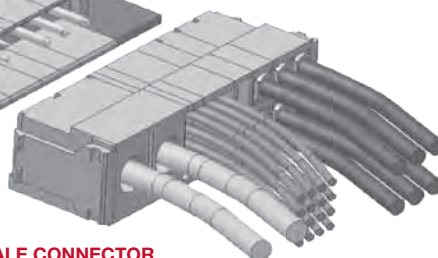
MALE CONNECTOR



Male Right Angle (90°)
PCB Mount Connector

Typical part number:
SP5SNHKN4BC4M000A1

FEMALE CONNECTOR



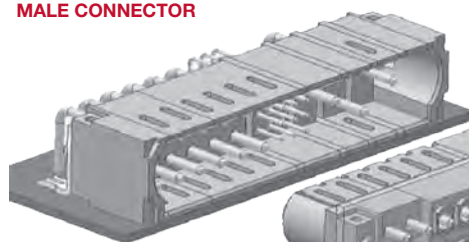
Female Cable Connector

Typical part number:
SP5SNHKN4BC1F0001

(Contacts ordered separately)

BOARD TO BOARD WITH BLIND MATING SYSTEM

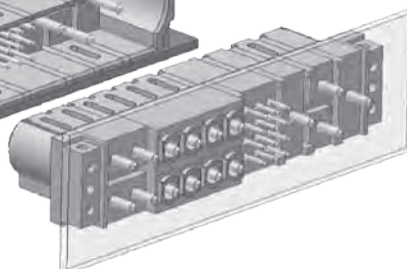
MALE CONNECTOR



Male Right Angle (90°)
PCB Mount Connector

Typical part number:
SP2CDNKNANBNA4M0LN9A1

FEMALE CONNECTOR

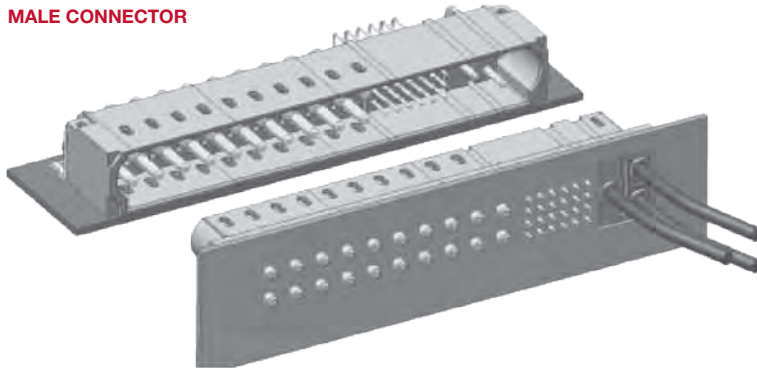


Female Straight PCB Mount
Connector

Typical part number:
SP2CDNKNANBNA3F009A1

TYPICAL CONNECTION SYSTEMS

MALE CONNECTOR



FEMALE CONNECTOR

Male Right Angle (90°) PCB Mount Connector

Typical part number:
SP2GGYNTN2ANB48M0LN9A1

Female Straight PCB Mount Connector with Crimp Contacts Pass-through

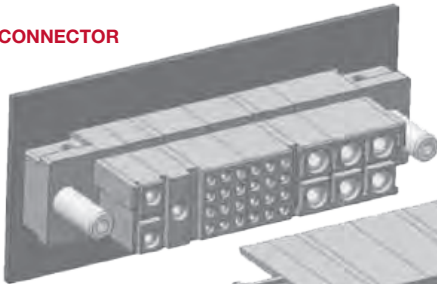
Typical part number:
SP2GGYNTN2ANB38F0N9A1-PA***
(Crimp contacts ordered separately)

BOARD TO CABLE WITH CRIMP CONTACTS PASS-THROUGH

In Scorpion series, PCB mount and crimp contacts can be mixed in one insulator housing.

Consult sales for your unique requirements.

FEMALE CONNECTOR



MALE CONNECTOR

Female Cable Connector

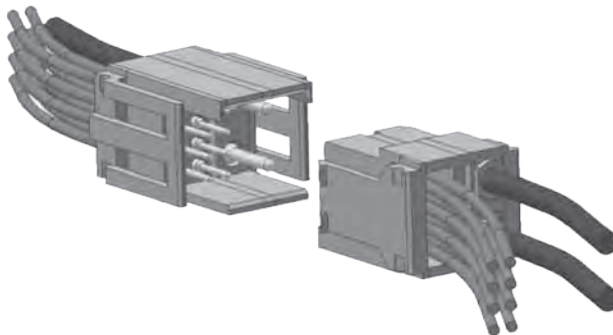
Typical part number:
SP6YENKKNAB3F0T0A1

Male Cable Connector

Typical part number:
SP6YENKKNAB1M0E01
(Contacts ordered separately)

BOARD TO CABLE WITH JACKSCREW SYSTEM

MALE CONNECTOR



FEMALE CONNECTOR

Male Cable Connector

Typical part number:
SP3JNB1M0001
(Contacts ordered separately)

Female Cable Connector

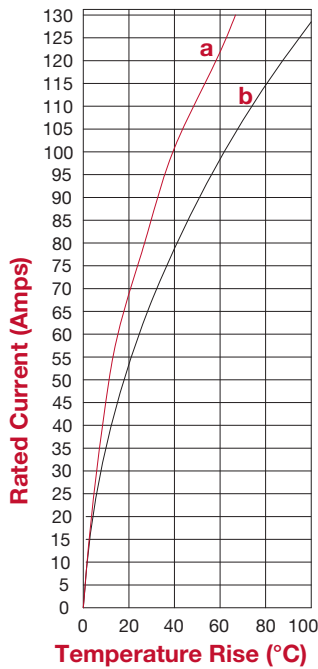
Typical part number:
SP3JNB1F0001
(Contacts ordered separately)

CABLE TO CABLE WITH LOCKING LATCH SYSTEM

TEMPERATURE RISE CURVES

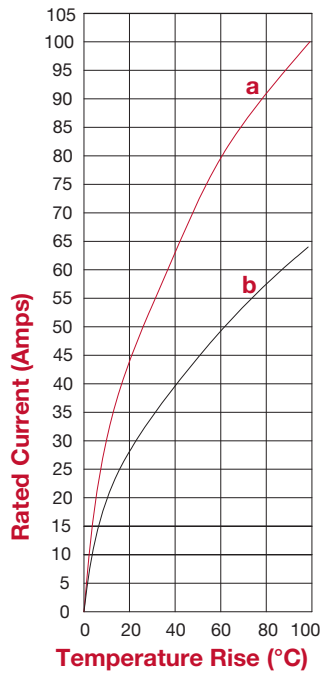
Tested per IEC Publication 512-3, Test 5a

SIZE 4



- a** Developed with 2 size 4 high conductivity contacts seated in code UU modules.
- b** Developed with 2 size 4 standard conductivity contacts seated in code UU modules.

SIZE 8



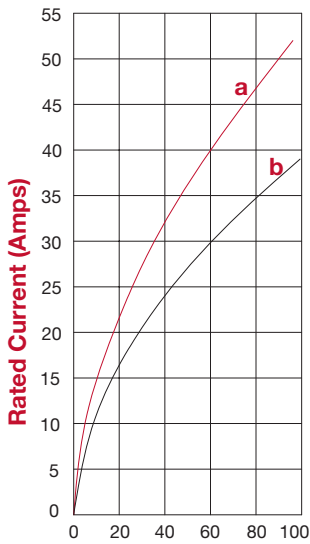
- a** Developed with 2 size 8 high conductivity contacts seated in code RR modules.
- b** Developed with 2 size 8 standard conductivity contacts seated in code RR modules.

SIZE 12



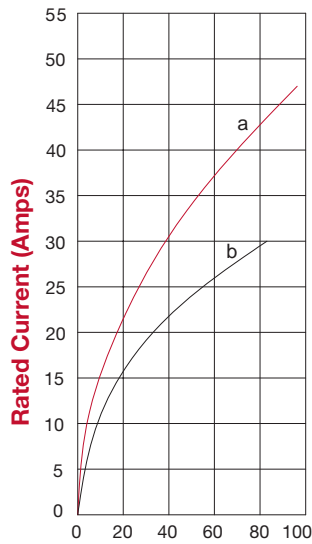
- a** Developed with 2 size 12 high conductivity contacts seated in code E module.
- b** Developed with 2 size 12 standard conductivity contacts seated in code E module.

SIZE 12



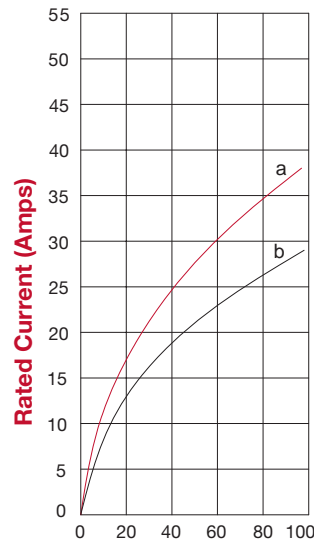
- a** Developed with 10 size 12 high conductivity contacts seated in code EYY modules.
- b** Developed with 10 size 12 standard conductivity contacts seated in code EYY modules.

SIZE 16



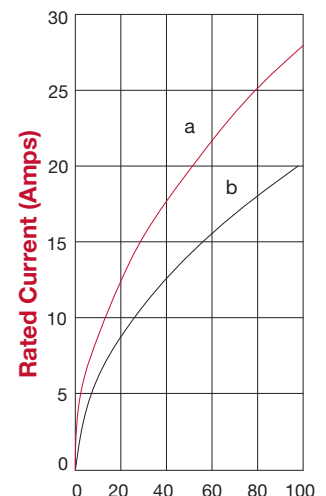
- a** Developed with 2 size 16 high conductivity contacts seated in code B module.
- b** Developed with 2 size 16 standard conductivity contacts seated in code B module.

SIZE 16



- a** Developed with 8 size 16 high conductivity contacts seated in code CC modules.
- b** Developed with 8 size 16 standard conductivity contacts seated in code CC modules.

SIZE 18



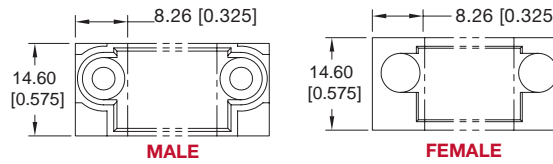
- a** Developed with 6 size 18 high conductivity contact seated in code Z module.
- b** Developed with 6 size 18 standard conductivity contact seated in code Z module.

Contact sales if additional testings and current ratings are required.

Dimension W

CODE	"W"
2	5.00 [0.197]
7	4.50 [0.177]

SUPER BLIND MATING GUIDE SYSTEM - SP1



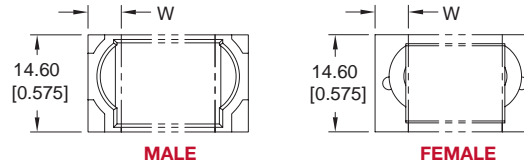
SP1

CODE 1 (STEP 2)

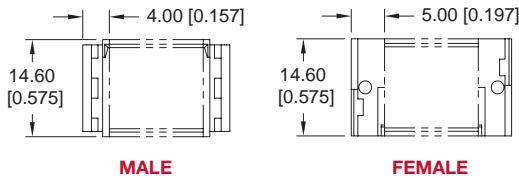
SP2

CODE 2 OR CODE 7
(STEP 2)

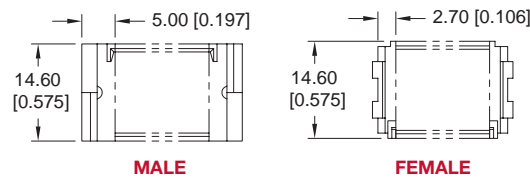
BLIND MATING GUIDE SYSTEM - SP2



MALE CABLE TO FEMALE PANEL/BOARD LOCKING LATCH SYSTEM - SP4



FEMALE CABLE TO MALE PANEL/BOARD LOCKING LATCH SYSTEM - SP5



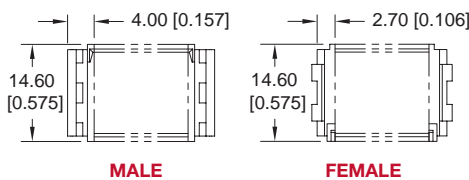
SP4

CODE 4 (STEP 2)

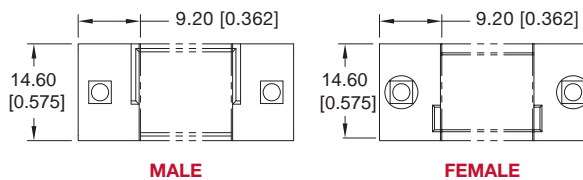
SP5

CODE 5 (STEP 2)

CABLE TO CABLE LOCKING LATCH SYSTEM - SP3



JACKSCREW SYSTEM - SP6

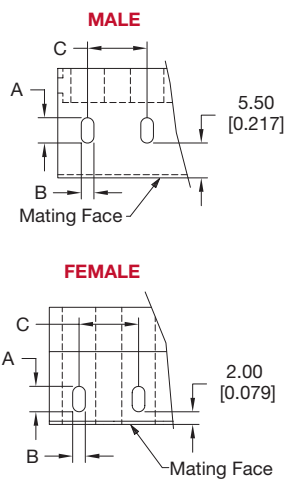


SP3

CODE 3 (STEP 2)

SP6

CODE 6 (STEP 2)



VENTING FEATURES

CODE 9 (STEP 8)

Venting feature is an outlet hole enabling air cooling onto a power contact.

In compliance with UL 1977 safety standard, section 10.2 Accessibility of live parts.

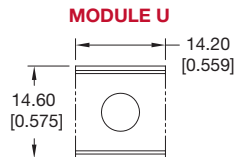
CONTACT SIZES	DIMENSION A	DIMENSION B	DIMENSION C
Size 4		2.00 [0.079]	14.20 [0.559]
Size 8		2.00 [0.079]	9.40 [0.370]
Size 12	4.00 [0.157]	2.00 [0.079]	5.90 [0.232]
Size 16		1.50 [0.059]	4.96 [0.195]
Size 18		1.50 [0.059]	3.80 [0.150]

(SEE STEP 3)

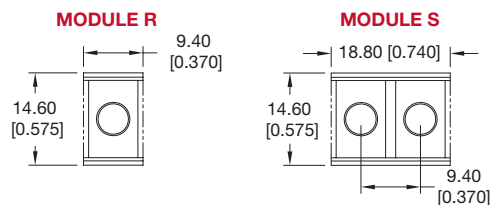
All modules shown on page 12 and 13 are male modules with the exception of size 22 precision formed female signal contact modules.

Consult sales for availability of other modules.

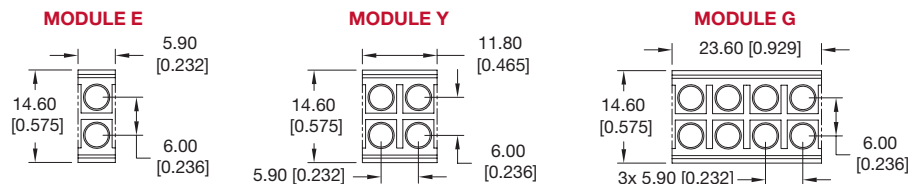
SIZE 4 POWER CONTACT MODULE



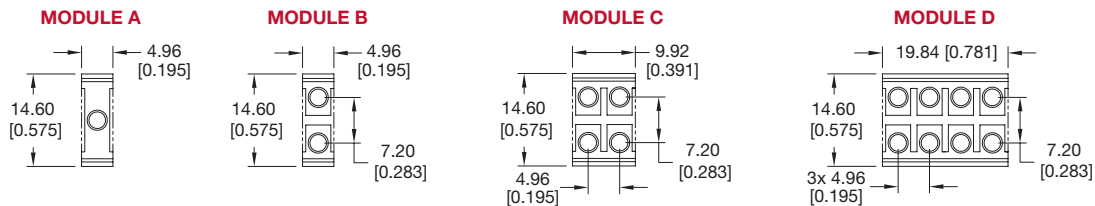
SIZE 8 POWER/SHIELDED CONTACT MODULES



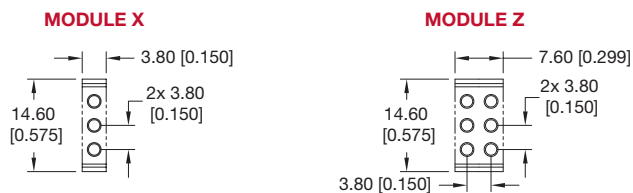
SIZE 12 POWER CONTACT MODULES



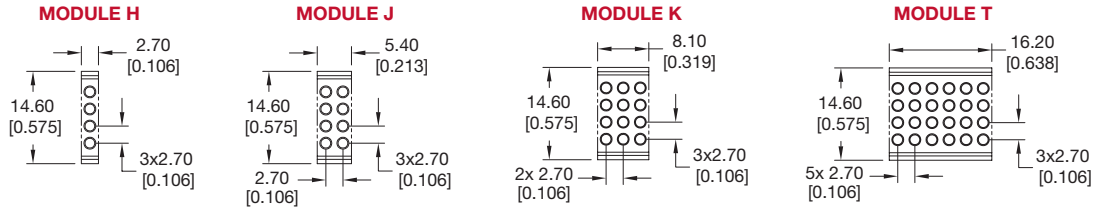
SIZE 16 POWER CONTACT MODULES



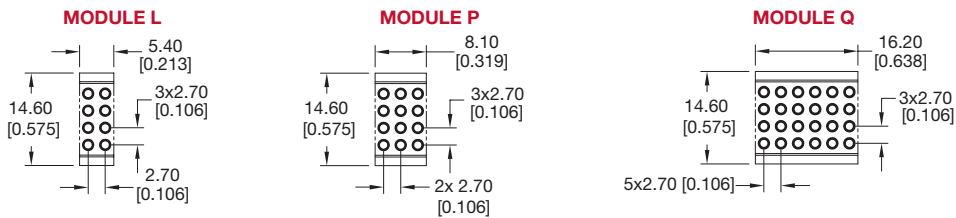
SIZE 18 POWER CONTACT MODULES



SIZE 22 SIGNAL CONTACT MODULES

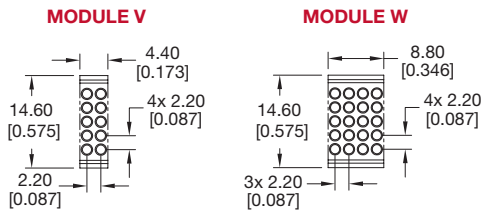


SIZE 22 PRECISION FORMED FEMALE SIGNAL CONTACT MODULES



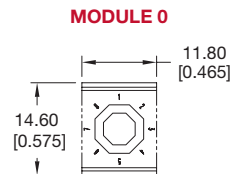
Available for Female Right Angle(90°) PCB mount termination.
 Consult sales for availability of other termination.

HYPERBOLOID 0.60MM [0.0236] CONTACT MODULES

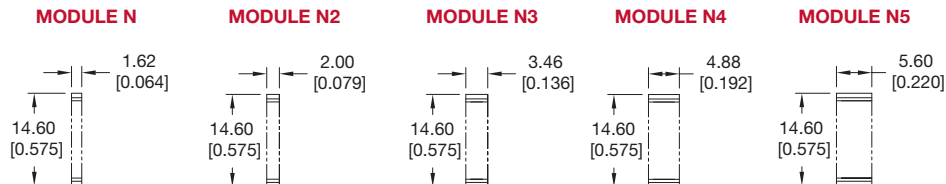


Available for PCB mount termination.
 Consult sales for crimp contact terminations.

KEYING MODULES



BLANK MODULES



INSULATOR DIMENSIONS

DIMENSION A

To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation

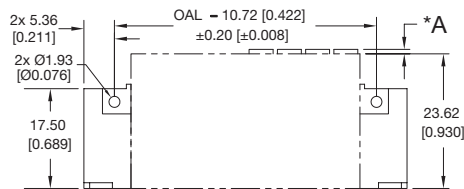
CONTACT MODULE	MALE	FEMALE
SIZE 4	8.83 [0.348]	9.40 [0.370]
SIZE 8	0	0
SIZE 12	2.20 [0.087]	3.20 [0.126]
SIZE 16	2.20 [0.087]	1.20 [0.126]
SIZE 18	0.60 [0.024]	0.60 [0.024]
SIZE 22	0	0

INSULATOR DIMENSIONS

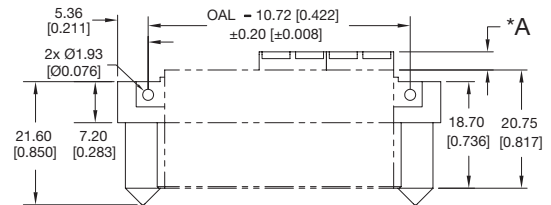
WHEN USING
SUPER BLIND MATING
SYSTEM

CODE 1 (STEP 2)

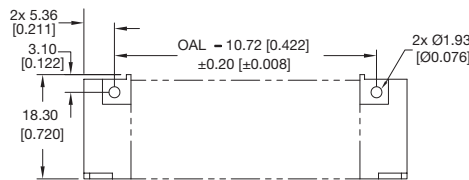
**MALE INSULATOR FOR CABLE/
PANEL CONNECTOR**



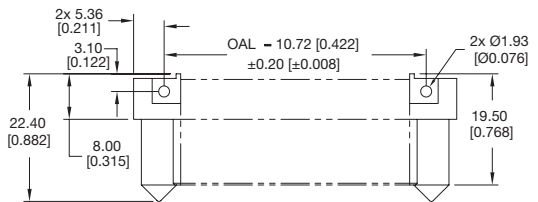
**FEMALE INSULATOR FOR CABLE/
PANEL CONNECTOR**



**MALE INSULATOR FOR
PCB MOUNT CONNECTOR**



**FEMALE INSULATOR FOR
PCB MOUNT CONNECTOR**

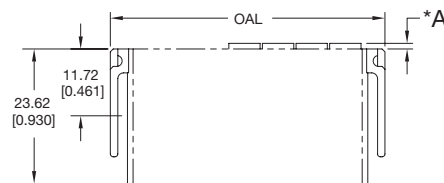


INSULATOR DIMENSIONS

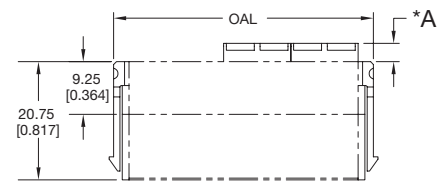
WHEN USING
LOCKING LATCH SYSTEM

(SEE STEP 2)

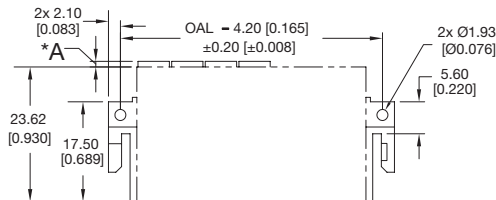
**MALE INSULATOR FOR
CABLE CONNECTOR**



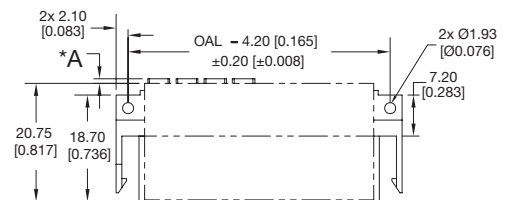
**FEMALE INSULATOR FOR
CABLE CONNECTOR**



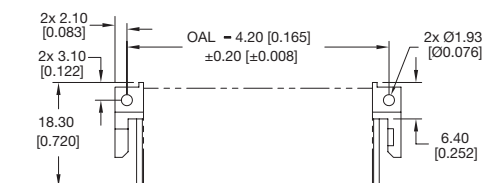
**MALE INSULATOR FOR
PANEL MOUNT CONNECTOR**



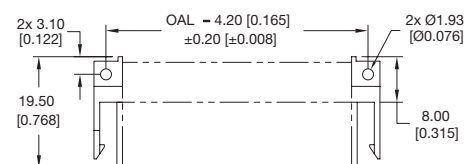
**FEMALE INSULATOR FOR
PANEL MOUNT CONNECTOR**



**MALE INSULATOR FOR
PCB MOUNT CONNECTOR**

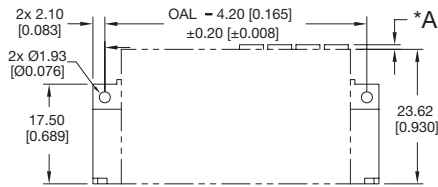


**FEMALE INSULATOR FOR
PCB MOUNT CONNECTOR**

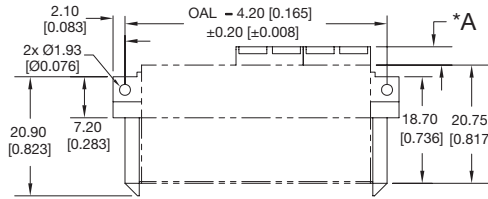


INSULATOR DIMENSIONS

**MALE INSULATOR FOR CABLE/
PANEL CONNECTOR**



**FEMALE INSULATOR FOR CABLE/
PANEL CONNECTOR**

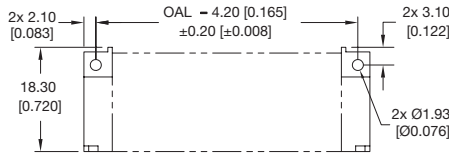


INSULATOR DIMENSIONS

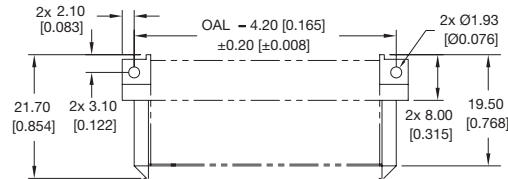
WHEN USING
BLIND MATING SYSTEM

CODE 2 (STEP 2)

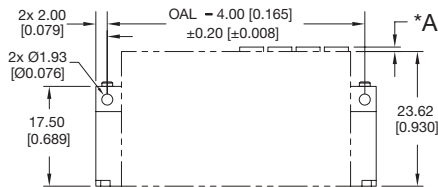
**MALE INSULATOR FOR
PCB MOUNT CONNECTOR**



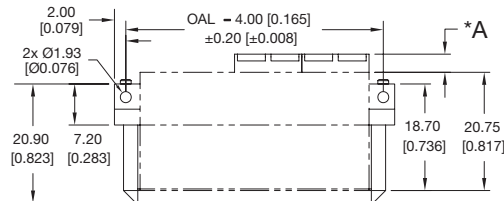
**FEMALE INSULATOR FOR
PCB MOUNT CONNECTOR**



**MALE INSULATOR FOR CABLE/
PANEL CONNECTOR**



**FEMALE INSULATOR FOR CABLE/
PANEL CONNECTOR**

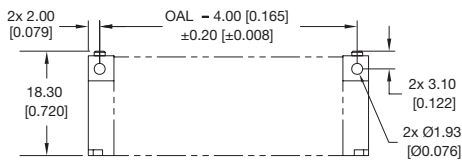


INSULATOR DIMENSIONS

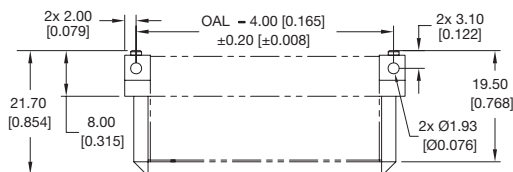
WHEN USING
BLIND MATING SYSTEM

CODE 7 (STEP 2)

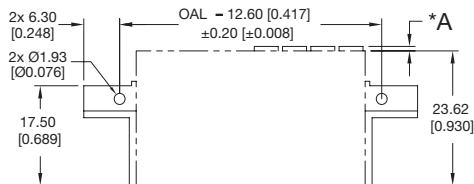
**MALE INSULATOR FOR
PCB MOUNT CONNECTOR**



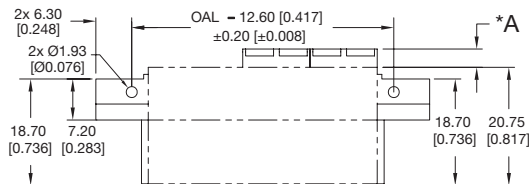
**FEMALE INSULATOR FOR
PCB MOUNT CONNECTOR**



**MALE INSULATOR FOR CABLE/
PANEL CONNECTOR**



**FEMALE INSULATOR FOR CABLE/
PANEL CONNECTOR**

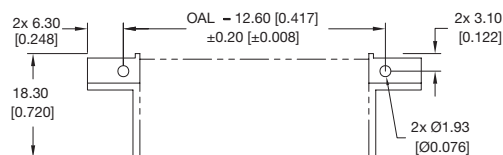


INSULATOR DIMENSIONS

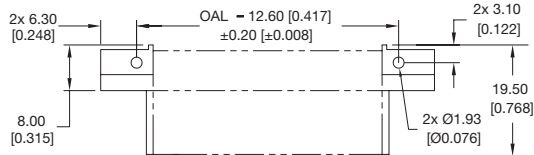
WHEN USING
JACKSCREW SYSTEM

CODE 6 (STEP 2)

**MALE INSULATOR FOR
PCB MOUNT CONNECTOR**



**FEMALE INSULATOR FOR
PCB MOUNT CONNECTOR**



TERMINATION DIMENSIONS

STRAIGHT PCB MOUNT CONNECTORS

CODE 3 or CODE 38 (STEP 4)

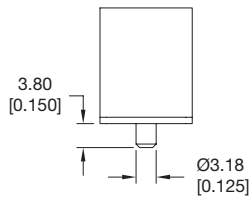
Code 3 is standard conductive material contact and code 38 is high conductivity material power contact.

Dimensions apply to both precision machined and precision formed contacts

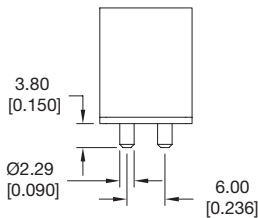
Male connector shown for reference. Dimensions also apply to female connector.

Consult sales for Contact Hole Patterns of Straight PCB Mount Connectors.

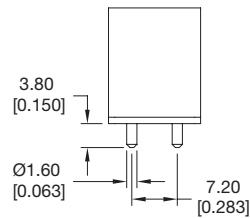
SIZE 8 CONTACTS



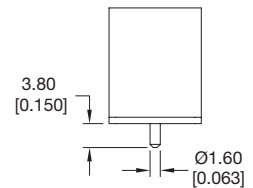
SIZE 12 CONTACTS



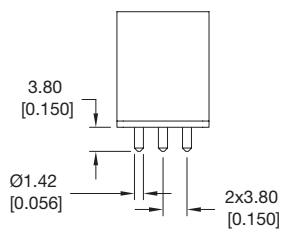
**SIZE 16 CONTACTS
DUAL ROW**



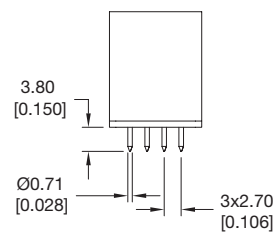
**SIZE 16 CONTACTS
SINGLE ROW**



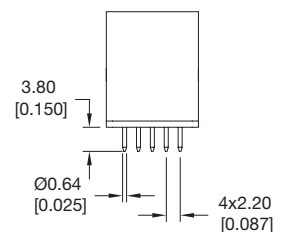
SIZE 18 CONTACTS



SIZE 22 CONTACTS



**HYPERBOLOID 0.60MM [0.0236]
CONTACTS**



RIGHT ANGLE (90°) PCB MOUNT CONNECTORS

CODE 4 or CODE 48 (STEP 4)

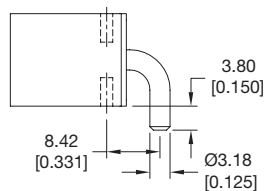
Code 4 is standard conductive material contact and code 48 is high conductivity material power contact.

Dimensions apply to both precision machined and precision formed contacts

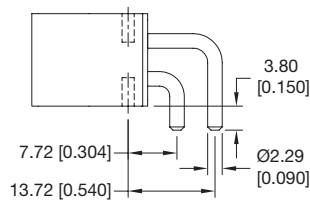
Male connector shown for reference. Dimensions also apply to female connector.

Consult sales for Contact Hole Patterns of Right Angle (90°) PCB Mount Connectors.

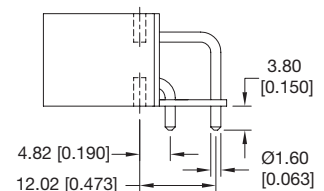
SIZE 8 CONTACTS



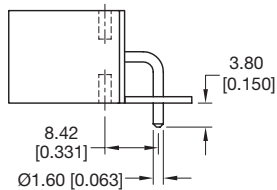
SIZE 12 CONTACTS



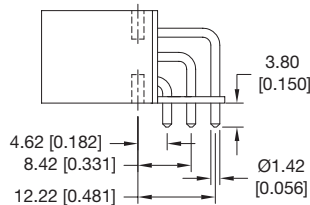
**SIZE 16 CONTACTS
DUAL ROW**



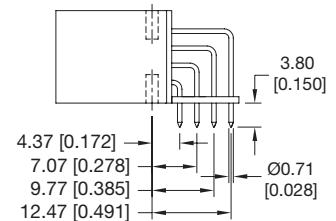
**SIZE 16 CONTACTS
SINGLE ROW**



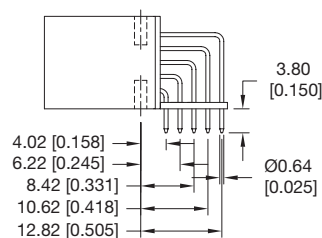
SIZE 18 CONTACTS



SIZE 22 CONTACTS

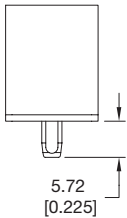


**HYPERBOLOID 0.60MM [0.0236]
CONTACTS**

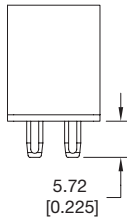


PRESS FIT DIMENSIONS

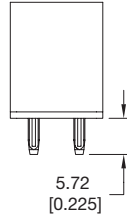
SIZE 8 CONTACTS



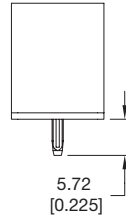
SIZE 12 CONTACTS



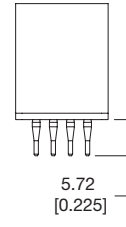
SIZE 16 CONTACTS DUAL ROW



SIZE 16 CONTACTS SINGLE ROW



SIZE 22 CONTACTS



COMPLIANT PRESS-FIT STRAIGHT PCB MOUNT CONNECTORS

CODE 93 or 938 (STEP 4)

Code 93 is standard conductive material contact and code 938 is high conductivity material power contact.

Note: Outline dimensions for Press-Fit Connectors are the same as those of Straight PCB Mount Versions.

For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, for more informations. Please consult factory for SK6370.

Press-Fit User Information

Connectors-to-PCB installation instructions:

1. Choose the proper tooling. Insertion tooling and single contact repair tooling are available from Positronic.
2. Insert the connector into the PCB or backplane and seat connector fully with seating/ support tool.
3. Secure the connector to the PCB or backplane using two self-tapping screws for plastic.

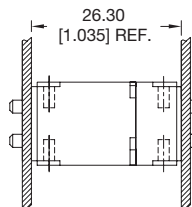
Need to repair a single contact because of damage in manufacturing, testing, or field use?

1. Choose the proper contact extraction tool.
2. Push the contact out with a firm, steady force. Remember, excessive force is not required.
3. Install a new contact with the proper contact insertion tool. You are done.

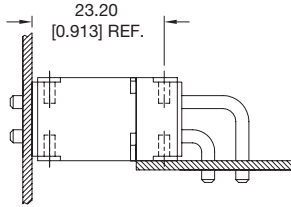
Note: Please consult factory for Connector Installation Tool Ordering Part number.

MATING DIMENSIONS

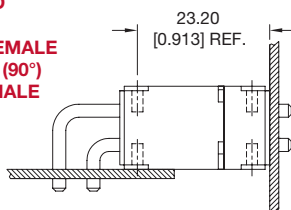
STRAIGHT BOARD MOUNT OR PANEL MOUNT FEMALE TO STRAIGHT BOARD MOUNT OR PANEL MOUNT MALE



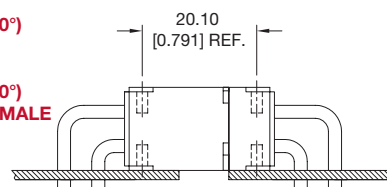
RIGHT ANGLE (90°) BOARD MOUNT FEMALE TO STRAIGHT BOARD MOUNT OR PANEL MOUNT MALE



STRAIGHT BOARD MOUNT OR PANEL MOUNT FEMALE TO RIGHT ANGLE (90°) BOARD MOUNT MALE

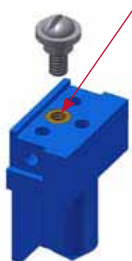


RIGHT ANGLE (90°) BOARD MOUNT FEMALE TO RIGHT ANGLE (90°) BOARD MOUNT MALE



ACCESSORIES

THREADED INSERT



Threaded Insert with 2-56 UNC screw threads

Note:

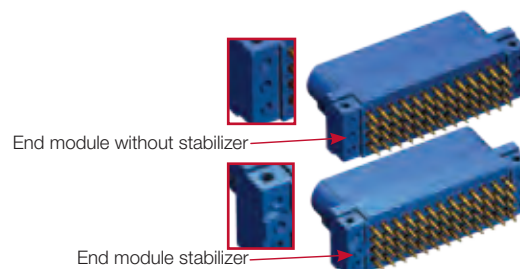
- 1 Threaded Insert pre-installed at factory.
- 2 Material: Brass.
- 3 Specify using PA MOS Consult sales for special options.

For screw options, see page 26 on MOUNTING SCREW.

END MODULE WITH STABILIZER

(Applicable for Connector with mounting screw)

For screw mounting connector, End module with stabilizer will minimise PCB warpage.
(For use with Code 3, 38, 93 and 938 in Step 4 of Part number definition). Available for SP2 end module. Consult sales for other end module.



ACCESSORIES

ACCESSORIES FOR PCB MOUNT

(SEE STEP 7)

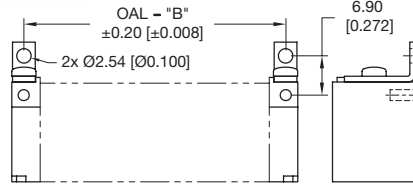
To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation

DIMENSION B

MODULE TYPES	"B"
SUPER BLIND MATE	10.72 [0.422]
OTHERS	4.20 [0.165]



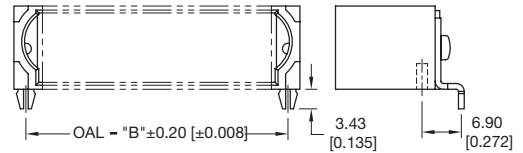
RIGHT ANGLE (90°) MOUNTING BRACKETS CODE B (STEP 7)



Material and Finish:: Brass with tin plate.



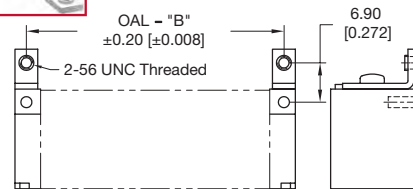
90° BOARD LOCK BRACKETS CODE LN (STEP 7)



Material and Finish:: Brass with tin plate.
Male connector shown for reference only.

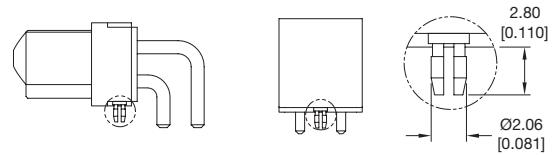


RIGHT ANGLE (90°) MOUNTING THREADED BRACKETS CODE BS (STEP 7)



Material and Finish:: Brass with tin plate.
Consult sales for mounting screw information.
Male connector shown for reference only.

PUSH-ON FASTENERS CODE N (STEP 7)



R/A (90°) PCB MOUNT

STRAIGHT PCB MOUNT

Material and Finish: Copper alloy with tin plate.

ACCESSORIES FOR PANEL MOUNT

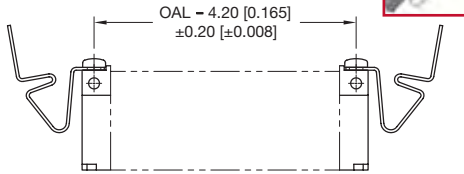
(SEE STEP 6)

To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation

DIMENSION B

MODULE TYPES	"B"
SUPER BLIND MATE	10.72 [0.422]
OTHERS	4.20 [0.165]

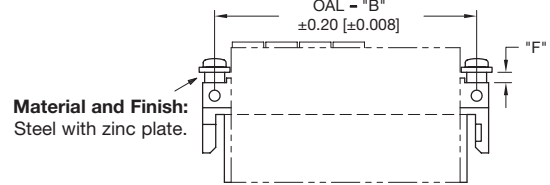
EASY RELEASE MOUNTING CLIPS CODE 6 (STEP 6)



Material and Finish: Beryllium copper with nickel plate.



FLOAT MOUNT BUSHINGS CODE 82 or 83 (STEP 6)



Material and Finish:
Steel with zinc plate.

CODE	PANEL THICKNESS	DIMENSION F
82	1.50 [0.059]	1.80 [0.071]
83	2.30 [0.091]	2.60 [0.102]

PANEL CUTOUT DIMENSIONS

General tolerance for panel cutout
dimensions is ±0.13 [±0.005].

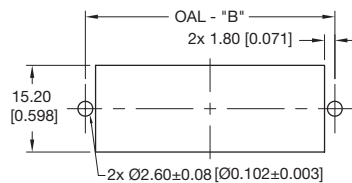
For screw options. See page 26 on
MOUNTING SCREW

To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation

DIMENSION B

MODULE TYPES	"B"
SUPER BLIND MATE	10.72 [0.422]
OTHERS	4.20 [0.165]

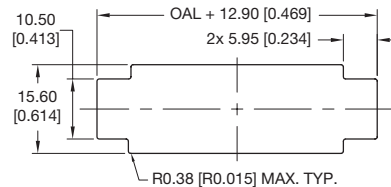
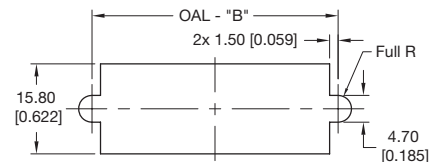
FOR MOUNTING SCREWS CODE 0 (STEP 6)



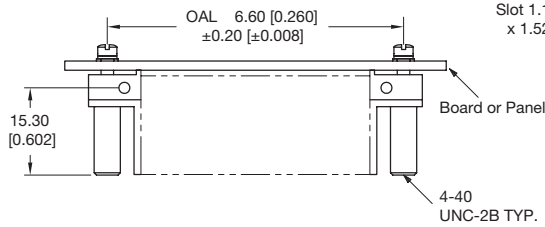
FOR QUICK RELEASE MOUNTING CLIP CODE 6 (STEP 6)

Max. panel thickness:
1.60 [0.063] nominal

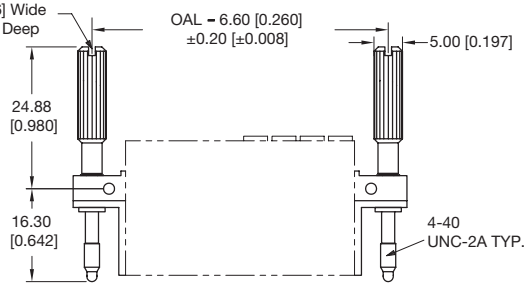
FOR FLOAT MOUNTING CODE 82 or 83 (STEP 6)



FEMALE FIXED JACKSCREW CODE T (STEP 7)



MALE TURNABLE JACKSCREW CODE E (STEP 7)



(SEE STEP 7)

Material:

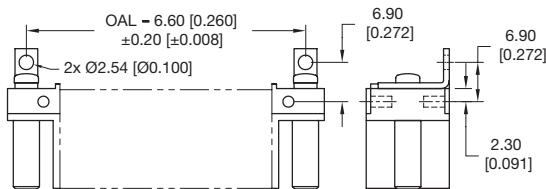
Jackscrews, Hex Nut and Lockwashers
- Stainless Steel, Passivated.

Knob - Aluminium, Yellow Anodized.

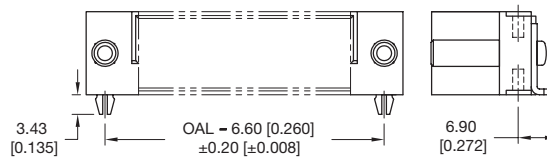
*Male connector shown for reference.
Contact sales about ordering
components separately.*

*To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation*

FEMALE FIXED JACKSCREW WITH RIGHT ANGLE (90°) MOUNTING BRACKETS CODE TB (STEP 7)



FEMALE FIXED JACKSCREW WITH RIGHT ANGLE (90°) BOARD LOCK BRACKETS CODE TLN (STEP 7)



ACCESSORIES FOR USE WITH JACKSCREW SYSTEM

(SEE STEP 7)

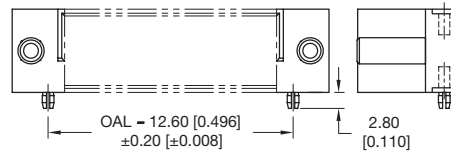
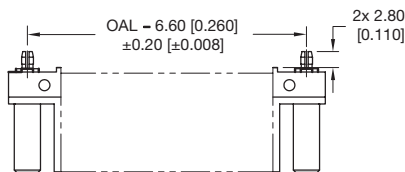
Material:

Jackscrews, Hex Nut and Lockwashers
- Stainless Steel, Passivated.

*Male connector shown for reference.
Contact sales about ordering
components separately.*

*To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation*

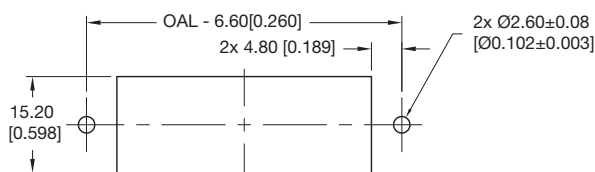
FEMALE FIXED JACKSCREW WITH PUSH-ON FASTENERS CODE TN (STEP 7)



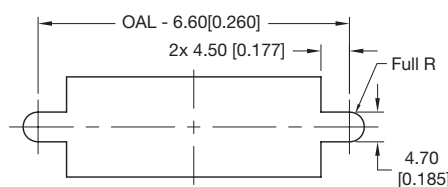
STRAIGHT PCB MOUNT CONNECTOR

RIGHT ANGLE (90°) PCB MOUNT CONNECTOR

FOR MOUNTING SCREWS CODE 0 (STEP 6)



FOR FLOAT MOUNTING CODE 82 or 83 (STEP 6)



PANEL CUTOUT DIMENSIONS WHEN USING WITH JACKSCREW SYSTEM

(SEE STEP 6)

General tolerance for panel cutout
dimensions is ± 0.13 [± 0.005].

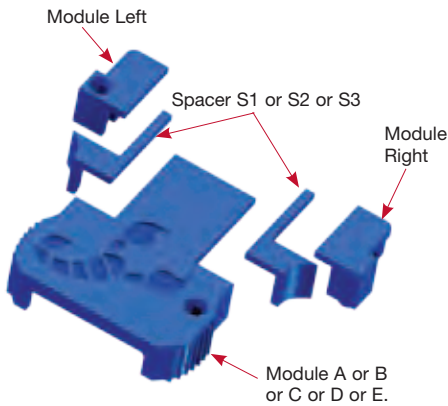
*To calculate OAL of Connector
See Example at Page 3
Overall Length Calculation*

APPLICABLE FOR
CONNECTOR WITH
N5 SPACER ONLY

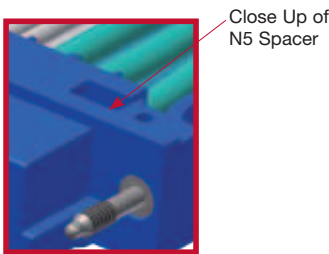
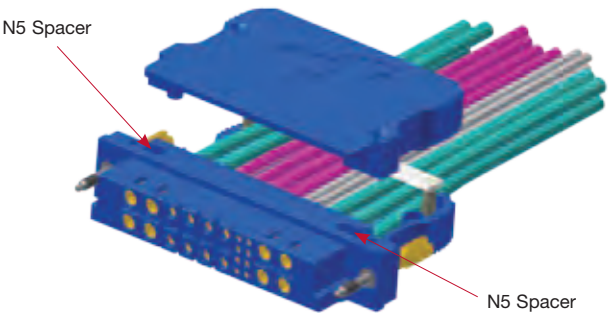
MATERIALS AND FINISHES

Hood	Glass-filled polyester, UL 94V-0. Blue color.
Hood Screws	Steel, zinc plate with chromate seal.
Cable clamp	Steel with nickel plate.
Cable Clamp Screws	Brass, zinc plate with chromate seal. (Consult sales for Hood availability).

SCORPION HOODS ARE MOLDED WITH THE FOLLOWING MODULES:

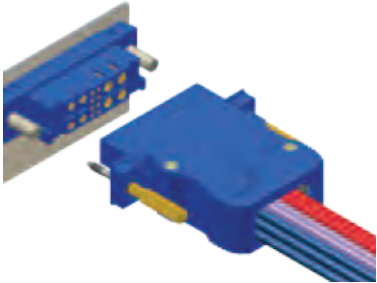


Scorpion Hood: Dimension and Ordering part number, please refer to ASK23100. Consult sales for Hood availability.

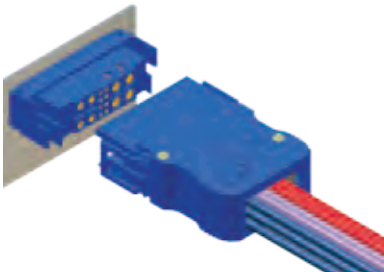


Note: N5 Spacer (for Hood application, place N5 spacer next to End module).

HOOD WITH JACKSCREW
CODE WE (STEP 7)



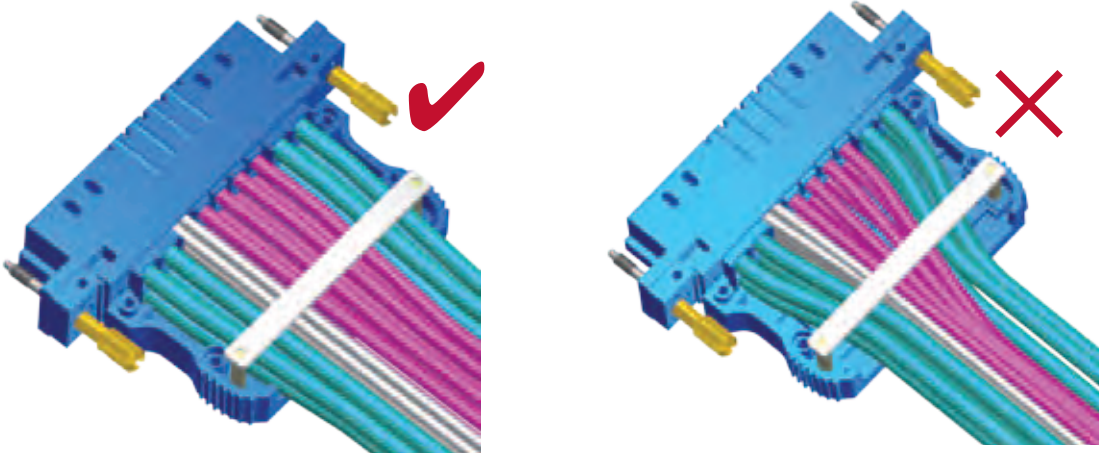
HOOD WITHOUT JACKSCREW
CODE W (STEP 7)



HOOD WITH CABLE CLAMP

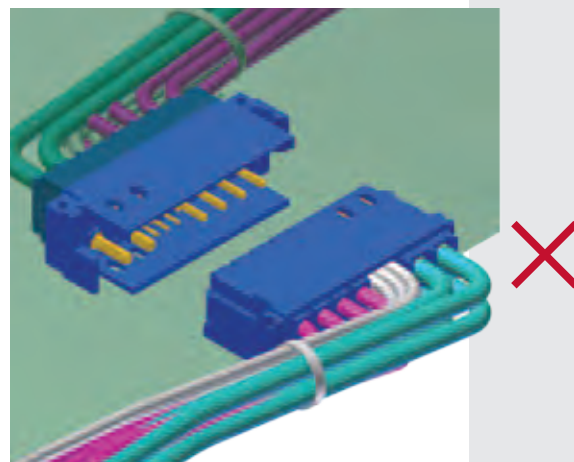
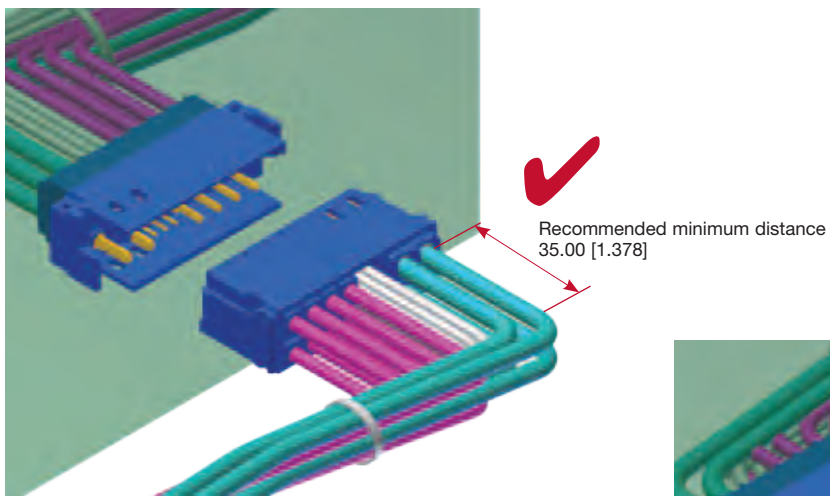
Minimise wire skewing inside the hood

APPLICABLE FOR
CONNECTOR WITH
N5 SPACER ONLY



APPLICATION WITHOUT HOOD

Removable contacts should be allowed to float after installation in the connector body. This enables superior mating performance. Therefore, wires must remain approximately perpendicular to the connector for a recommended minimum distance. See diagram.



APPLICATION RECOMMENDATION:

Positronic recommends do not bend wires on a crimp version at a sharp angle

Material and Finishes:

Precision machined copper alloy
with gold flash over nickel.

Consult sales for other contact sizes,
materials, finishes, termination styles
and more details.

Note:

Please use correct wire size
and it should be smaller than ØA of
the contact. Some connectors may not
accommodate some thicker insulation
wires. Customer review for wire
selection is recommended. Removable
contacts should be allowed to float
after installation in connector body. This
enables superior mating performance.
If floating is not enabled, some mating
issues may occur; especially when wires/
cables are bent at a severe angle.

SIZE 4 REMOVABLE CRIMP CONTACTS

(Contacts Ordered Separately)

PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	WIRE SIZE AWG [mm²]	ØA
---	---	---------------------------	----

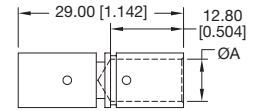
FEMALE CONTACTS

FC0404N2	FC0404N2S	4 [25.0]	7.40 [0.291]
----------	-----------	----------	--------------

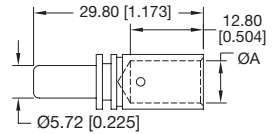
MALE CONTACTS

MC0404N	MC0404NS	4 [25.0]	7.40 [0.291]
---------	----------	----------	--------------

FEMALE



MALE



SIZE 4 REMOVABLE CONTACTS, BUS BAR INTERNAL THREADS

(Contacts Ordered Separately)

PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	THREAD T
---	---	----------

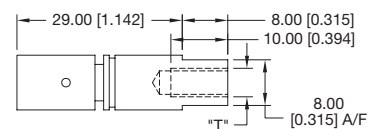
FEMALE CONTACTS

SPFIT04M	SPFIT04MS	M5 x 0.8
SPFIT04S	SPFIT04SS	10-24 UNC 2B

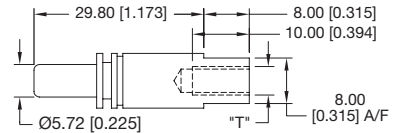
MALE CONTACTS

SPMIT04M	SPMIT04MS	M5 x 0.8
SPMIT04S	SPMIT04SS	10-24 UNC 2B

FEMALE



MALE



SIZE 4 REMOVABLE CONTACTS, BUS BAR EXTERNAL THREADS

(Contacts Ordered Separately)

PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	THREAD T
---	---	----------

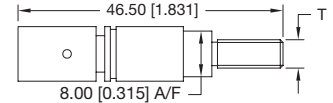
FEMALE CONTACTS

SPFET04M	SPFET04MS	M5 x 0.8
SPFET04S	SPFET04SS	10-24 UNC 2A

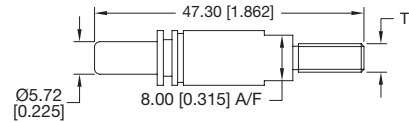
MALE CONTACTS

SPMET04M	SPMET04MS	M5 x 0.8
SPMET04S	SPMET04SS	10-24 UNC 2A

FEMALE



MALE



SIZE 4 REMOVABLE CONTACTS, RIGHT ANGLE THREAD FOR TYPICAL RING TERMINAL

(Contacts Ordered Separately)

PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	THREAD T	WIRE SIZE AWG [mm²]
---	---	----------	---------------------------

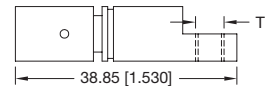
FEMALE CONTACTS

SPFRA04M	SPFRA04MS	M5 x 0.8	10 [5.3]
SPFRA04S	SPFRA04SS	10-24 UNC 2B	10 [5.3]

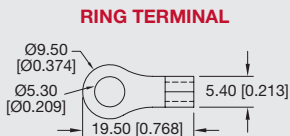
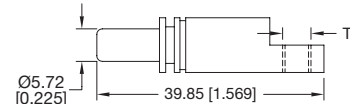
MALE CONTACTS

SPMRA04M	SPMRA04MS	M5 x 0.8	10 [5.3]
SPMRA04S	SPMRA04SS	10-24 UNC 2B	10 [5.3]

FEMALE



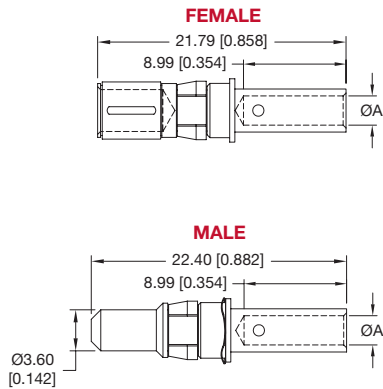
MALE



Shown for reference only

CONTACTS

SIZE 8 REMOVABLE CRIMP CONTACTS *(Contacts Ordered Separately)*



PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	WIRE SIZE AWG [mm²]	ØA
FEMALE CONTACTS			
N/A	FC4008DS	8 [10.0]	4.60 [0.181]
FC4010D	N/A	10 [5.3]	3.10 [0.122]
FC4012D		12 [4.0]	2.57 [0.101]
FC4016D		16 [1.5]	1.70 [0.067]
MALE CONTACTS			
N/A	MC4008DS	8 [10.0]	4.60 [0.181]
MC4010D	N/A	10 [5.3]	3.10 [0.122]
MC4012D		12 [4.0]	2.57 [0.101]
MC4016D		16 [1.5]	1.70 [0.067]

N/A - Not Applicable

Material and Finishes:

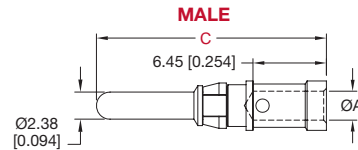
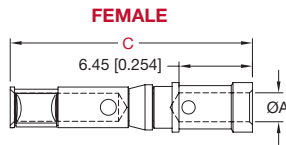
Precision machined copper alloy with gold flash over nickel.

Consult sales for other contact sizes, materials, finishes, termination styles and more details.

Note:

Please use correct wire size and it should be smaller than ØA of the contact. Some connectors may not accommodate some thicker insulation wires. Customer review for wire selection is recommended. Removable contacts should be allowed to float after installation in connector body. This enables superior mating performance. If floating is not enabled, some mating issues may occur; especially when wires/cables are bent at a severe angle.

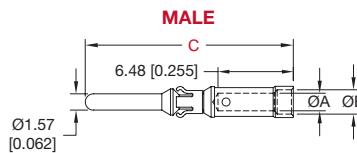
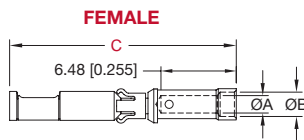
SIZE 12 REMOVABLE CRIMP CONTACTS *(Contacts Ordered Separately)*



PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	WIRE SIZE AWG [mm²]	ØA	SEQUENTIAL MATE	C
FEMALE CONTACTS					
FC1210P2	FC1210P2S	10 [6.0]	3.10 [0.122]	N/A	21.25 [0.837]
FC1212P2	FC1212P2S	12 [4.0]	2.54 [0.100]		
MALE CONTACTS					
MC1210N-PA563	MC1210NS-PA563	10 [6.0]	3.10 [0.122]	FIRST	23.18 [0.912]
MC1210N	MC1210NS			STANDARD	20.18 [0.794]
MC1212N-PA563	MC1212NS-PA563	12 [4.0]	2.54 [0.100]	FIRST	23.18 [0.912]
MC1212N	MC1212NS			STANDARD	20.18 [0.794]

N/A - Not Applicable

SIZE 16 REMOVABLE CRIMP CONTACTS *(Contacts Ordered Separately)*



PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	WIRE SIZE AWG [mm²]	ØA	ØB	SEQUENTIAL MATE	C
FEMALE CONTACTS						
FC112P2-PA907	FC112P2S-PA907	12 [4.0]	2.49 [0.098]	N/A	N/A	19.33 [0.761]
FC114P2-PA907	N/A	14-16 [2.5-1.5]	2.06 [0.081]	2.67 [0.105]		
FC116P2-PA907		16-18-20 [1.5-1.0-0.5]	1.70 [0.067]	2.36 [0.093]		
FC120P2-PA907		20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]		
MALE CONTACTS						
MC112N-133.5	MC112NS-133.5	12 [4.0]	2.49 [0.098]	N/A	FIRST	21.74 [0.856]
MC112N	MC112NS				STANDARD	19.41 [0.764]
MC114N-133.5	N/A	14-16 [2.5-1.5]	2.06 [0.081]	2.67 [0.105]	FIRST	21.74 [0.856]
MC114N					STANDARD	19.41 [0.764]
MC116N-133.5		16-18-20 [1.5-1.0-0.5]	1.70 [0.067]	2.36 [0.093]	FIRST	21.74 [0.856]
MC116N					STANDARD	19.41 [0.764]
MC120N-133.5		20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]	FIRST	21.74 [0.856]
MC120N					STANDARD	19.41 [0.764]

N/A - Not Applicable

Material and Finishes:

Precision machined copper alloy
with gold flash over nickel.

Consult sales for other contact sizes,
materials, finishes, termination styles
and more details.

Note:

Please use correct wire size
and it should be smaller than ØA of
the contact. Some connectors may not
accommodate some thicker insulation
wires. Customer review for wire
selection is recommended. Removable
contacts should be allowed to float
after installation in connector body. This
enables superior mating performance.
If floating is not enabled, some mating
issues may occur; especially when wires/
cables are bent at a severe angle.

SIZE 18 REMOVABLE CRIMP CONTACTS

(Contacts Ordered Separately)

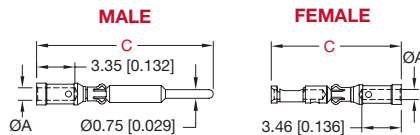


PART NUMBER (STANDARD CONDUCTIVITY CONTACTS)	PART NUMBER (HIGH CONDUCTIVITY CONTACTS)	WIRE SIZE AWG [mm²]	ØA	ØB	ØD	SEQUENTIAL MATE	C
FEMALE CONTACTS							
FC1816P2	FC1816P2S	16-18 [1.5-1.0]	1.70 [0.067]	1.70 [0.067]	2.43 [0.096]	N/A	19.34 [0.761]
FC1820P2	FC1820P2S	20 [0.5]	1.14 [0.045]	1.73 [0.068]	1.73 [0.068]		
MALE CONTACTS							
MC1816N-PA561	MC1816NS-PA561	16-18 [1.5-1.0]	1.70 [0.067]	1.70 [0.067]	2.43 [0.096]	FIRST	21.08 [0.830]
MC1816N	MC1816NS					STANDARD	19.08 [0.751]
MC1820N-PA561	MC1820NS-PA561	20 [0.5]	1.14 [0.045]	1.73 [0.068]	1.73 [0.068]	FIRST	21.08 [0.830]
MC1212N	MC1820NS					STANDARD	19.08 [0.751]

N/A - Not Applicable

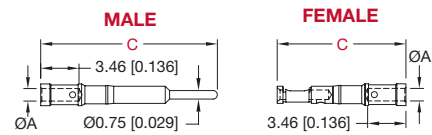
SIZE 22 REMOVABLE CRIMP CONTACTS

(Contacts Ordered Separately)



SIZE 22 NON REMOVABLE CRIMP CONTACTS

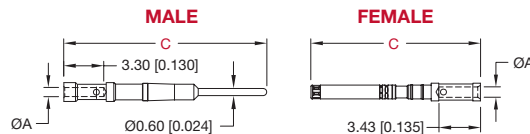
(Contacts Ordered Separately)



REMOVABLE CONTACT	NON REMOVABLE CONTACT	WIRE SIZE AWG [mm ²]	ØA	C
FEMALE CONTACTS				
FC422P9	FC422T-PA908	22 - 26 [0.3-0.12]	0.89 [0.035]	11.41 [0.449]
MALE CONTACTS				
MC422N9	MC422T-PA908	22 - 26 [0.3-0.12]	0.89 [0.035]	15.49 [0.610]

N/A - Not Applicable

HYPERBOLOID 0.6MM NON REMOVABLE CRIMP CONTACTS



NON REMOVABLE CONTACT	WIRE SIZE AWG [mm ²]	ØA	C
FEMALE CONTACTS			
FC3124T	24 - 28 [0.25-0.08]	0.86 [0.034]	13.96 [0.550]
MALE CONTACTS			
MC3124T	24 - 28 [0.25-0.08]	0.76 [0.030]	16.70 [0.657]

N/A - Not Applicable

Materials and Finishes:

Precision machined copper alloy with gold flash over nickel.

Consult sales for other contact sizes, materials, finishes, termination
styles and more details.

SHIELDED CONTACTS, REMOVABLE SIZE 8

(Contacts Ordered Separately)

CODE 1 (STEP 4)

ELECTRICAL CHARACTERISTICS

Initial Contact Resistance	0.008 ohms, maximum.
Nominal Impedance	50 ohms.
* Insertion Loss	-0.46 dB at 1 GHz -1.5 dB at 2 GHz
* VSWR	Contact technical sales
* Proof Voltage	1000 V r.m.s.

* Above values measured using frequency domain techniques.

MATERIALS AND FINISHES

Copper alloy with PTFE teflon insulator.	
Signal Contact	0.76µ [0.000030] gold over nickel.
Contact Body:	Gold flash over nickel.

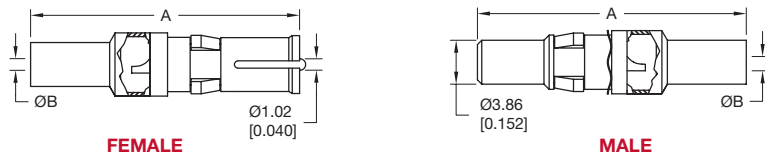
OPTIONAL FINISHES

Signal Contact 1.27µ [0.000050] gold over nickel. by adding "-15" suffix onto part number.
Example: MS4102D-15.

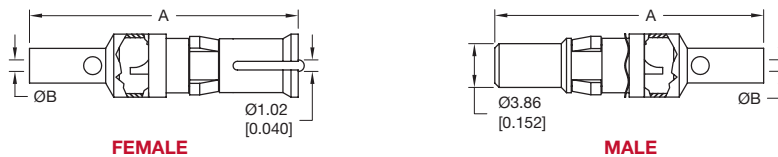
Contact Body	0.76µ [0.000030] gold flash over nickel.
--------------	--

Contact sales for more shielded contact options, high voltage contacts, air line couples, more technical characteristics, soldering and crimping information.

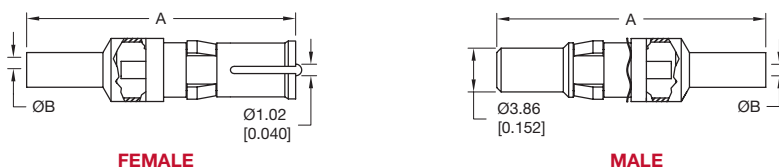
SIZE 8 STRAIGHT SOLDER/ CRIMP CONTACTS



SIZE 8 STRAIGHT SOLDER/ SOLDER CONTACTS



SIZE 8 STRAIGHT CRIMP/ CRIMP CONTACTS



CONTACTS

SHIELDED CONTACTS, REMOVABLE SIZE 8 Cont'

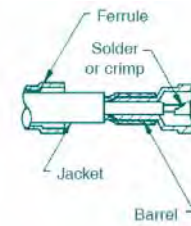
(Contacts Ordered Separately)

SOLDER / CRIMP PART NUMBER		SOLDER / SOLDER PART NUMBER		CRIMP / CRIMP PART NUMBER		A	ØB	RG CABLE NUMBER
MALE	FEMALE	MALE	FEMALE	MALE	FEMALE			
MC4101D	FC4101D	MS4101D	FS4101D	MCC4101D	FCC4101D	23.60 [0.929]	1.02 [0.040]	178 B/U 196 B/U
MC4102D	FC4102D	MS4102D	FS4102D	MCC4102D	FCC4102D	23.60 [0.929]	1.70 [0.067]	179 B/U 316 B/U
MC4103D	FC4103D	MS4103D	FS4103D	MCC4103D	FCC4103D	26.34 [1.037]	2.74 [0.108]	180 B/U
MC4104D	FC4104D	MS4104D	FS4104D	MCC4104D	FCC4104D	26.34 [1.037]	3.05 [0.120]	58 B/U

SHIELDED CONTACT HAND CRIMP TOOL



Typical part number:
FC4101D



MOUNTING SCREWS

SELF TAPPING SCREW See page 18 PANEL CUTOUT DIMENSION under ACCESSORIES	MATERIAL OPTIONS	PART NUMBER	THREAD LENGTH	RECOMMENDED P.C. BOARD THICKNESS <i>When applicable</i>
	Steel	4546-7-1-16	6.35±0.76 [0.250±0.030]	2.36 [0.093]
	Steel	4546-7-2-16	7.93±0.76 [0.312±0.030]	3.18 [0.125]
	Steel	4546-7-3-16	9.53±0.76 [0.375±0.030]	4.45 [0.175]
	Stainless Steel	4546-7-6-4	6.35±0.76 [0.250±0.030]	2.36 [0.093]
	Stainless Steel	4546-7-7-4	7.93±0.76 [0.312±0.030]	3.18 [0.125]
	Stainless Steel	4546-7-8-4	9.53±0.76 [0.375±0.030]	4.45 [0.175]

SCREW 2-56 UNC-2A (USE WITH THREADED INSERT) See page 17 THREADED INSERT under ACCESSORIES	MATERIAL OPTIONS	PART NUMBER	THREAD LENGTH	RECOMMENDED P.C. BOARD THICKNESS <i>When applicable</i>
	Steel	2074-12-1-16	6.81±0.76 [0.268±0.030]	2.36 [0.093]
	Steel	2074-12-2-16	7.63±0.76 [0.300±0.030]	3.18 [0.125]
	Steel	2074-12-3-16	8.90±0.76 [0.350±0.030]	4.45 [0.175]
	Stainless Steel	2074-12-4-4	6.81±0.76 [0.268±0.030]	2.36 [0.093]
	Stainless Steel	2074-12-5-4	7.63±0.76 [0.300±0.030]	3.18 [0.125]
	Stainless Steel	2074-12-6-4	8.90±0.76 [0.350±0.030]	4.45 [0.175]

TOOLING

RECOMMENDED
TOOLS FOR
CRIMP CONTACTS.



Contact Extraction Tool



Contact Insertion Tool



Cycle-Controlled Step
Adjustable Hand Crimp Tool



Size 4 Hand Crimp Tool

CONTACT SIZE	CONTACT EXTRACTION TOOL	CONTACT INSERTION TOOL	HAND CRIMP TOOL
Size 4	Not Applicable	Not Applicable	9509-7-0 (FC0404** and MC0404** contacts)
Size 8	4311-0-2	Not Applicable	9504-19-0 (FC4008DS and MC4008DS contacts) 9509-0-0 (*C4010D, *C4012D, and *C4016D contacts)
Size 12	2711-0-0	9099-3-0	9509-6-1 with 9509-6-2 positioner (*C1210** contacts) 9501-0 with 9502-38-0 positioner (MC1212** contacts) 9501-0 with 9502-37-0 positioner (FC1212** contacts)
Size 16	9081-0-0	9099-0-0	9501-0 with 9502-1-0 positioner (FC1**P2, MC1**N) 9501-0 with 9502-17-0 positioner (MC1**N-133.5) 9509-3 (FC112N2S, MC112NS and MC112NS-133.5)
Size 18	9081-9-0	9099-6-0	9507-0 with 9502-32-0 positioner (male contacts) 9507-0 with 9502-30-0 positioner (female contacts)
Size 22	^ 9081-3-0	9099-7-0	9507-0 with 9502-12-0 positioner (male contacts) 9507-0 with 9502-13-0 positioner (female contacts)
Hyperboloid 0.6mm	Not Applicable	9512-106-0	9507-0 with 9502-40-0 positioner (male contacts) 9507-0 with 9502-46-0 positioner (female contacts)

^ Not Applicable for Size 22 non-removable crimp contacts.
Consult sales for additional crimping tools and crimping information.

LOCKING CLIP

INSERTION,
EXTRACTION, AND
RETENTION OF
SIZE 4 CONTACTS

INSERTION

STEP 2: Lock the Locking Clip.

STEP 1: Insert the Contact from Rear Side.

EXTRACTION

STEP 1: Unlock the Locking Clip.

STEP 2: Extract the Contact from Rear Side.

KEYING MODULE AND PLUG

CODE 2 (STEP 3)

- Note:**
- 1 Material:**
Glass-filled polyester,
UL 94V-0, Color: Blue.
- 2** Default factory setting for keying plug on keying module is at position 1.
- 3** There are 8 available positions for customer to choose from. Customer can change the position by using Male Insertion tool / Extraction tool for Male Plug, Female Insertion tool / Extraction tool for Female Plug.

KEYING PLUGS

Female Plug Male Plug

ASSEMBLY OF KEYING PLUGS TO KEYING MODULES

Female Module with Female Plug Male Module with Male Plug

Male Insertion / Extraction Tool	Female Insertion / Extraction Tool
9505-1-1	9505-1-2

FEMALE PLUG - INSERTION

STEP 1: Insert the Female Plug into the Female Insertion / Extraction Tool

STEP 2: Press the Female Plug into the molding.

EXTRACTION

Unlock the Female Plug from the Rear Side.

MALE PLUG - INSERTION

STEP 1: Insert the male Plug into the male Insertion / Extraction Tool

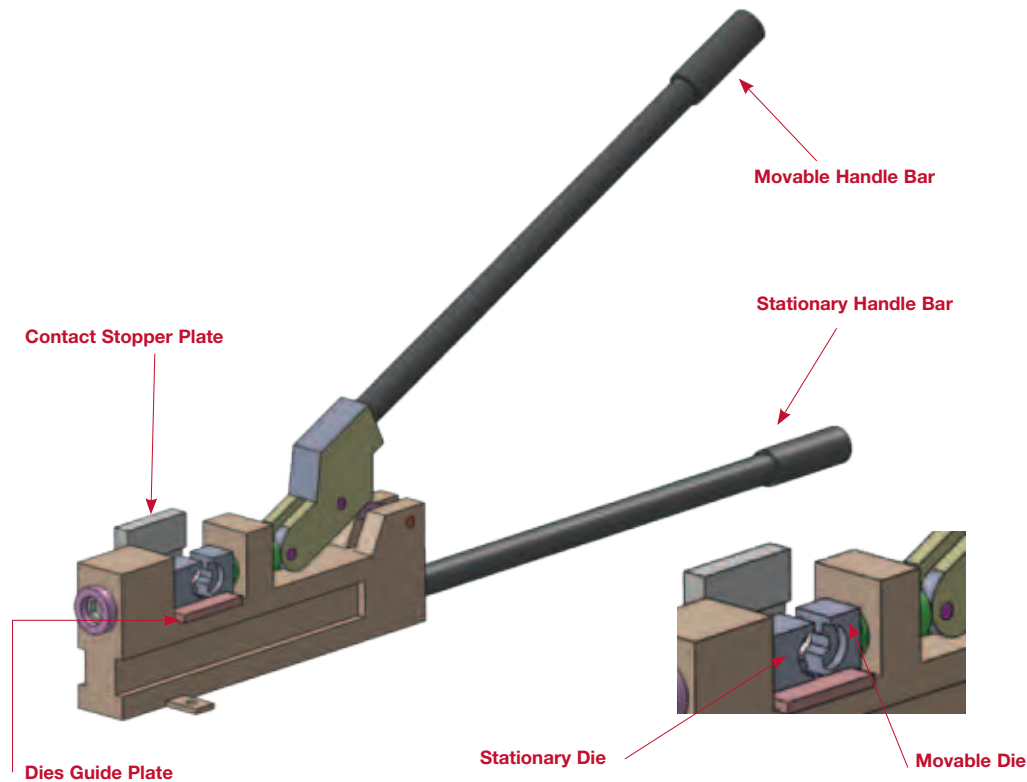
STEP 2: Press the male Plug into the molding.

EXTRACTION

Unlock the Male Plug from the Rear Side.

RECOMMENDED CRIMPING PROCEDURE FOR SIZE 4 CONTACTS.

- 1 Strip cable and insert in contact crimp barrel. Ensure that all of the conductor wire strands are captured within crimp barrel and that the cable conductor wire is visible through inspection hole.
- 2 Lift the movable handle to open the die head, place the contact with cable inside hexagonal die, ensure that the end face of contact is touching the stopper.
- 3 Now press down movable handle to crimp the contact. After crimping is done, pull both bar away from each other to open the die.



- 4 To remove pinched material of crimped contact, rotate the contact in 90 degrees and repeat step 2 and 3. Otherwise file off pinched material.

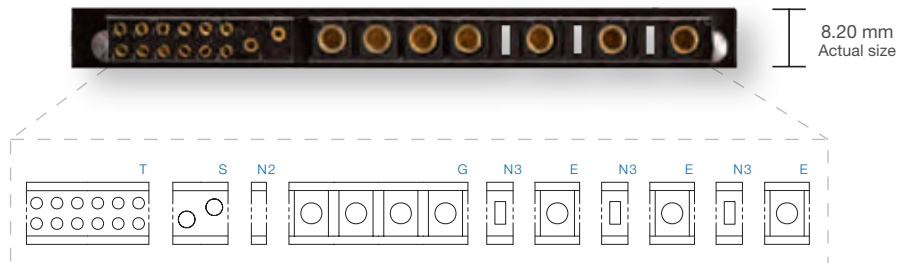


Final crimped contact shall look like this.

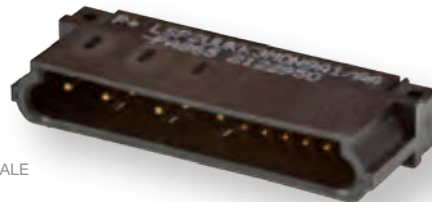
NOTE

Scorpion Low-Profile

configurable. low profile. connector. positronic.



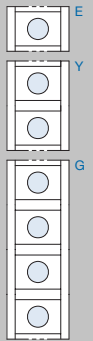
- Ideal for SWaP (size, weight & power) reduction
- Define the envelope and pin configuration
- One-piece low profile insulator
- Perfect for 1U applications
- Current ratings up to 55 amps per contact
- Power contact resistance is 0.7 milliohms maximum
- Nearly unlimited configurations
- Vent options for more effective air cooling
- Spacer options giving increase voltage capabilities
- Sequential mating contacts



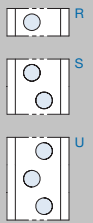
ALL IMAGES TO SCALE

Module Options

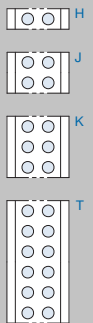
Size 12



Size 20



Size 22



Spacers / Blanks

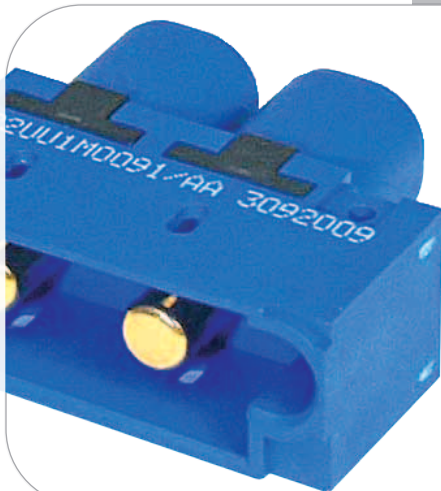


Today's hardware designs require maximum power output with minimal space and weight claim. Available in standard and low profile versions, Scorpion by Positronic is a configurable connector capable of virtually limitless pin layouts. This gives the designer the option to specify a connector perfectly suited to the application by achieving the ideal blend of size, weight and power (SWaP) – all of this without the high cost of NRE and long lead times.

Visit www.connectpositronic.com/scorpion for details.



Positronic
global connector solutions

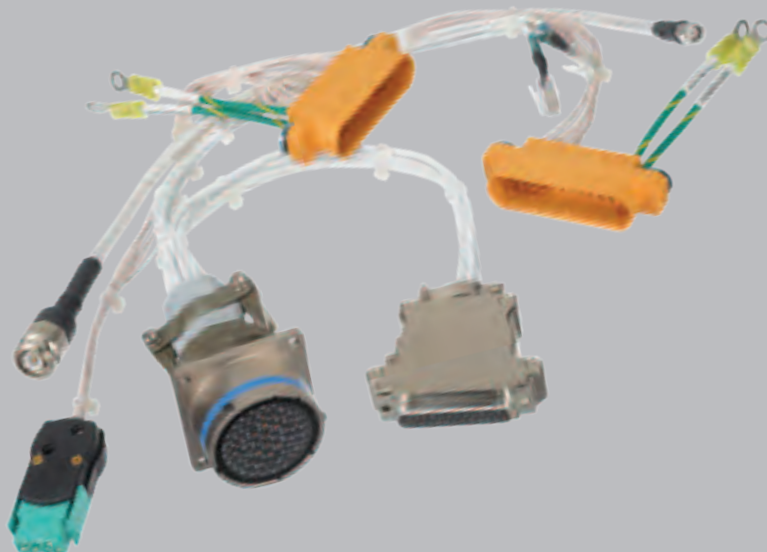


Cable Assembly Options

Positronic leverages its experience in high reliability connector manufacturing to build cable assemblies held to high standards. The cable assembly facility is certified to ISO9001 and AS9100. Contact Positronic for your optical cable needs.

Capabilities include:

- Design, development, engineering support and documentation
- Build-to-print
- Product prototyping and first articles
- Testing
- Adherence to IPC-620 standards



Regional Headquarters

Global Headquarters

Positronic | USA

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

European Headquarters

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Asian Headquarters

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

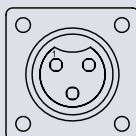
Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/sales

BABY KING COBRA

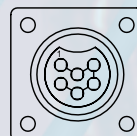


Miniature, Economical & Rugged Circular Connector Systems

Connector Versions



BKC320:
Three (3) Size 20
Contacts



BKC620:
Six (6) Size 20
Contacts

Technical Characteristics

Materials and Finishes

Insulator: Glass-filled nylon, UL 94V-0.

Contacts: Precision machined copper alloy with gold over nickel plate.

'O' Ring: Silicon, UL 94V-0

Electrical Characteristics

Contact Current Ratings

Size 20 Contacts: 7.5 amperes nominal.

Initial Contact Resistance per IEC 512-2, Test 2b.

Size 20 Contacts: 0.005 ohms, maximum.

Insulator Resistance per IEC 512-2, Test 3a.

Insulator: 5 G ohms, minimum.

Proof Voltage

Size 20 Contacts: 1000 V r.m.s.

Working Voltage

Size 20 Contacts: 250 V r.m.s.

Climatic Characteristics

Working temperature: -55°C to +125°C

Dust and

Water Ingress: IP65 with overmolded Assemblies (Consult Factory for details)

Mechanical Characteristics

Polarization: Provided by insulator.

Fixed Contacts: Size 20 female contacts feature "Open Entry" 500 cycles design.

Contact Retention
in Insulator:

Size 20 Contacts: 27 N [6 lbs.] minimum.

Locking System:

Threaded or Twist
Locking Shroud

UL :

File E220614



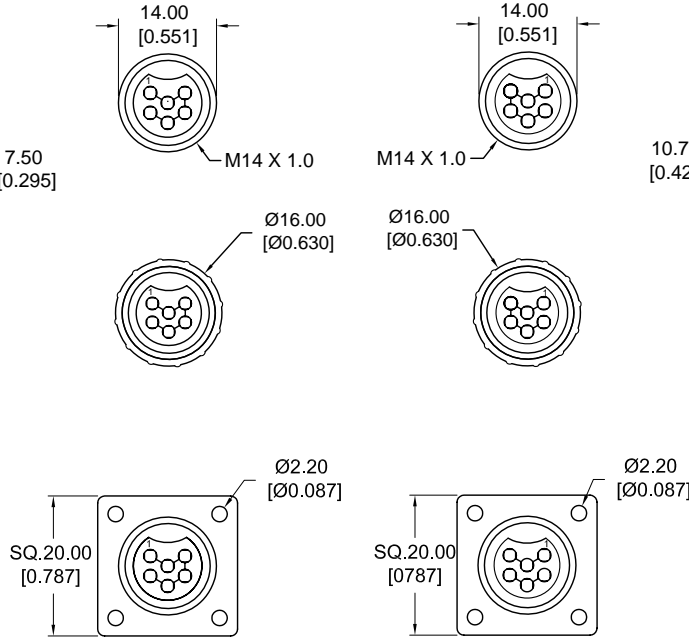
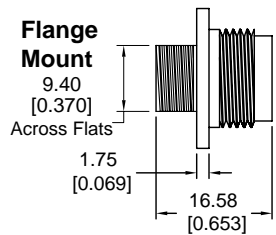
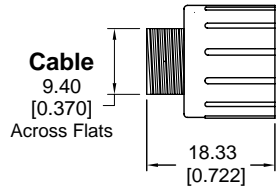
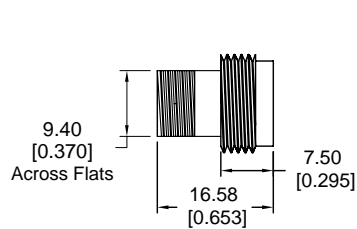
POSITRONIC
GLOBAL *Connector* SOLUTIONS

www.connectpositronic.com

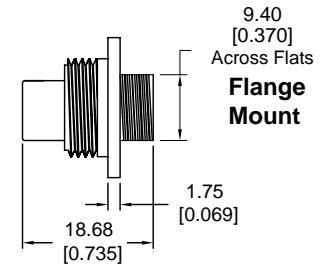
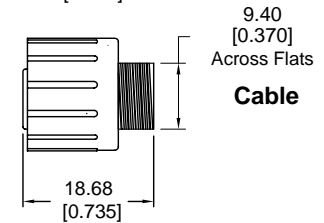
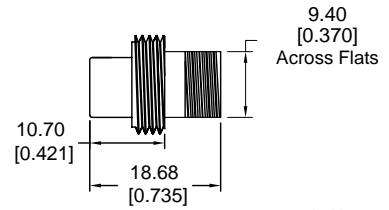


THREADED LOCKING SYSTEM

Male Connector

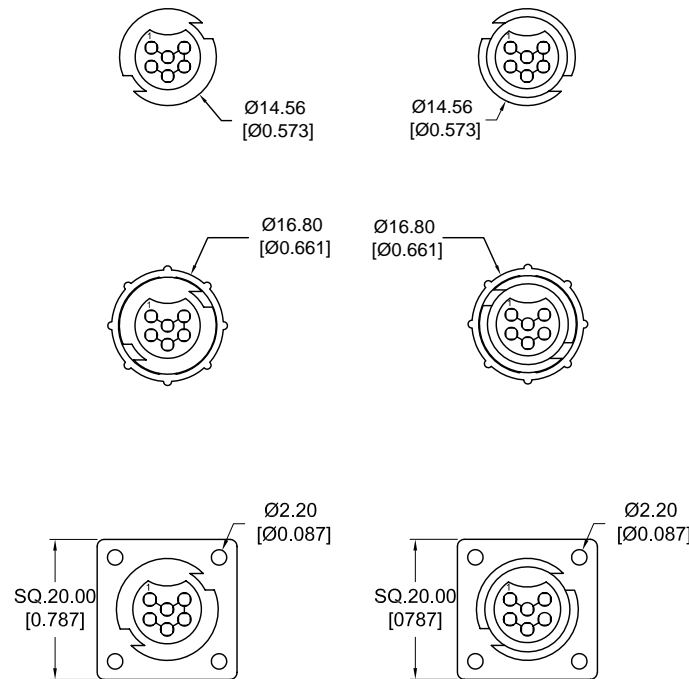
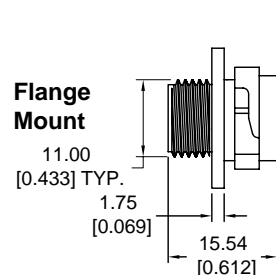
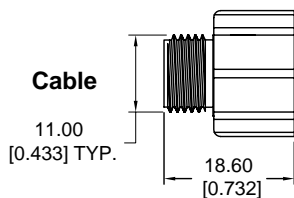
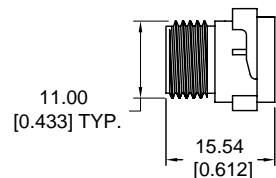


Female Connector

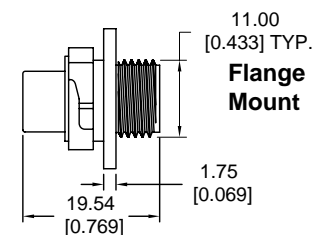
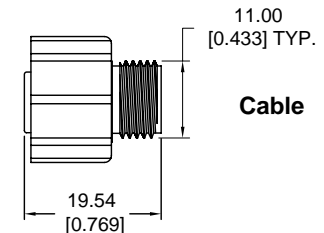
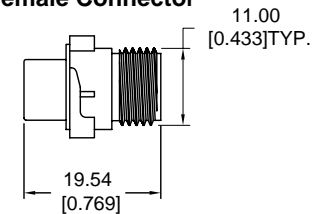


TWIST LOCKING SYSTEM

Male Connector

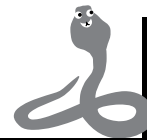


Female Connector



Above Dimensions are same for both BKC320 and BKC620 versions.

Solder Cup Contacts / Accessories

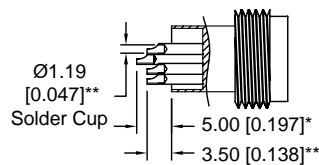


**BABY KING
COBRA**
Circular Connectors

Solder Cup Contacts

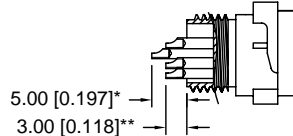
Male Connector

Typical Part Number:
BKC620M2T10

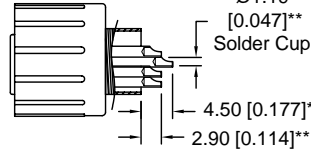


Typical Part Number:
BKC620M2TW10

Specify code M2TW
in Step 2



$\varnothing 1.19$
[0.047]**
Solder Cup

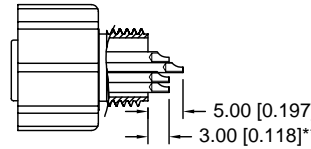


Female Connector

Typical Part Number:
BKC620F2T20

Typical Part Number:
BKC620F2TW30

Specify code F2TW in
Step 2

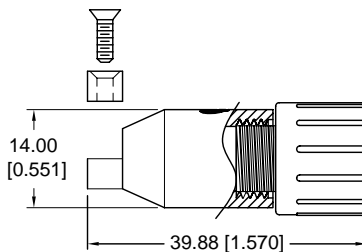


* applicable for BKC620 only.

** applicable for BKC620 and BKC320.

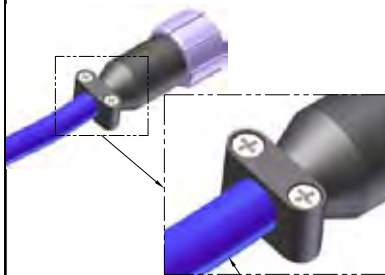
ACCESSORIES

Connector with Hood Male or Female



Materials:

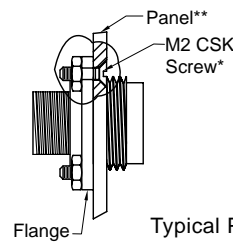
Hood & Clamp: Nylon, UL 94V-0.
Screws: Steel with zinc plate.



Note: Hood design can accommodate
jacketed cable \varnothing between 4.50mm
[0.177] to 6.00mm [0.236]

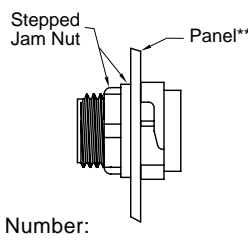
Panel Mounting Option

Rear Panel Mount

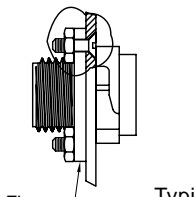


Typical Part Number:
BKC320M2T1FT
BKC620M2T1PF

Front Panel Mount

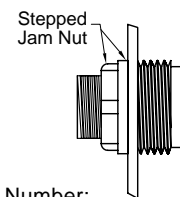


Typical Part Number:
BKC320M2TW1P
BKC620M2TW1P



Typical Part Number:

BKC320M2TW1PF
BKC620M2TW1PF



Materials:

Screws and Nuts: Steel with zinc plate.

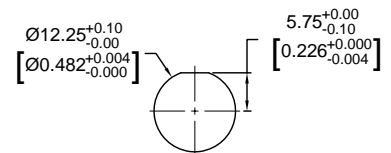
*Screw and nut shown for reference only.

**Panel thickness 1.50 [0.059] max only.

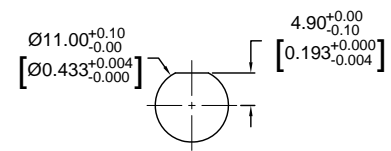
Panel Cutout

Front Mount (Jam Nut)

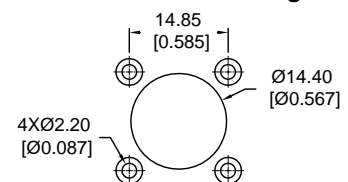
Twist Lock Cutout



Threaded Lock Cutout



Rear Mount Cutout for Threaded Lock or Twist Lock Connector with Flange

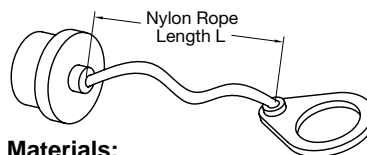


Dust Cover

Panel Mount



Cable



Materials:

Dust Cover: Glass-Filled Nylon, UL 94V-0.

Ordering Part Numbers:
(Female Dust Cover Part Number)

5132-19-1 L=100[3.937]

5132-19-2 L=35[1.378]

For Male Dust Cover, please consult factory.
The above part numbers to be ordered separately.

Unless otherwise specified, dimensional tolerances are:

- 1) Male contact mating diameters : ± 0.03 [0.001]
- 2) Contact termination diameters : ± 0.08 [0.003]
- 3) All other diameters : ± 0.13 [0.005]
- 4) All other dimensions : ± 0.38 [0.015]

Dimensions are in millimeters [inches].
All dimensions are subject to change.

**For Overmolded
BKC Series Cable Assemblies.
Please Contact Sales.**

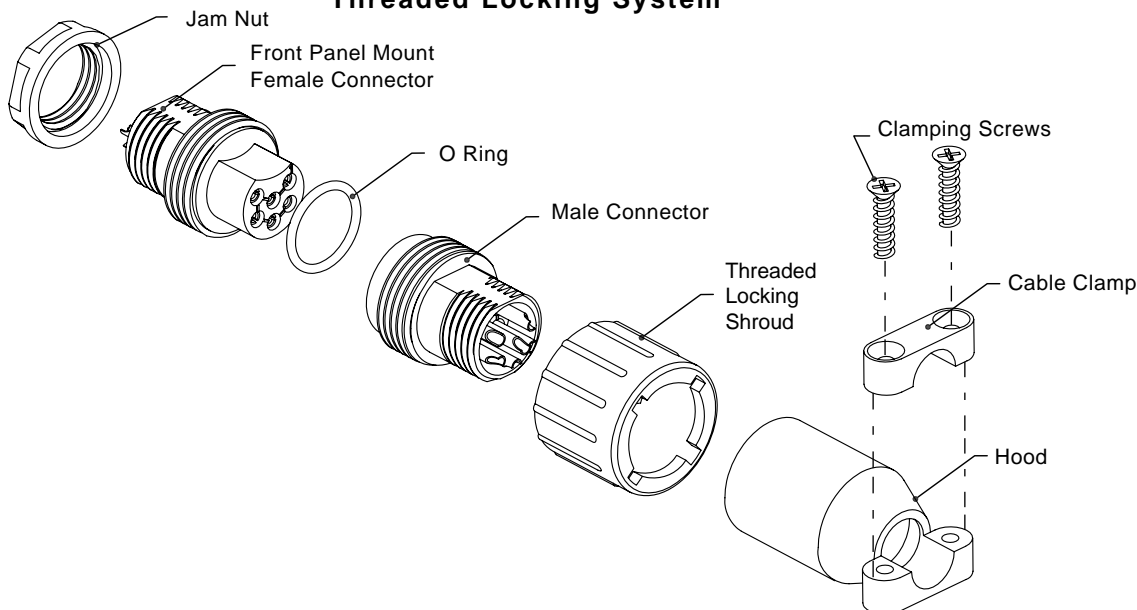




TYPICAL CONNECTOR ASSEMBLY & ORDERING INFORMATION



Typical Connector Assembly Threaded Locking System



Connector Ordering Information

Specify complete connector by following step 1 through step 5.

Step	1	2	3	4	5
Example	BKC620	F2T1	PF	/AA	- XXX

STEP 1: CONNECTOR VERSION

Baby King Cobra Series -
BKC620 : Six (6) size 20 contacts.
BKC320 : Three (3) size 20 contacts.

STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS

M2T1 : Threaded Male, solder cup, fixed contacts.
(Supplied Without Threaded Locking Shroud)
F2T1 : Threaded Female, solder cup, fixed contacts.
(Supplied Without Threaded Locking Shroud)
M2T2 : Threaded Male, solder cup, fixed contacts.
(Supplied With Threaded Locking Shroud)
F2T2 : Threaded Female, solder cup, fixed contacts.
(Supplied With Threaded Locking Shroud)
(M2T1 mates only with F2T2 or F2T1.)
(F2T1 mates only with M2T2 or M2T1.)

M2TW1 : Twist Male, solder cup, fixed contacts.
(Supplied without Twist Locking Shroud)
F2TW1 : Twist Female, solder cup, fixed contacts
(Supplied without Twist Locking Shroud)
M2TW3 : Twist Male, solder cup, fixed contacts.
(Supplied with Twist Locking Shroud)
F2TW3 : Twist Female, solder cup, fixed contacts.
(Supplied with Twist Locking Shroud)
(M2TW1 mates only with F2TW3 or F2TW1.)
(F2TW1 mates only with M2TW3 or M2TW1.)

STEP 6 - SPECIAL OPTIONS

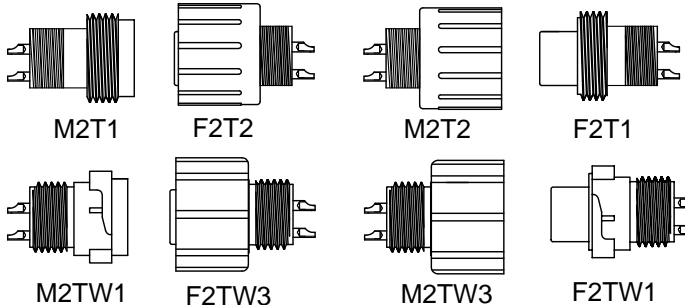
Consult factory for special options.

STEP 4: ENVIRONMENTAL COMPLIANCE OPTION

/AA : Compliance per EU Directive 2002/95/EC (RoHS)
Example: BKC620M2T2P/AA.
Note : If RoHS legislation is not required, this step will not be used.
Example: BKC620M2T2P.

STEP 3: MOUNTING STYLES AND HOOD

0 : None.
P : Panel mount with jam nut and without flange.
(Available in Front Mount version only)
PF : Panel mount with Flange and without jam nut.
(Available in Rear Mount version only)
J : Hood.



Above views applicable for both BKC620 and BKC320 versions.

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

POSITRONIC INDUSTRIES, INC.

423 N Campbell Ave, PO Box 8247
Springfield, MO 65801, USA
Telephone (417) 866-2322
Fax (417) 866-4115
Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

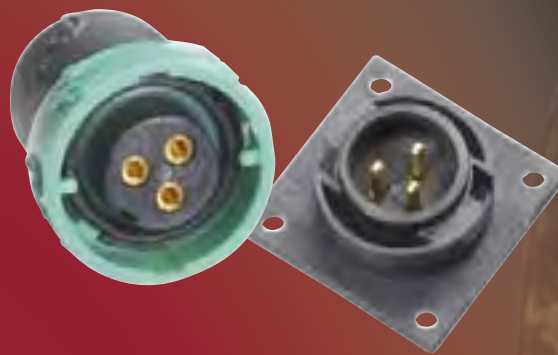
Zone Industrielle d'Engachies
46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 (0) 5 6263 4491
Fax 33 (0) 5 6263 5117
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

Blk 3014A
Ubi Road 1 #07-01
Singapore 408703
Telephone 65 6842 1419
Fax 65 6842 1421
singapore@connectpositronic.com

KING COBRA

Rugged & Economical Circular Connector Systems

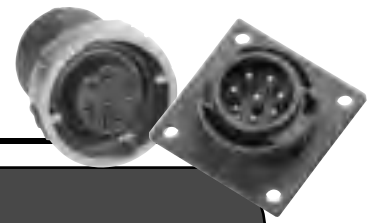


PROFESSIONAL-QUALITY IP65 - RATED CIRCULAR CONNECTORS



- IP65 Environmental Rating
- Cable, Panel And PC Mount Options
- Solid Machined Contacts
- Unique "Twist-Lock" Mechanism

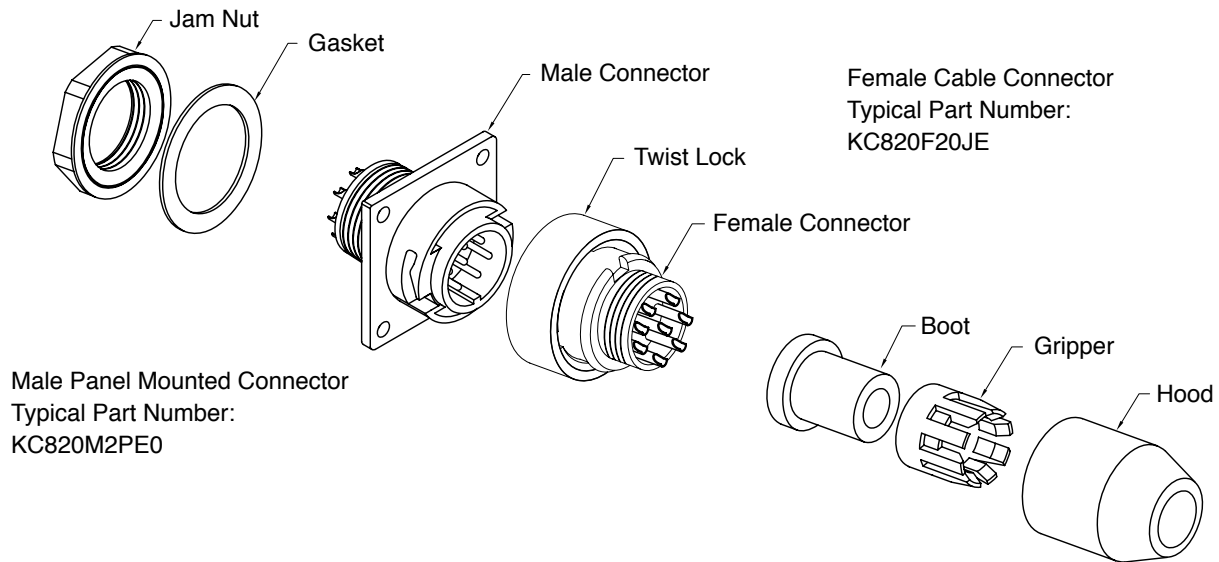
Positronic Industries
www.connectpositronic.com



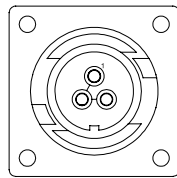
FEATURES:

- Circular “Twist-Lock” connectors with competitive pricing!
- Dust and water ingress protection to IP65 per IEC 60529.
- High reliability power and signal solid machined contacts.
- High mating cycle life and vibration-resistant capabilities!

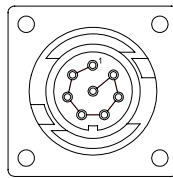
Typical Connector Assembly



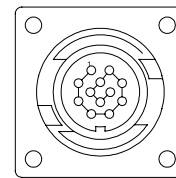
Connector Versions



KC316:
Three (3) Size 16
Power Contacts



KC820:
Eight (8) Size 20
Signal Contacts



KC1222:
Twelve (12) Size 22
Removable Signal Contacts

Unless otherwise specified, dimensional tolerances are:

- | | |
|----------------------------------|----------------------|
| 1) Male contact mating diameters | : ± 0.03 [0.001] |
| 2) Contact termination diameters | : ± 0.08 [0.003] |
| 3) All other diameters | : ± 0.13 [0.005] |
| 4) All other dimensions | : ± 0.38 [0.015] |

Dimensions are in millimeters [inches]. All dimensions are subject to change.

Catalog A-004 rev. NC

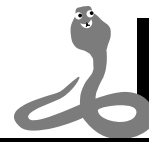
Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.



Positronic Industries, Inc
www.connectpositronic.com
www.positronicasia.com



TECHNICAL INFORMATION



KING COBRA
Circular Connectors

Technical Characteristics

Materials and Finishes

Insulator:	Glass-filled nylon, UL 94V-0.
Contacts:	Precision machined copper alloy with gold over nickel plate.

Electrical Characteristics

Contact Current Ratings

Size 16 Contacts:	20.0 amperes.
Size 20 Contacts:	7.5 amperes.
Size 22 Contacts:	3.0 amperes.

Initial Contact Resistance per IEC 512-2, Test 2b.

Size 16 Contacts:	0.003 ohms, maximum.
Size 20/22 Contacts:	0.005 ohms, maximum.

Insulator Resistance per IEC 512-2, Test 3a.

Insulator:	5 G ohms, minimum.
------------	--------------------

Proof Voltage

Size 16 Contacts:	1300 V r.m.s.
Size 20/22 Contacts:	1000 V r.m.s.

Working Voltage

Size 16 Contacts:	433 V r.m.s.
Size 20/22 Contacts:	333 V r.m.s.

Climatic Characteristics

Working temperature: -55°C to +125°C

Dust and Water Ingress Protection: IP65 per IEC 60529 in mated condition (when jacketed cable is used). Degree of protection is dust-tight (no ingress of dust) and protected against water projected in jets from any direction.

Mechanical Characteristics

Polarization: Provided in insulator design.

Removable Contacts: Insert contact in rear face of insulator; release from front face of insulator. Size 22 Female contacts feature "Open Entry" 500 cycles design and "Closed Entry" 1000 cycles minimum design options.

Fixed Contacts: Size 16 female contacts feature "Closed Entry" 1000 cycles minimum design. (Consult factory for higher cycle options.) Size 20 female contacts feature "Open Entry" 500 cycles design. (Consult factory for "Closed Entry" options.)

Contact Retention in Insulator:

Size 16 Contacts:	45 N [10 lbs.] minimum.
Size 20/22 Contacts:	27 N [6 lbs.] minimum.

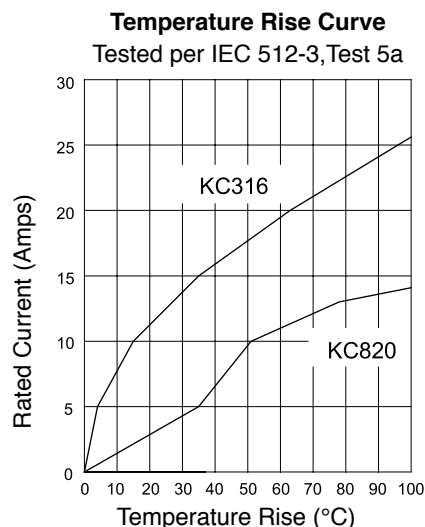
Coupling System: Twist lock.

Shock and Vibration: Pending. (Consult factory)

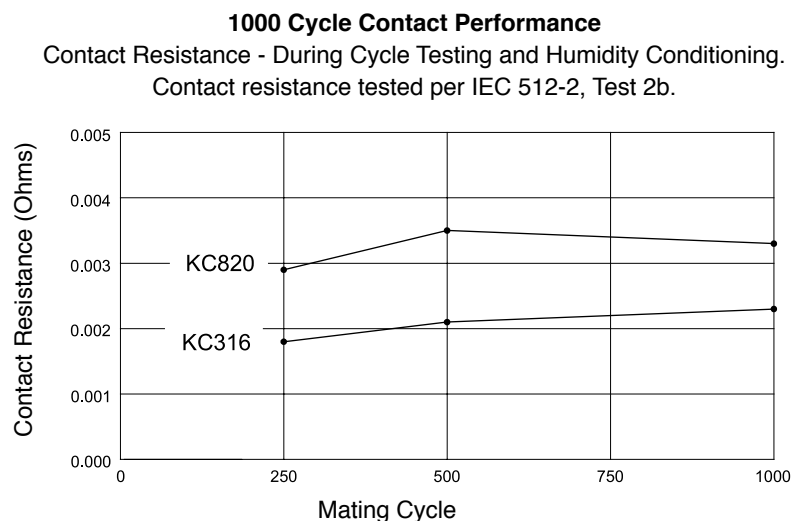
Recognized

UL certification in process.
Consult factory for TÜV recognition.

Temperature Rise Curve and Contact Performance



Above curves developed separately using (a) KC316 connectors and 16 AWG wires, and (b) KC820 connectors and 20 AWG wires. All contacts under load.



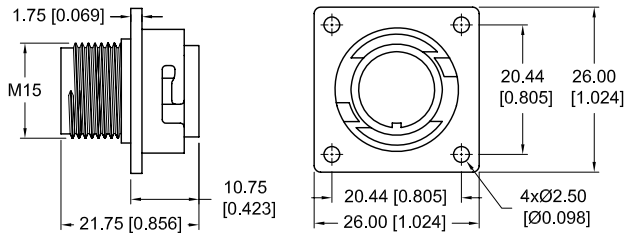
Humidity conditioning per EIA-364-31B, Method II (Condition A) after 250, 500 and 1000 mating cycles. Above curves developed separately using (a) KC316 connectors, and (b) KC820 connectors.



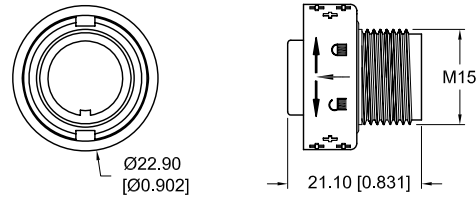


Outline Dimensions

Male Connector



Female Connector

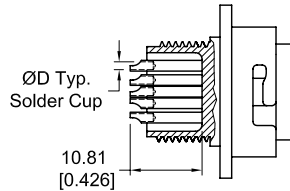


Solder Cup Contacts

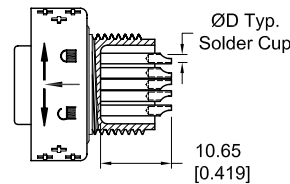
Available in versions KC316 and KC820 only

Male Connector Typical Part Number: KC820M200

Specify code M2 in Step 2



Version	ØD
KC316	1.40 mm [0.055 inch]
KC820	1.19 mm [0.047 inch]



Female Connector Typical Part Number: KC820F200

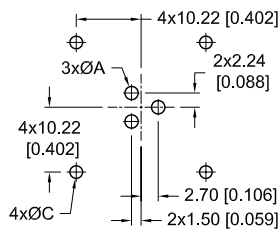
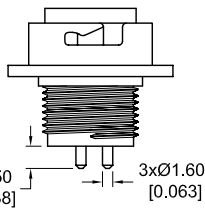
Specify code F2 in Step 2

PCB Mount Contact Dimensions and PCB Hole Patterns Straight and Right Angle (90°) PCB Mount Male Connectors

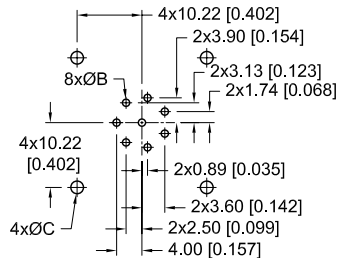
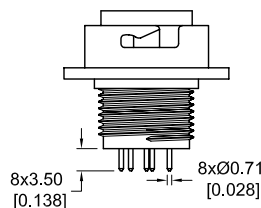
Straight PCB Mount

(Available in male connectors only)
Specify code M3 in Step 2

Version 316



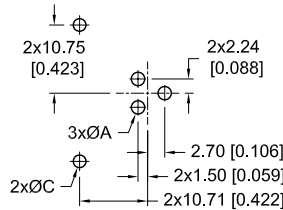
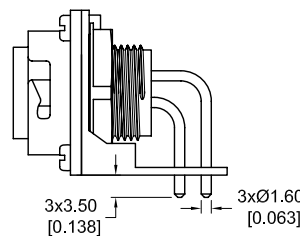
Version 820



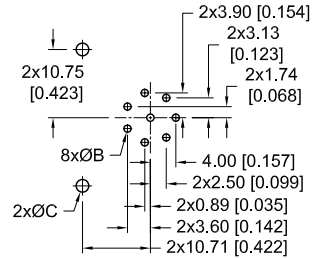
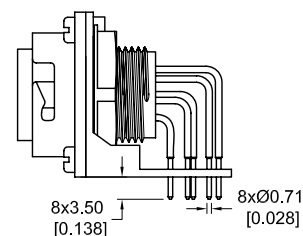
Right Angle (90°) PCB Mount

(Available in male connectors only)
Specify code M4 in Step 2

Version 316



Version 820



Note: Contact factory for availability of Female PCB Mount versions.

Suggested PCB Hole Sizes and Mounting Screw:

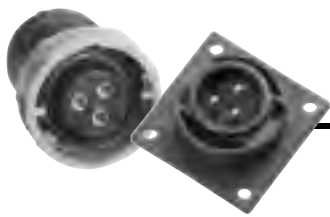
Suggested ØA = Ø2.03 [0.080] holes for size 16 contact termination holes. (Version 316).

Suggested ØB = Ø1.14 [0.045] holes for size 20 contact termination holes. (Version 820).

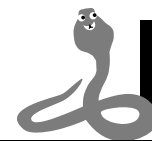
Suggested ØC = Ø2.00±0.08 [0.079±0.003] holes for use with push-on fasteners.

Suggested ØC = Ø2.54 [0.100] holes for mounting connector with screws. Screws ordered separately. Screw part number 4546-7-1-16 for PCB thickness between 1.00 mm [0.039 inch] and 2.50 mm [0.098 inch]. (Consult factory for other PCB thickness requirements.)





PANEL MOUNT CONNECTORS, ACCESSORIES AND SCREW TERMINATION VERSION



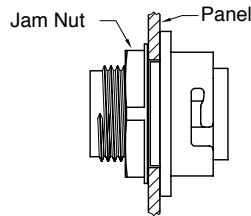
KING COBRA
Circular Connectors

Panel Mounting Options

Available in male connectors only

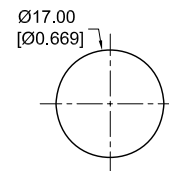
Front Panel Mount Typical Part Number: KC316M2P0

Specify code P in Step 3



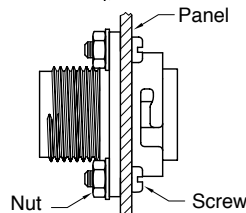
Panel Cutout for Front Panel Mount

Maximum thickness 2.00 mm
[0.079 inch]



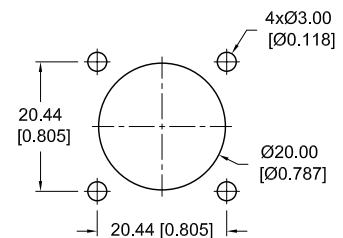
Rear Panel Mount Typical Part Number: KC820M2PR0

Screws, nuts and washers
supplied seperately.



Panel Cutout for Rear Panel Mount

Maximum thickness 2.00 mm
[0.079 inch]



(Screws and nuts shown for reference only)

Accessories

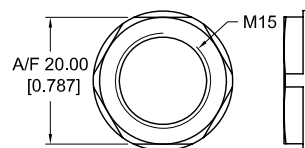
Jam Nut

Supplied factory installed to
connector.

(See ordering information
- code P in step 3)

Material:

Jam nut: Nylon, UL 94V-0.



Spacers

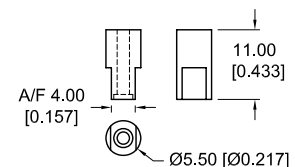
Supplied factory installed to
connector with 4 screws.

Specify code S in step 3

Materials and Finish:

Spacer: Nylon, UL 94V-0.

Screw: Steel with zinc plate



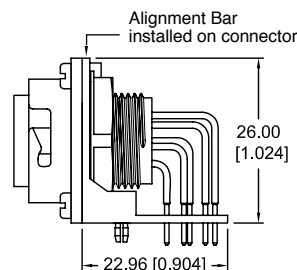
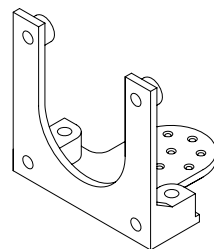
Alignment Bar

Supplied factory installed on
all right angle (90°) PCB mount
connectors with 4 screws.

Materials and Finish:

Alignment Bar: Nylon, UL 94V-0.

Screw: Steel with zinc plate.



See page 3 for
mounting hole details.

Spacers with Push-on Fasteners

Supplied factory installed to connector.

Specify code S6 in step 3

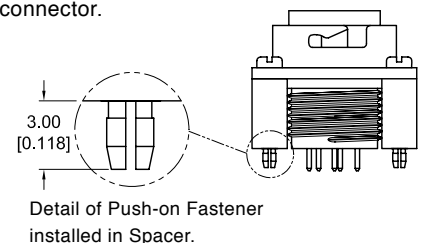
Materials and Finishes:

Push-on Fastener:

Copper alloy with tin plate.

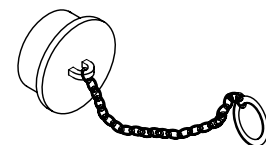
Spacer: Nylon, UL 94V-0.

Screw: Steel with zinc plate.



Dust Cover

Consult factory for availability.



Screw Termination Connector

Typical Part Number: KC316F700

Specify code F7 in Step 2.

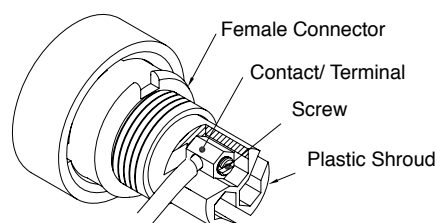
Available in version KC316 female connector only.

Materials and Finish:

Terminal and Screw:

Copper alloy with tin plate

Plastic Shroud: Nylon, UL 94V-0.



Note:

Screw Termination accomodates
maximum wire size AWG 18 [1.0 mm²].



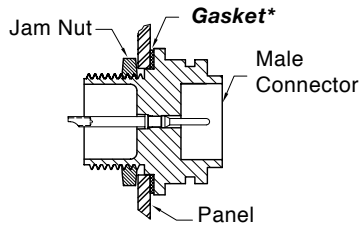


Detail of IP65 Version Connectors and Hood

Male Front Panel Mount Connector

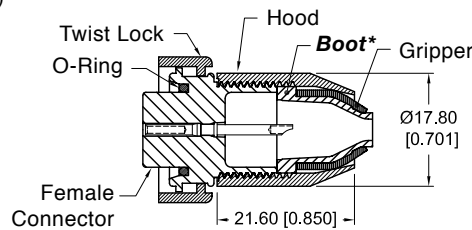
Typical Part Number: KC820M2PE0

(Consult factory for rear panel mount IP65 applications.)



Female Cable Connector

Typical Part Number: KC316F20JE



Materials:

Hood and Gripper: Nylon, UL 94V-0.
Boot and Gasket: Nitrile.
O-Ring: Silicon.

Note:

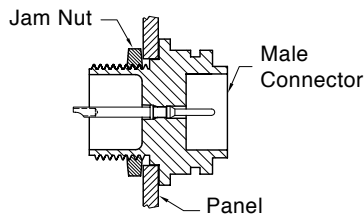
Hood design can accommodate jacketed cable diameters between 4.00mm [0.157 inch] and 7.00mm [0.276 inch].

** For IP65 version only*

Detail of Non-IP65 Version Connectors and Hood

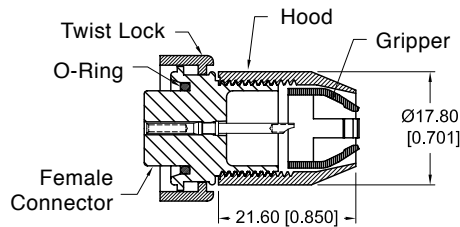
Male Front Panel Mount Connector

Typical Part Number: KC316M2P0



Female Cable Connector

Typical Part Number: KC820F20J



Materials:

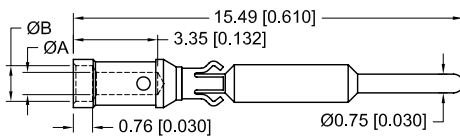
Hood and Gripper: Nylon, UL 94V-0.
O-Ring: Silicon.

Note:

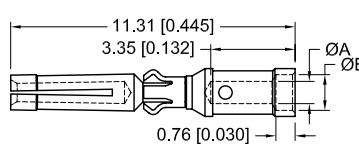
Hood design can accommodate jacketed cable diameters between 4.00mm [0.157 inch] and 7.00mm [0.276 inch].

Removable Crimp Contacts for Version KC1222

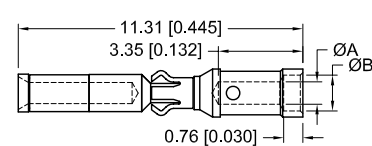
MC422N



FC422N4 (Open Entry)



FC422N2 (Closed Entry)



Male Contact	Female Contact	Wire Size AWG [mm²]	ØA	ØB
MC422N	FC422N4 FC422N2	22 [0.3] - 24 [0.25]	0.89 [0.035]	1.42 [0.056]

Please use correct wire size and it should be smaller than ØA of the contact
(Consult factory for solder style removable contacts.)

Recommended Tools for Crimp Contacts

Contact Extraction Tool
Shown for reference only



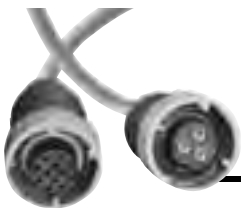
Contact Insertion Tool
Shown for reference only



Cycle-Controlled Step
Adjustable Hand Crimp Tool
Shown for reference only

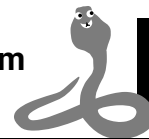


Contact Size	Contact Extraction Tool	Contact Insertion Tool	Hand Crimp Tool	Semi-Automatic Crimp Machine
Size 22	9081-3	9099-1	9507-0 with 9502-12 positioner (male contacts) 9507-0 with 9502-23 positioner (female contacts)	9550-1



Ordering Information - Code Numbering System

Specify complete connector by following step 1 through step 4



KING COBRA
Circular Connectors

Step	1	2	3	4	5	6	King Cobra Version 316	
Example	KC316	M2	PE	JE	/AA	- XXX		
STEP 1: CONNECTOR VERSION KC316 : King Cobra Series - Three (3) Size 16 Contacts		STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS M2 : Male panel mount, solder cup, fixed contacts. M3 : Male straight PCB mount, solder. M4 : Male right angle (90°) PCB mount, solder. F2 : Female cable connector, solder cup, fixed contacts. (Select 0 in Step 3) F7 : Female cable connector, screw termination. Supplied with contacts. (Select 0 in Step 3) Note : Consult factory for other connector versions.		STEP 3: MOUNTING STYLES 0 : None. S : Spacer for straight PCB mount connectors. S6 : Spacer with push-on fastener for straight PCB mount connectors. N : Push-on fastener for use with alignment bar and right angle (90°) PCB mount connectors. P : Front panel mount male connectors with jam nut, non-IP65. PE : Front panel mount male connectors with jam nut and gasket, IP65. PR : Rear panel mount male connectors, non-IP65. PRE : Rear panel mount male connectors with gasket, IP65.		STEP 4: HOODS 0 : None. J : Hood with gripper, non-IP65. JE : Hood with gripper and boot, IP65.		STEP 5: RoHS COMPLIANCE OPTIONS /AA : Compliance per EU Directive 2002/95/EC (RoHS) Note : If RoHS legislation is not required, this step will not be used.
						STEP 6 - SPECIAL OPTIONS Consult factory.		

Step	1	2	3	4	5	6	King Cobra Version 820	
Example	KC820	F2	0	JE	/AA	- XXX		
STEP 1: CONNECTOR VERSION KC820 : King Cobra Series - Eight (8) Size 20 Contacts		STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS M2 : Male panel mount, solder cup, fixed contacts. M3 : Male straight PCB mount, solder. M4 : Male right angle (90°) PCB mount, solder. F2 : Female cable connector, solder cup, fixed contacts. (Select 0 in Step 3)		STEP 3: MOUNTING STYLES 0 : None. S : Spacer for straight PCB mount connectors. S6 : Spacer with push-on fastener for straight PCB mount connectors. N : Push-on fastener for use with alignment bar and right angle (90°) PCB mount connectors. P : Front panel mount male connectors with jam nut, non-IP65. PE : Front panel mount male connectors with jam nut and gasket, IP65. PR : Rear panel mount male connectors, non-IP65. PRE : Rear panel mount male connectors with gasket, IP65.		STEP 4: HOODS 0 : None. J : Hood with gripper, non-IP65 JE : Hood with gripper and boot, IP65.		STEP 5: RoHS COMPLIANCE OPTIONS /AA : Compliance per EU Directive 2002/95/EC (RoHS) Note : If RoHS legislation is not required, this step will not be used.
						STEP 6 - SPECIAL OPTIONS Consult factory.		

Step	1	2	3	4	5	6	King Cobra Version 1222	
Example	KC1222	M1	P	J	/AA	- XXX		
STEP 1: CONNECTOR VERSION KC1222 : King Cobra Series - Twelve (12) Size 22 Contacts		STEP 2: CONNECTOR GENDER AND TYPE OF CONTACTS M1 : Male panel mount, removable crimp contacts. F1 : Female cable connector, removable crimp contacts. (Select 0 in Step 3) Note: Contacts ordered separately.		STEP 3: MOUNTING STYLES 0 : None. P : Front panel mount male connectors with jam nut, non-IP65. PE : Front panel mount male connectors with jam nut and gasket, IP65. PR : Rear panel mount male connectors, non-IP65. PRE : Rear panel mount male connectors with gasket, IP65.		STEP 4: HOODS 0 : None. J : Hood with gripper, non-IP65 JE : Hood with gripper and boot, IP65.		STEP 5: RoHS COMPLIANCE OPTIONS /AA : Compliance per EU Directive 2002/95/EC (RoHS) Note : If RoHS legislation is not required, this step will not be used.
						STEP 6 - SPECIAL OPTIONS Consult factory.		



ASIA / PACIFIC SALES OFFICES

Singapore Factory, Sales and Engineering Office

Singapore	+65 6842 1419
Japan	+813 5812 7720
South Korea	+82 31 909 8047
India	+91 20 2439 4810
Taiwan	+886 2 2937 8775
China	+86 755 2643 7578
Shanghai	+86 21 5078 2096
Shenzhen	+86 755 2643 7578
Malaysia	+60 4 644 9688
New Zealand	+64 3 358 5154
Australia	+61 2 4362 3293

singapore@connectpositronic.com

japan@connectpositronic.com

korea@connectpositronic.com

india@connectpositronic.com

taiwan@connectpositronic.com

shanghai@connectpositronic.com

shenzhen@connectpositronic.com

newzealand@connectpositronic.com

australia@connectpositronic.com

NORTH AMERICAN SALES OFFICES

United States, Springfield, Missouri

Factory and Sales Office 800 641 4054

Puerto Rico Sales Office 787 841 0920

Mexico Sales Office 800 872 7674

Canada Sales Office 800 327 8272

EUROPEAN SALES OFFICES

France, Auch Factory and Sales 33 (0) 5 6263 4491

Northern France Sales Office 33 (0) 1 4588 1388

Southern France Sales Office 33 (0) 4 6772 8028

Italy Sales Office 39 (0) 2 5411 6106

Germany Sales Office 49 (0) 23 5163 4739

Europe & Middle East Technical Agents:

Austria, Benelux, Denmark, Finland, Greece,

United Kingdom, Ireland, Scotland, Slovenia,

Spain, Sweden, Switzerland, Israel and Turkey

POSITRONIC INDUSTRIES, INC

423 N Campbell Avenue, P O Box 8247,

Springfield, MO 65801, USA

Telephone: 1 417 866 2322

Fax: 1 417 866 4115

Email: info@connectpositronic.com

POSITRONIC INDUSTRIES, SA

Zone Industrielle Est, 46 Route d'Engachies,

F32020, Auch Cedex 9, France

Telephone: 33 05 62 63 44 91

Telecopieur: 33 (0) 5 62 63 51 17

Email: contact@connectpositronic.com

POSITRONIC ASIA PTE LTD

3014A Ubi Road 1 # 07-01 Singapore 408703

Telephone: 65 6842 1419 Fax: 65 6842 1421

Email: singapore@connectpositronic.com

www.connectpositronic.com



KING COBRA
Rugged & Economical Circular Connector Systems



Positronic Industries
www.connectpositronic.com





WONDERSUN

POWER CONNECTOR



Technical Characteristics

Materials and Finishes

Insulator: Glass-filled Nylon, UL 94V-0,
Color: Black Standard.
(Consult factory for availability of other colors.)

Contacts: Precision machined copper alloy
with gold flash over nickel.
Other finishes available upon request.

Electrical Characteristics

Contact Current Rating (per UL 1977):
Size 8 Contacts: 60 amperes, continuous
(standard material).
Consult factory for high conductivity material.

Initial Contact Resistance max.
(per IEC 512-2, Test 2b):
Size 8 Contacts: 0.001 ohms (standard material).

Insulator Resistance (per IEC 512-2, Test 3a): 5 G ohms.

Voltage Proof: 2200 V r.m.s.
Working Voltage: 600 V r.m.s.
Hot Pluggable: Consult factory.

Mechanical Characteristics

Polarization: Provided by connector body design.

Removable Contacts: Insert contact in rear face
of insulator; release from front face
of insulator with a contact
extraction tool. Female contacts
feature "Closed Entry" design.

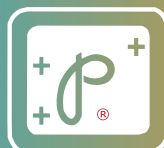
Removable Contact Retention: 67 N [15 lbs.] per IEC 512-8,
Test 15a.
in Connector Body:

Mechanical Operations: 1,000 cycles

Climatic Characteristics

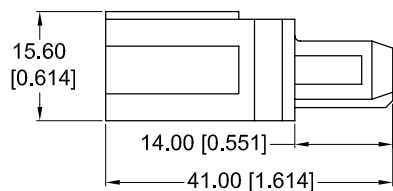
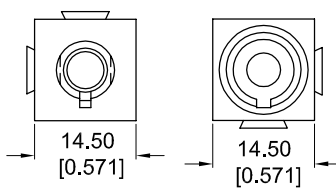
Working temperature: -55°C to +125°C

UL : Consult factory.
TÜV: Consult factory.

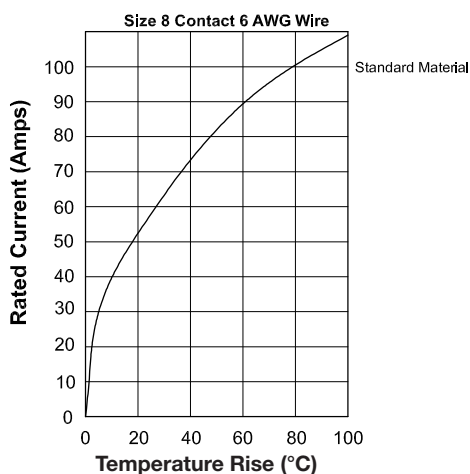


POSITRONIC
GLOBAL *Connector* SOLUTIONS

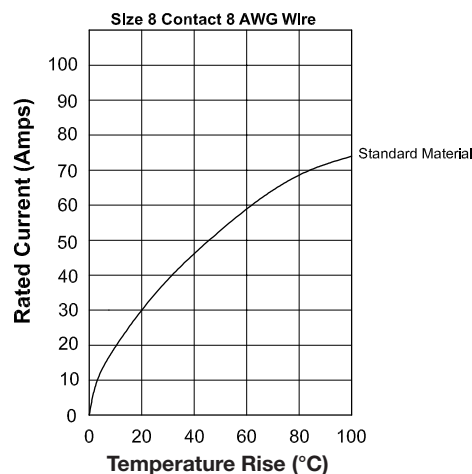
www.connectpositronic.com

Outline Dimensions

Female

Male
Temperature Rise Curves

Tested per IEC 512-3, Test 5a

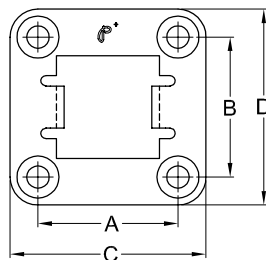


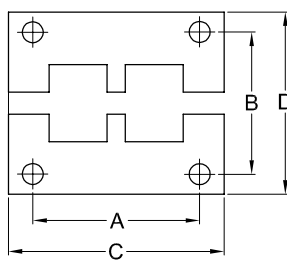
Above curves developed using Size 8 contact with 6 AWG wire.

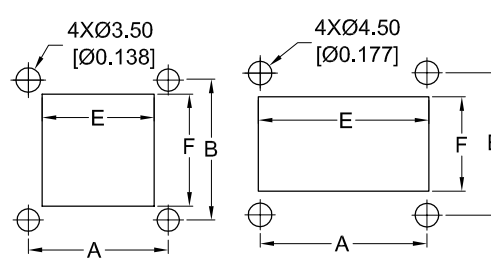


Above curves developed using Size 8 contact with 8 AWG wire.

Consult factory for high conductive contact material results.

Accessories & Contacts
Mounting Bracket
Plastic Mount Bracket for Single Connector

 Materials and Finishes: PC UL 94V-0.
 Thickness: 2.00 [0.079].

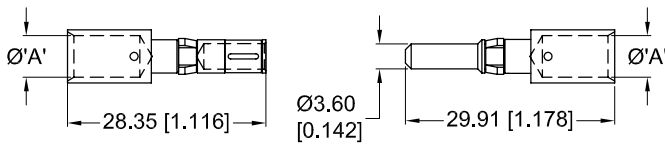
Metal Mount Brackets for Two Connectors

 Materials and Finishes: Steel, Zinc Plate,
 Thickness: 1.50 [0.059].

Panel Mount Cut Out Dimensions


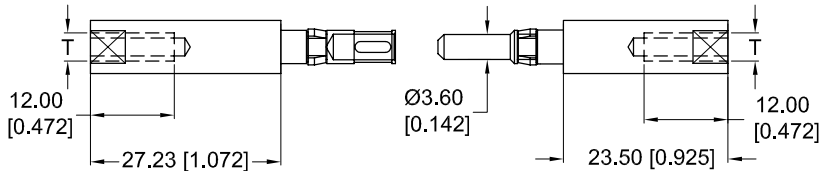
(Part number 5071-4-0 for metal mount plate, order separately)

Part No.	Description.	A	B	C	D	E	F
5071-12-*	Single Connector	20.00 [0.787]	20.00 [0.787]	28.00 [1.102]	28.00 [1.102]	16.00 [0.629]	16.00 [0.629]
5071-4-0	Two Connectors	31.80 [1.252]	27.10 [0.854]	41.50 [1.634]	35.20 [1.386]	32.50 [1.279]	18.00 [0.709]

Removable Crimp Contacts



Removable Internal Threads Contacts (Bus Bar Contacts)

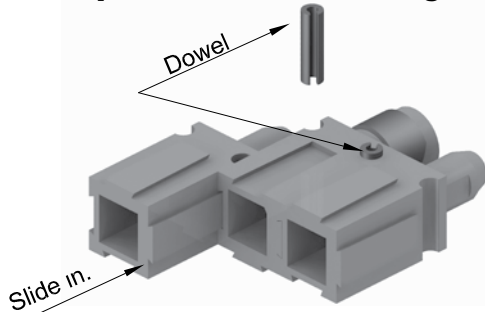


Consult sales for availability of high conductivity material.

Part Number (Standard Material)	Wire Size AWG [mm ²]	ØA
Female Contacts		
WSFC86N2	6 [13.5]	5.92 [0.233]
WSFC88N2	8 [8.50]	4.60 [0.181]
Male Contacts		
WSMC86N	6 [13.5]	5.92 [0.233]
WSMC88N	8 [8.50]	4.60 [0.181]

Part Number (Standard Material)	Thread T
Female Contacts	
WSFIT08M	M4 x0.7
WSFIT08S	8-32 UNC 2B
Male Contacts	
WSMIT08M	M4 x0.7
WSMIT08S	8-32 UNC 2B

Multiple Connector Locking Feature



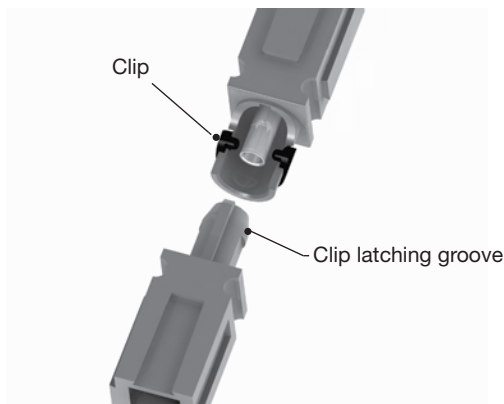
Connectors can be latched together via the built in attachment groove.
(Use dowel (part number 5071-13-0) for locking, order separately)
Material : Nylon, UL 94V-0

Polarization

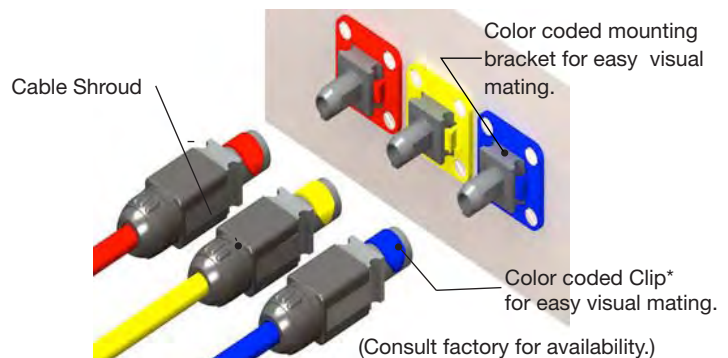


For multiple contact configurations, alternate male & female combination to avoid mismatching.

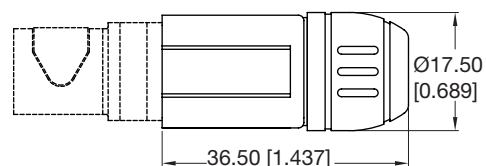
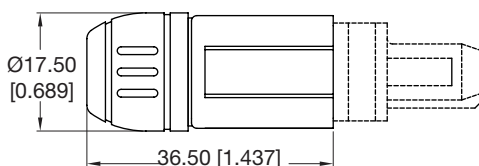
Locking Mechanism



Color coding for easy mating



Cable Shroud



*Cable shroud will accept max. 7.00mm[0.275] diameter wire. Material : Nylon, UL 94V-0
(Consult factory for availability.)



Step	1	2	3	4	5	6
Example	WSS	01	M	P1	/AA	XXX
STEP 1: Basic Series WSS: Single Connector WSD: Two Connectors						STEP 6: Special Options Consult factory for color code Flange and Clip part numbers. (see page 3)
STEP 2: Type of Contacts 01 : Removable contact. Contacts ordered separately.				STEP 5: Environmental Compliance options /AA : Compliant per EU Directive 2002/95/EC (RoHS) Example: WSS01M0/AA Note: If no environmental options are required, this step will not be used. Example: WSS01M0		
STEPS 3: Connector Gender M - Male F - Female		STEP 4: Mounting Style and Cable Shroud 0 : No hardware. P1 : Plastic panel mount bracket for one connector. (Select WSS in Step 1) J : Cable Shroud. (Mounting plate for two connector version order separately Part number 5071-4-0. see page 2 for details.)				

* Dowel required for multiple cable assembly see page 3 for details (order dowels separately)

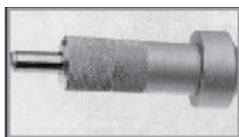
Unless otherwise specified, dimensional tolerances are:

- 1) Male contact mating diameters : ± 0.03 [0.001]
- 2) Contact termination diameters : ± 0.08 [0.003]
- 3) All other diameters : ± 0.13 [0.005]
- 4) All other dimensions : ± 0.38 [0.015]

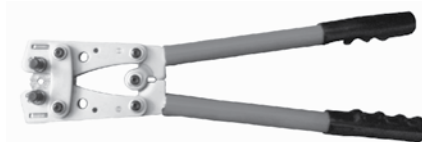
Dimensions are in millimeters [inches].
 All dimensions are subject to change.

Recommended Tools for Removable Contacts

Contact Extraction Tool



Adjustable Hand Crimp Tool



**Positronic
 Recommended
 Conductor Tensile
 Strength (Pull Test)**
 To ensure proper crimp

Contact Size	Contact Extraction Tool	Hand Crimp Tool	Wire Size
Size 8	5071-100-0	5071-14-0	6 AWG [13.5 mm ²]
Size 8	5071-100-0	5071-14-0	8 AWG [8.5 mm ²]

Wire Size	Axial Load
6 AWG [13.5 mm ²]	1200N [270 lbs.]
8 AWG [8.5 mm ²]	890N [200 lbs.]

As per SAE AS39029

Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

POSITRONIC INDUSTRIES, INC.
 423 N Campbell Ave, PO Box 8247
 Springfield, MO 65801, USA
 Telephone 1 417 866-2322
 Fax 1 417 866-4115
 info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.
 Zone Industrielle d'Engachies
 46 Route d'Engachies
 France 32020 Auch Cedex 9
 Telephone 33 (0) 5 6263 4491
 Fax 33 (0) 5 6263 5117
 contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.
 Blk 3014A
 Ubi Road 1 #07-01
 Singapore 408703
 Telephone 65 6842 1419
 Fax 65 6842 1421
 singapore@connectpositronic.com

LOW PROFILE SCORPION

Slim Modular Power & Signal Contact Connectors



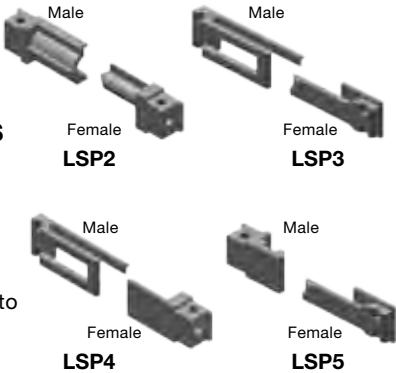
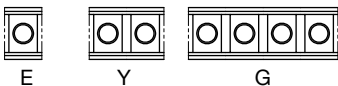
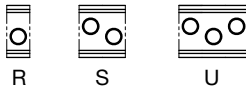
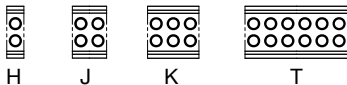

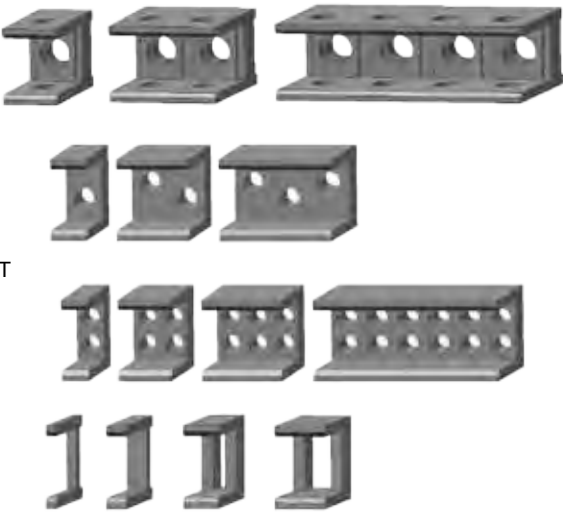
- Four power contact options:
55 amps, 38 amps, 12 amps and 3 amps versions
plus high density signal lines.
- Blind mating, float mount, panel mount and
cable connector options with unique locking system.
- Ventilation option to offer increased air cooling.



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS

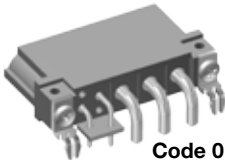
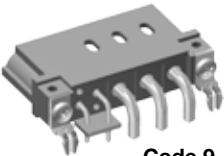





Ordering Information - Code Numbering System

Specify complete connector by selecting an option from step 1 through 9
(Consult sales for connectors' length exceeding 101mm or part numbers using more than 30 characters)

STEP	1	2	3	4	5
Example	LSP	2	YKNRS	4	M
STEP 1: BASIC SERIES LSP : Low Profile Scorpion Series.					
STEP 2: GUIDE AND LOCKING OPTIONS 2 : Blind Mating System. 3 : Locking Latch System, for cable to cable connectors only. 4 : Locking Latch System, for male cable to female panel/board connectors only. 5 : Locking Latch System, for female cable to male panel/board connectors only.					
STEP 3: CONNECTOR VARIANTS Size 12 power contact module, E or Y or G  Size 20 power contact module, R or S or U  Size 22 signal contact module, H or J or K or T  Blank module, N or N2 or N3 or N4  Consult sales for availability of other modules. It is recommended signal contacts are positioned at the center of connector.					
STEP 4: CONTACT TERMINATION TYPE 1 : Crimp contacts, order separately. 3 : Solder, straight PCB mount. 38 : Solder, straight PCB mount. High conductivity power contacts. 4 : Solder, right angle (90°) PCB mount. 48 : Solder, right angle (90°) PCB mount. High conductivity power contacts. *93 : Press-fit compliant terminations, straight PCB mount, for use with PCB not thinner than 2.29[0.090]. *938 : Press-fit compliant terminations, straight PCB mount, for use with PCB not thinner than 2.29[0.090]. High conductivity power contacts. * Consult sales for availability of press-fit compliant terminations or mixed contact termination type.					
STEP 5: CONNECTOR GENDER M : Male F : Female - Standard contacts. S : Female - Posiband contacts					

Notes:

- 1 A Low Profile Scorpion part number can be a maximum of 30 characters. If the connector configuration exceeds this number, please consult sales for a special part number for your unique requirement.
- 2 Consult sales for connector length exceeding 101.00 mm [3.976 inch].
- 3 Alignment bar is only available for size 20 and size 22 right angle (90°) contacts.

6	7	8	9	10		11
0	N	9	A1	/AA	-	XXX
						STEP 11: SPECIAL OPTIONS Consult sales for Special Options
						STEP 10: ENVIRONMENTAL COMPLIANCE OPTIONS /AA : Compliant per EU Directive 2002/95/EC (RoHS) Example: LSP5YN2HK4M000A1/AA Note: This step will not be used if compliance to environmental legislation is not required. Example: LSP5YN2HK4M000A1
						STEP 9: CONTACT PLATING 1 : Crimp contacts ordered separately. A1 : Gold flash over nickel on mating end termination end. A2 : Gold flash over nickel on mating end and 0.005[0.0002] tin-lead solder coat on termination end. Not available with code 93, 938 in step 4. C1 : 0.00076[0.000030] gold over nickel on mating end and termination end. C2 : 0.00076[0.000030] gold over nickel on mating end and 0.005[0.0002] tin-lead solder coat on termination end. Not available with code 93, 938 in step 4. D1 : 0.00127[0.000050] gold over nickel on mating end and termination end. D2 : 0.00127[0.000050] gold over nickel on mating end and 0.005[0.0002] tin-lead solder coat on termination end. Not available with code 93, 938 in step 4. Consult sales for availability of silver plating.
						STEP 8: VENT OPTIONS (For power contacts) 0 : Connector body is not vented. 9 : Connector body vented for air cooling.  Code 0  Code 9
						STEP 7: MOUNTING STYLE 0 : Not applicable / No additional accessories. B : 90° metal mounting bracket (through hole), for right angle PCB mounted connectors use code 4 or 48, see step 4. LN : 90° metal mounting bracket (board lock), for right angle PCB mounted connectors use code 4 or 48, see step 4. N : Push-on fastener for PCB mounted connectors use code 3, 38, 4 or 48, see step 4.  Code B  Code LN  Code N
						STEP 6: PANEL MOUNT 0 : Not applicable / No added accessories. 6 : Easy release mounting clip for 1.50mm [0.059 inch] thick panel, for male panel mount connector only. 82 : Float mount for 1.50 mm [0.059 inch] thick panel. 83 : Float mount for 2.30 mm [0.091 inch] thick panel.  Code 6  Code 82 or 83



Materials and Finishes:

Insulators:	Glass-filled polyester, UL 94V-0. Black color (Blue optional).
Contacts:	Precision machined copper alloy with gold flash over nickel plate. Other finishes available upon request.
Mounting Brackets:	Brass with tin plate.
Push-on Fasteners:	Copper alloy with tin plate.
Float Mount Bushings:	Steel with zinc plate.

Electrical Characteristics:

Contact Current Rating (See Page 5 for Power Contact Details)

Standard Conductivity Contacts:

Size 12 Contacts:	38 amperes, continuous.
Size 20 Contacts:	12 amperes, continuous.
Size 22 Contacts:	3 amperes, nominal.

High Conductivity Contacts:

Size 12 Contacts:	55 amperes, continuous.
--------------------------	-------------------------

Initial Contact Resistance (Standard Conductivity Contacts)

per IEC 512-2, Test 2b:

Size 12 Contacts:	0.001 ohms, maximum.
Size 20 Contacts:	0.005 ohms, maximum.
Size 22 Contacts:	0.005 ohms, maximum.

Initial Contact Resistance (High Conductivity Contacts)

per IEC 512-2, Test 2b:

Size 12 Contacts:	0.0007 ohms, maximum.
--------------------------	-----------------------

Insulation Resistance per IEC 512-2, Test 3a, Method A:

5 G ohms.

Voltage Proof per IEC 512-2, Test 4a, Method C:

Size 12 and size 20 contacts, 2200 V r.m.s.

Size 22 contacts, 1800 V r.m.s.

Working Voltage, Clearance and Creepage Distances:

Consult sales for information about your specific connector choice.

Hot Pluggable [50 Couplings per UL 1977, paragraph 15]:

Size 12 Contacts:	Contact sales for availability.
--------------------------	---------------------------------

Climatic Characteristic:

Working Temperature: -55°C to +125°C.

Mechanical Characteristics:

Blind Mating System:	Integral guide feature allows for misalignment up to 2.00 mm [0.079 inch].
-----------------------------	--

Locking Latch System:	Design of connector body provides locking system for cable to cable, cable to printed board and cable to panel mount applications.
------------------------------	---

Polarization:	Design of connector body provides polarization features.
----------------------	---

Removable Crimp Contacts:	Size 12, 20 and 22 female contacts feature closed entry design for highest reliability. Install contacts from rear of insulator. To remove contacts, release from front of insulator with extraction tool and remove from rear of insulator.
--------------------------------------	---

Removable Contact Retention in Connector Body per IEC 512-8, Test 15a:

Size 12 Contacts: 67N [15 lbs.] minimum.

Size 20 and

Size 22 Contacts: 27N [6 lbs.] minimum.

Non Removable

Crimp Contacts (Size 22 only):	Size 22 female contacts feature closed entry design for highest reliability. Insert contact from rear of insulator.
---	---

Non Removable Crimp Contact Retention in Connector Body per IEC 512-8, Test 15a:

Size 22 Contacts: 27N [6 lbs.] minimum.

Fixed Contacts:	Printed board terminations, both straight and right angle. Size 12 female contacts feature closed entry design for highest reliability. Size 20 and 22 female contact has open entry design.
------------------------	--

Fixed Contact Retention in Connector Body per IEC 512-8, Test 15a:

Size 12 Contacts: 45N [10 lbs.] minimum.

Size 20 Contacts: 45N [10 lbs.] minimum.

Size 22 Contacts: 27N [6 lbs.] minimum.

Sequential Contact Mating System:

Size 12 Contacts: Two levels.

Size 20 Contacts: One level.
(Two levels for Printed Board mount connectors.)

Size 22 Contacts: One level.
(Two levels for Printed Board mount connectors.)

Printed Board and Panel Mounting Holes:

Mounting holes provided in connector body for both printed board
and panel mounting. Self-tapping screws or push-on fastener
options are available.

Mechanical Operations

per IEC 512-5: 1000 cycles minimum.

Recognized:

UL and TÜV: Consult sales.

Products described within this catalog may be protected
by one or more of the following U.S. patents:

#4,721,472
#4,900,261
#5,255,580
#5,329,697
#6,260,268

Patented in Canada, 1992. Other Patents Pending.

Unless otherwise specified, dimensional tolerances are:

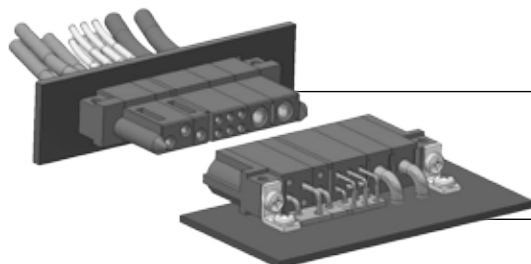
- 1) Male contact mating diameters : ± 0.03 [0.001]
- 2) Contact termination diameters : ± 0.08 [0.003]
- 3) All other diameters : ± 0.13 [0.005]
- 4) All other dimensions : ± 0.38 [0.015]

Dimensions are in millimeters [inches]. All dimensions are subject to change.

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic®, Positronic Industries, Inc.®, P+ logo, Positronic Global Connector Solutions®, Connector Excellence® and their logo designs are registered trademarks of Positronic Industries, Inc.
PICMG® logo is a registered trademark of the PCI Industrial Computers Manufacturers Group.





Board to Panel with Blind Mating System

Female Panel Mount Connector

Typical part number:

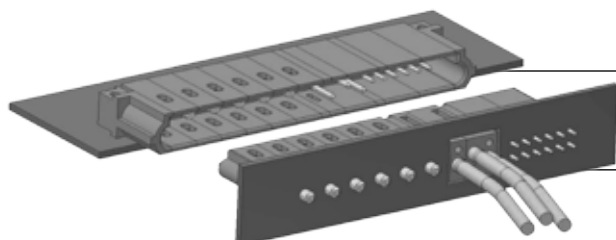
LSP2YKNRS1F0001

(Contacts ordered separately)

Male Right Angle PCB Mount Connector

Typical part number:

LSP2YKNRS4M0B0A1



Board to Board with Crimp Contacts Pass-through

Male Right Angle (90°) PCB Connector

Typical part number:

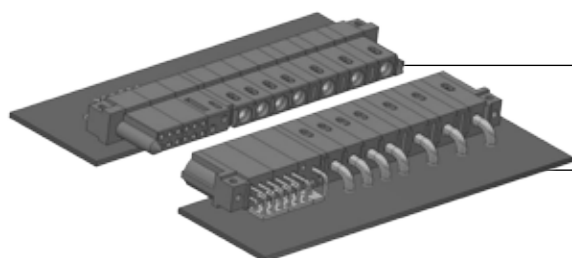
LSP2YGN2UN2T4M009A1

Female Straight PCB Connector

Typical part number:

LSP2YGN2UN2T3F009A1-PAxxx

(Crimp contacts ordered separately)



Board to Board with Blind Mating System

Female Right Angle(90°) PCB Connector

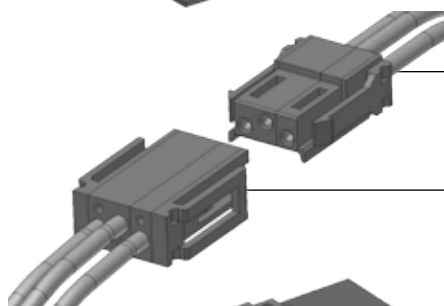
Typical part number:

LSP2EN3EN3EN3GN2ST4F009A1

Male Right Angle(90°) PCB Connector,

Typical part number:

LSP2EN3EN3EN3GN2ST4M009A1



Cable to Cable with Locking Latch System

Female Cable Connector

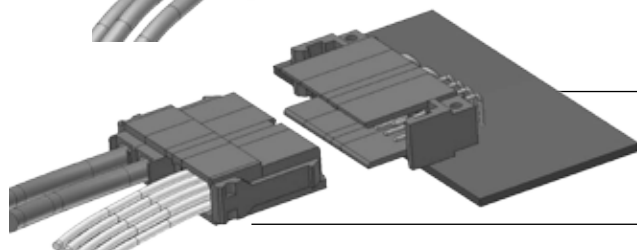
Typical part number: LSP3U1F0001

(Contacts ordered separately)

Male Cable Connector

Typical part number: LSP3U1M0001

(Contacts ordered separately)



Cable to Board with Locking Latch System

Male Right Angle PCB Mount Connector

Typical part number: LSP5YN2HK4M000A1

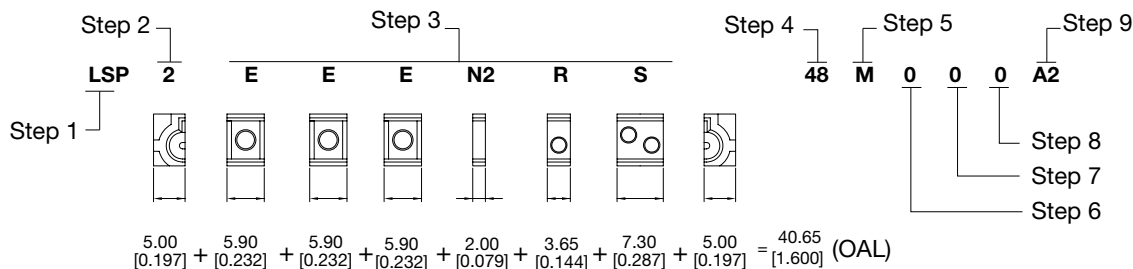
Female Cable Connector

Typical part number: LSP5YN2HK1F0001

(Contacts ordered separately)

How to calculate Over All Length (OAL) of a Low Profile Scorpion connector:

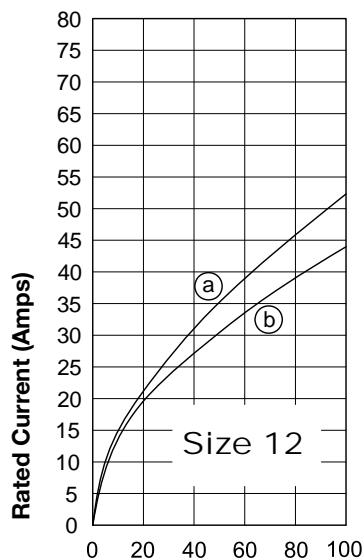
Overall Length (OAL) of a connector is the sum of all the modules length. Refer to example below for OAL calculation. See page 5 and 7 for individual module dimensions.





Temperature Rise Curves

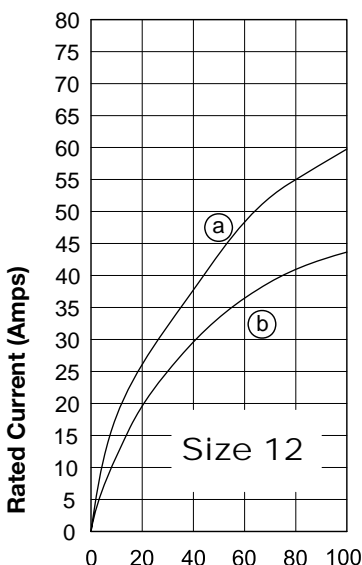
Tested per IEC Publication 512-3, Test 5a



Temperature Rise (°C)

(a) Developed with 3 size 12 high conductivity contact seated in code EEE module.

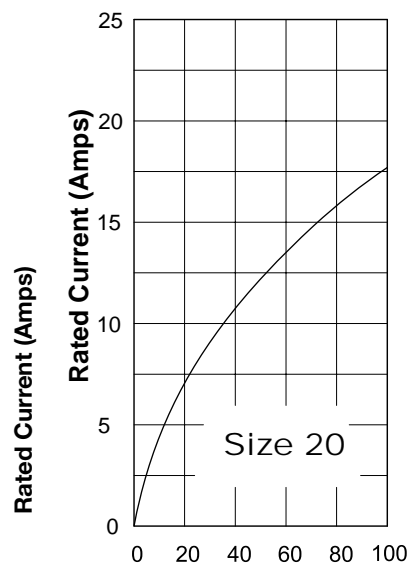
(b) Developed with 3 size 12 standard conductivity contact seated in code EEE module.



Temperature Rise (°C)

(a) Developed with 7 size 12 high conductivity contacts seated in code EN3EN3EN3EEEE module.

(b) Developed with 7 size 12 standard conductivity contacts seated in code EN3EN3EN3EEEE module.



Temperature Rise (°C)

Developed with 2 size 20 standard conductivity contacts seated in code S module.

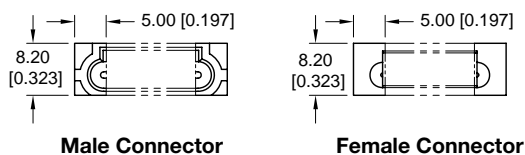
Contact sales if additional testings and current ratings are required.

Guide Systems and Locking Options

See Step 2 of Ordering Information

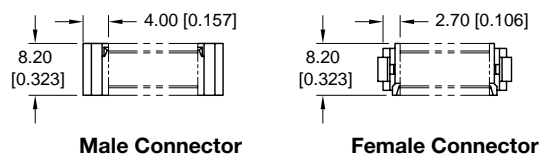
Blind Mating Guide System

Specify Code 2 in Step 2



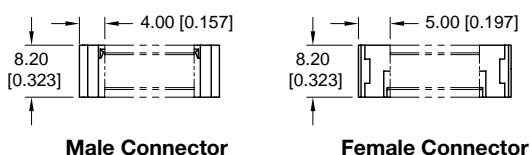
Cable to Cable Locking Latch System

Specify Code 3 in Step 2



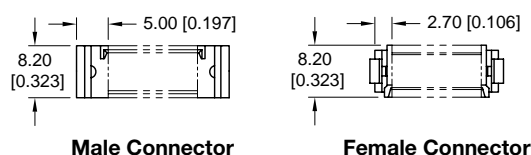
Male Cable to Female Panel/Board Locking Latch System

Specify Code 4 in Step 2



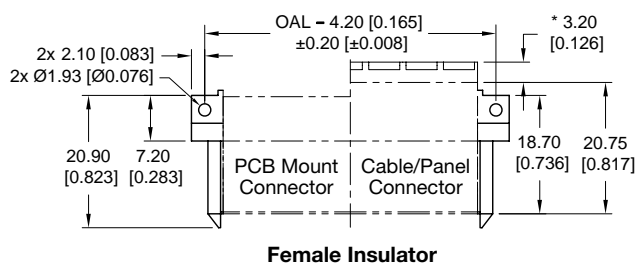
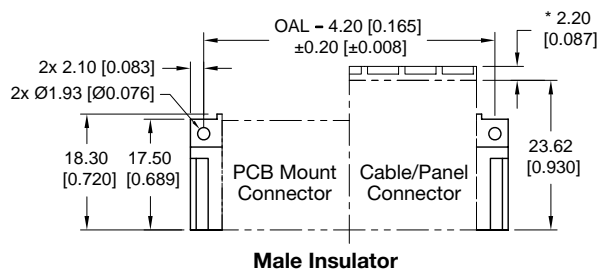
Female Cable to Male Panel/Board Locking Latch System

Specify Code 5 in Step 2



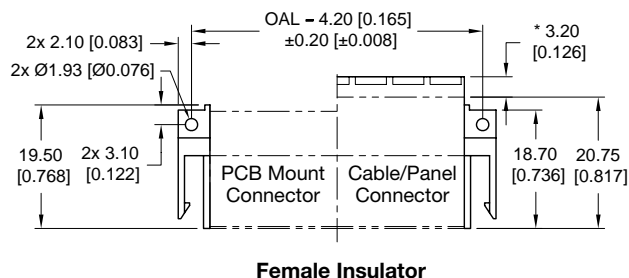
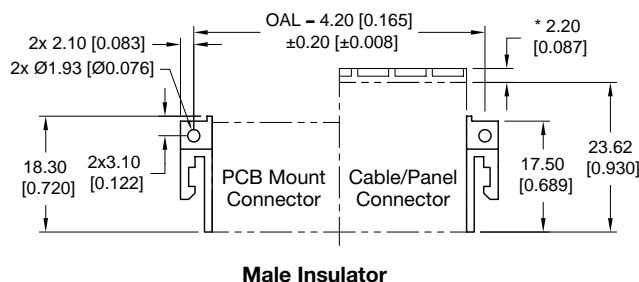
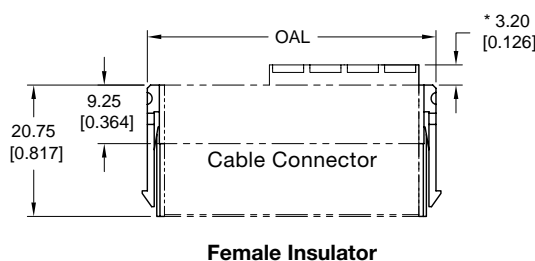
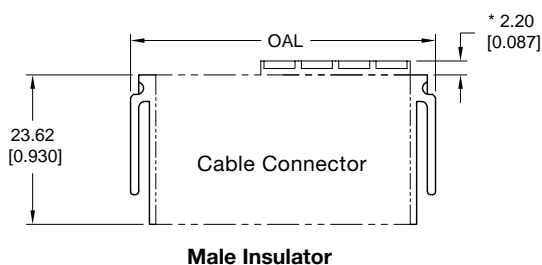


Insulator Dimensions when using Blind Mating System



* Dimension applicable for Size 12 power contact module only.

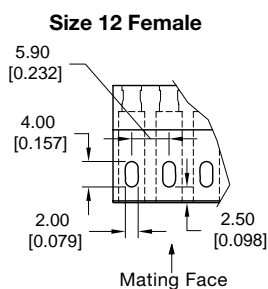
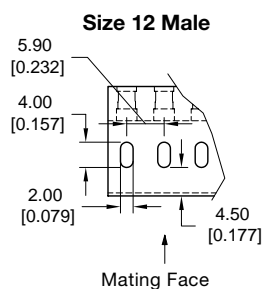
Insulator Dimensions when using Locking Latch System



* Dimension applicable for Size 12 power contact module only.

Venting Features

Specify Code 9 in Step 8 of Ordering Information



Venting feature is an outlet hole enabling air cooling onto a power contact.

In compliance with UL 1977 safety standard, section 10.2 Accessibility of live parts.

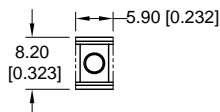


Module Options

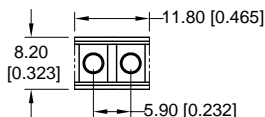
See Step 3 of Ordering information

Size 12 Power Contact Modules

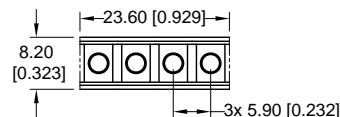
Module E



Module Y

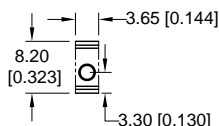


Module G

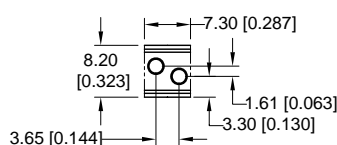


Size 20 Power / Signal Contact Modules

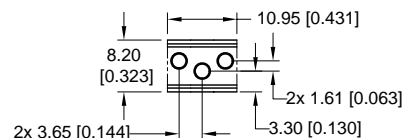
Module R



Module S

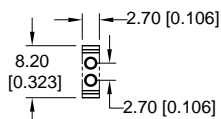


Module U

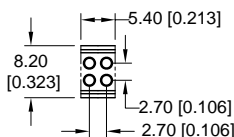


Size 22 Signal Contact Modules

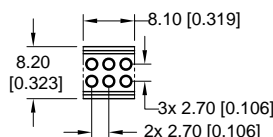
Module H



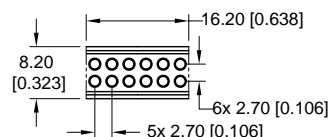
Module J



Module K

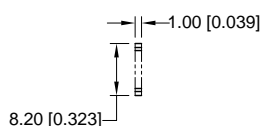


Module T

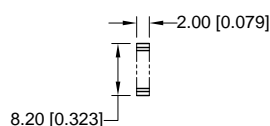


Blank Modules

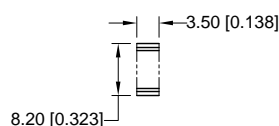
Module N



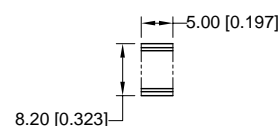
Module N2



Module N3



Module N4



All modules shown above are male modules.

Available in female straight and right angle (90°) PCB mount. Consult sales for availability of other modules.

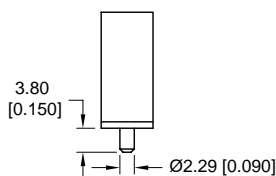
Contact Termination Dimensions

See Step 4 of Ordering information

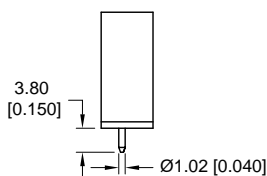
Straight PCB Mount Connectors

Specify Code 3 or 38 in Step 4

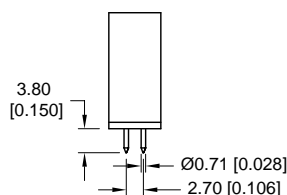
Size 12 contacts



Size 20 contacts



Size 22 contacts

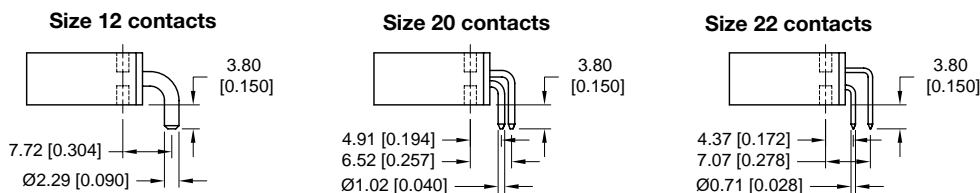


Code 3 is standard conductive material contact and code 38 is high conductivity material power contact.



Right Angle (90°) PCB Mount Connectors

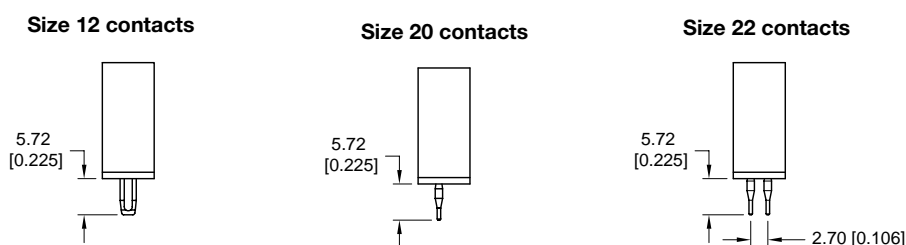
Specify Code 4 or 48 in Step 4



Code 4 is standard conductive material contact and code 48 is high conductivity material power contact.

Press-Fit Straight PCB Mount Connectors

Specify Code 93 or 938 in Step 4



Code 93 is standard conductive material contact and code 938 is high conductivity material power contact.

Male connector shown for reference. Dimensions also apply to female connector.

Note: Outline dimensions for Press-Fit Connectors are the same as those of Straight PCB Mount Versions. For Suggested Straight Mount PCB Holes Sizes of Compliant Press-Fit Connectors, please refer to SK6370 or consult sales for more informations.

Press-Fit User Information

Connectors-to-PCB installation instructions:

1. Insert the connector into the PCB or backplane and seat connector fully with seating/ support tool.
2. Secure the connector to the PCB or backplane using two self-tapping screws for plastic.
3. Consult factory for appropriate installation tools.

Mounting Screw

Material Options	Part Number	Thread Length	P.C.B Thickness
Steel	4546-7-1-16	6.35±0.76 [0.250±0.030]	2.36 [0.093]
Steel	4546-7-2-16	7.93±0.76 [0.312±0.030]	3.18 [0.125]
Steel	4546-7-3-16	9.53±0.76 [0.375±0.030]	4.45 [0.175]
Stainless Steel	4546-7-6-4	6.35±0.76 [0.250±0.030]	2.36 [0.093]
Stainless Steel	4546-7-7-4	7.93±0.76 [0.312±0.030]	3.18 [0.125]
Stainless Steel	4546-7-8-4	9.53±0.76 [0.375±0.030]	4.45 [0.175]

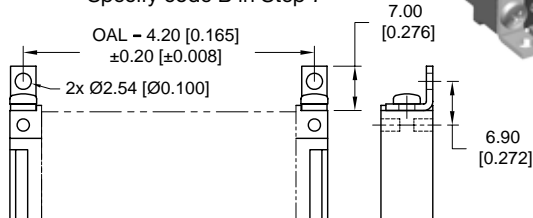


Accessories for PCB Mount

See Step 7 of Ordering Information

90° Through Hole Brackets

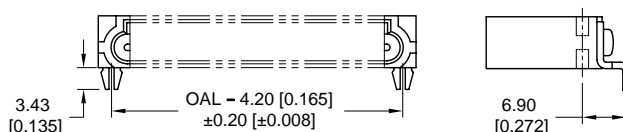
Specify code B in Step 7



Material and Finish: Brass with tin plate.

90° Board Lock Brackets

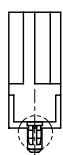
Specify code LN in Step 7



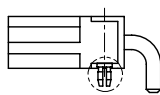
Material and Finish: Brass with tin plate.

Push-on Fasteners

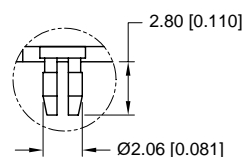
Specify code N in Step 7



Straight PCB Mount Connector



Right Angle (90°) PCB Mount Connector



Material and Finish:
Copper alloy with tin plate.

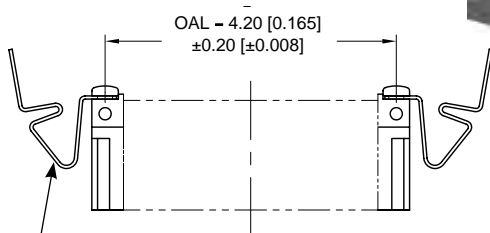
Male connector shown for reference only. Consult sales for mounting screw information.

Accessories for Panel Mount

See Step 6 of Ordering Information

Easy Release Mounting Clips

Specify code 6 in Step 6

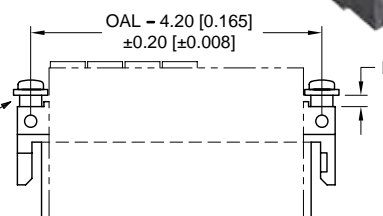


Material and Finish:
Beryllium copper with nickel plate.
For male connector only.

Float Mount Bushings

Specify Code 82 or 83 in Step 6

Material and Finish:
Steel with zinc plate.

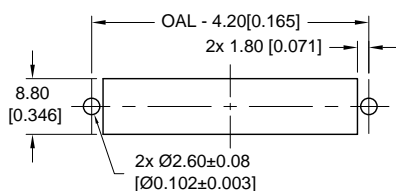


Code	Panel Thickness	Dimension F
82	1.50 [0.059]	1.80 [0.071]
83	2.30 [0.091]	2.60 [0.102]

Panel Cutout Dimensions

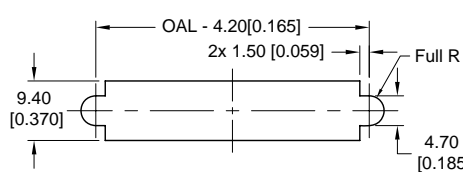
For Mounting Screws

Specify code 0 in Step 6



For Float Mounting

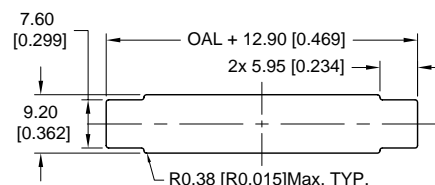
Specify code 82 or 83 in Step 6



For Quick Release Mounting Clip

Specify code 6 in Step 6

(Maximum panel thickness: 1.60 [0.063] nominal)



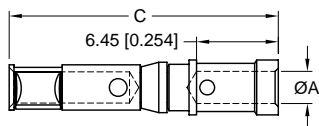
General tolerance for panel cutout dimensions is ± 0.13 [± 0.005].

To calculate OAL of connector. See example at bottom of page 4 **Typical LSP Modular Connectors**

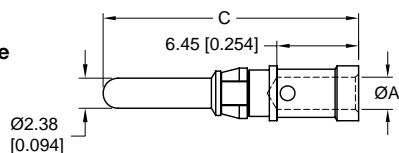


Size 12 Removable Crimp Contacts

Female



Male

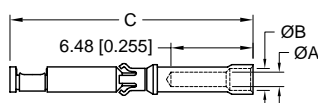


Part Number (Standard Conductivity Contacts)	Part Number (High Conductivity Contacts)	Wire Size AWG [mm²]	ØA	Sequential Mate	C
Female Contacts					
FC1210P2	FC1210P2S	10 [6.0]	3.10 [0.122]	N/A	21.25 [0.837]
FC1212P2	FC1212P2S	12 [4.0]	2.54 [0.100]		
Male Contacts					
MC1210N-PA563	MC1210NS-PA563	10 [6.0]	3.10 [0.122]	First	23.18 [0.912]
MC1210N	MC1210NS			Standard	20.18 [0.794]
MC1212N-PA563	MC1212NS-PA563	12 [4.0]	2.54 [0.100]	First	23.18 [0.912]
MC1212N	MC1212NS			Standard	20.18 [0.794]

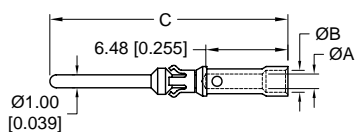
N/A - Not Applicable

Size 20 Removable Crimp Contacts

Female



Male

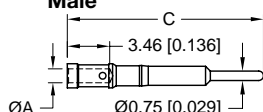


Part Number (Standard Conductivity Contacts)	Wire Size AWG [mm²]	ØA	ØB	Sequential Mate	C
Female Contacts					
FC718P3	18 [1.0]	1.40 [0.055]	N/A	N/A	19.19 [0.756]
FC720P3	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]		
Male Contacts					
MC718N	18 [1.0]	1.40 [0.055]	N/A	Standard	18.80 [0.740]
MC720N	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.73 [0.068]		

N/A - Not Applicable

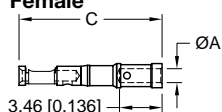
Size 22 Non Removable Crimp Contacts

Male



MC422T-PA908

Female

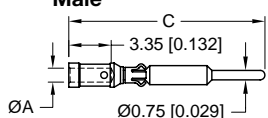


MC422T-PA908

Removable Contact	Non Removable Contact	Wire Size AWG [mm ²]	ØA	C
Female Contacts				
FC422P9	FC422T-PA908	22 - 26 [0.30] - [0.12]	0.89 [0.035]	11.41 [0.449]
Male Contacts				
MC422N9	MC422T-PA908	22 - 26 [0.30] - [0.12]	0.89 [0.035]	15.49 [0.610]

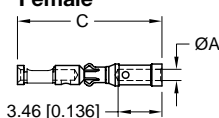
Size 22 Removable Crimp Contacts

Male



MC422N9

Female



FC422P9

Materials and Finishes:

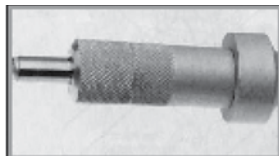
Precision machined copper alloy with gold flash over nickel.

Consult sales for other contact sizes, materials, finishes, termination styles and more details.

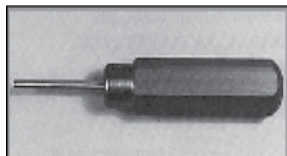


Recommended Tools for Crimp Contacts

Contact Extraction Tool



Contact Insertion Tool



Cycle-Controlled Step
Adjustable Hand Crimp Tool



Contact Size	Contact Extraction Tool	Contact Insertion Tool	Hand Crimp Tool
Size 12	2711-0-0	9099-3-0	9509-6-1 with 9509-6-2 positioner (*C1210** contacts) 9501-0 with 9502-38-0 positioner (MC1212** contacts) 9501-0 with 9502-37-0 positioner (FC1212** contacts)
Size 20	9081-2-0	9099-4-0	9507-0 with 9502-21 positioner (male contacts) 9507-0 with 9502-22 positioner (female contacts)
Size 22	^ 9081-3-0	9099-7-0	9507-0 with 9502-12-0 positioner (male contacts) 9507-0 with 9502-13-0 positioner (female contacts)

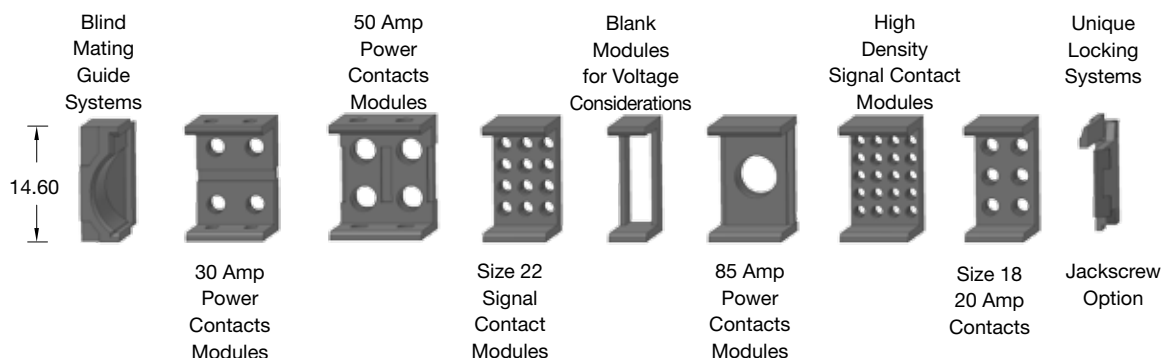
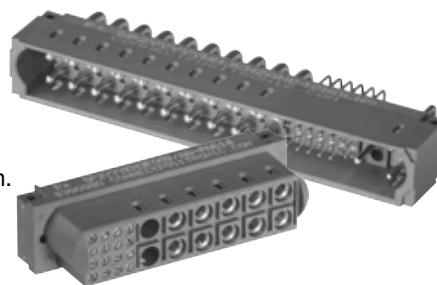
^ Not Applicable for Size 22 non-removable crimp contacts.
Consult sales for additional crimping tools and crimping information.

SCORPION MODULAR CONNECTORS

Complete Connector Customization - Quick and Affordable

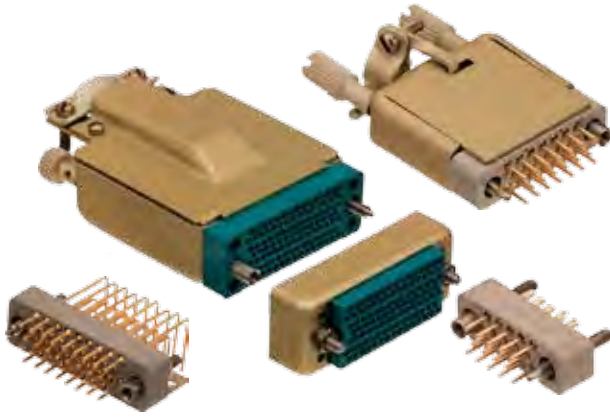


- Six power contact options: 20 amp versions through 85 amp.
- High density signal lines.
- Shielded contacts and high voltage options.
- Blind mating, float mount, panel mount and cable connector options with unique locking system.
- PC mount, crimp, and press fit terminations.
- Ventilation option to increase air cooling.
- Blank modules to increase voltage performance.



Please refer to Scorpion Series Catalog No. A-010. Rev B for additional informations

High Density Rectangular Connectors



SGM/SGMC/SMPL Series

CRIMP & SOLDER TERMINATIONS FOURTEEN CONTACT VARIANTS 4 through 104 poles

CONTACTS: Fixed and removable. Precision machined of solid copper alloy. Female contact is "closed entry" design for highest reliability. Current rating to 5 amperes continuous per contact. Gold flash over nickel plate. Other finishes available upon request. **TERMINATIONS:** Crimp; solder cup; straight and right angle solder printed board mount.

INSULATORS: Glass-filled DAP, U.L. 94V-0. Variants of 4, 5, 7, 9, 11, 14, 20, 26, 29, 34, 44, 50, 75 and 104 contacts. **POLARIZATION:** Guide pilots and sockets, jackscrews and shells. **LOCKING SYSTEM:** Jackscrews and vibration lock system. **CABLE ADAPTERS:** Hoods, aluminum. **MOUNTING:** Panel and printed board. **WORKING TEMPERATURE:** -55°C to +125°C. **CRIMPING TOOLS:** Automatic and manual. **MILITARY QUALIFICATIONS:** Conform to MIL-DTL-28748/7, /8, /13, and /14 and SAE AS 39029/34 and /35. IEC 807-7, performance level 1. U.L. recognized.

High Density D-subminiature Connectors



ODD- LOW COST

76% CONTACT DENSITY INCREASE. **CONTACTS:** Fixed and removable. Precision machined of solid high tensile copper alloy; female contact is rugged "Robi-D open entry" design. Current rating to 5 amperes. Gold flash over nickel plate. Other finishes available upon request. **TERMINATIONS:** Crimp; solder cup; straight or right angle solder printed board mount.

INSULATORS: Glass-filled polyester, U.L. 94V-0. Six variants of 15, 26, 44, 62, 78 and 104 contacts. **SHELLS:** Steel and brass; tin plate and zinc or cadmium plate with chromate seal. **LOCKING SYSTEM:** Jackscrews and slide lock system. **CABLE ADAPTERS:** Hoods; metal, thermoplastic, composite, EMI/RFI. **MOUNTING:** Panel and printed board. **WORKING TEMPERATURE:** -55°C to +125°C. **CRIMPING TOOLS:** Automatic and manual. **MILITARY QUALIFICATIONS:** Compatible with connectors conforming to MIL-DTL-24308. U.L. and CSA recognized.

Baby King Cobra Circular Connectors



Miniature, Economical & Rugged Circular Connector Systems

CONTACTS: Removable or fixed. Precision machined of solid copper alloy. Screw termination contact is available. Current rating 7.5 amperes nominal. Gold flash over nickel plate. Other finishes available upon request. **TERMINATIONS:** Crimp; solder cup; straight and right angle solder printed board mount.

INSULATORS: Glass filled nylon, UL 94V-0. Two variants: three size 20, and 6 size 22. **POLARIZATION:** Provided by insulator. **LOCKING SYSTEM:** Threaded or Twist Locking Shroud. **CABLE ADAPTERS:** Hoods; nylon, IP65 with overmolded Assemblies (Consult Factory for details). **CABLIZED CONNECTORS:** Customer specified wire or cable can be supplied terminated to connector with cable adapters or over-molded cable assemblies. **MOUNTING:** Panel and printed board. **WORKING TEMPERATURE:** -55° to +125°C. **CRIMPING TOOLS:** Automatic and manual.

NORTH AMERICAN SALES OFFICES

United States, Springfield, Missouri
Factory and Sales Office
Puerto Rico Sales Office
Mexico Sales Office
Canada Sales Office

800 641 4054
800 641 4054
800 872 7674
800 327 8272

info@connectpositronic.com
info@connectpositronic.com
info@connectpositronic.com
info@connectpositronic.com

EUROPEAN SALES OFFICES

France, Auch Factory and Sales
Northern France Sales Office
Southern France Sales Office
Italy Sales Office
Germany Sales Office
United Kingdom Sales Office

33 (0) 5 6263 4491
33 (0) 1 4588 1388
33 (0) 6 8648 4023
39 (0) 2 5411 6106
49 (0) 23 5163 4739
44 (0) 7975 682 488

contact@connectpositronic.com
jchalaux@connectpositronic.com
plafon@connectpositronic.com
rmagni@connectpositronic.com
cbouche@connectpositronic.com
lbridwell@connectpositronic.com

Europe & Middle East Technical Agents:

Finland, United Kingdom, Scotland, Israel, Norway, Sweden, Turkey and the Ukraine.

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices

+65 6842 1419

singapore@connectpositronic.com

ASIA, Direct Sales Offices

China

Factory - Zhuhai
Shenzhen
Shanghai
Xian Sales Office
Beijing Sales Office

+86 756 3626 466
+86 158 2907 9779
+86 158 2907 9779
+86 029 8839 5306
+86 10 8203 7718
+81 3 6310 5830

zhuhai@connectpositronic.com
shenzhen@connectpositronic.com
shanghai@connectpositronic.com
xian@connectpositronic.com
beijing@connectpositronic.com
japan@connectpositronic.com

Japan Sales and Engineering Offices

India

Factory Sales and Engineering Offices
Bangalore Sales Office
New Delhi Sales Office

+91 20 2469 9910
+91 94 4907 3251
+91 80107 11175

india@connectpositronic.com
bangalore@connectpositronic.com
delhi@connectpositronic.com

Korea Sales Office

+82 31 909 8047

korea@connectpositronic.com

Taiwan Sales Office

+886 2 2937 8775

taiwan@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Australia, Hong Kong, Malaysia, New Zealand, Philippines, Thailand and Vietnam.

POSITRONIC INDUSTRIES, INC

423 N Campbell Avenue, P O Box 8247,
Springfield, MO 65801, USA
Telephone: 1 417 866 2322
Fax: 1 417 866 4115
Email: info@connectpositronic.com

POSITRONIC INDUSTRIES, SAS

Zone Industrielle Est, 46 Route d'Engachies,
F32020, Auch Cedex 9, France
Telephone: 33 (0) 5 62 63 44 91
Telecopieur: 33 (0) 5 62 63 51 17
Email: contact@connectpositronic.com

POSITRONIC ASIA PTE LTD

3014A Ubi Road 1 # 07-01 Singapore 408703
Telephone: 65 6842 1419 Fax: 65 6842 1421
Email: singapore@connectpositronic.com

www.connectpositronic.com



POSITRONIC®
GLOBAL *Connector* SOLUTIONS

LOW PROFILE SCORPION
Slim Modular Power & Signal Contact Connectors



CONNECTOR SAVERS

D-subminiature Connectors



Positronic®
global connector solutions



CONNECTOR SAVERS FOR:

- STANDARD DENSITY D-SUBMINIATURE
- HIGH DENSITY D-SUBMINIATURE
- COMBINATION D-SUBMINIATURE
- HIGH PERFORMANCE D-SUBMINIATURE

Rev J

C001 Rev G

C004 Rev F

C005 Rev B1

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261[†] #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

[†]Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

Connector Savers can be mated to a connector which would normally experience high numbers of mating cycles. The connector saver can be easily replaced, “saving” a connector which is not easily replaced.



STANDARD DENSITY CONNECTOR SAVER / GENDER CHANGER

AD and HAD Series available in five shell sizes. Standard density connector savers and gender changers. AD series female contacts feature a rugged open entry design for use with professional/industrial quality applications. HAD series female contacts feature the PosiBand® closed entry design for even higher reliability or military quality D-subminiature connectors.



HIGH DENSITY CONNECTOR SAVER / GENDER CHANGER

DAD Series available in six shell sizes. The high density connector savers and gender changers. DAD female contacts can be supplied in either open entry design for use with professional/military quality applications or PosiBand closed entry designs for use in any application requiring high performance characteristics including military.



COMBO-D CONNECTOR SAVERS

ACBDP and ACBMP Series available for all standard Combo-D variants in shell sizes 1 through 6. Combo-D connector savers with size 20 and size 8 contacts. ACBDP series female contacts feature a rugged open entry design for use in professional/industrial quality applications. ACBMP series female contacts feature the PosiBand® closed entry design for even higher reliability including military.



SPACE-D CONNECTOR SAVERS

SAD, SADD and SACBMP Series. Standard density, high density or Combo-D variants available. High reliability, non-outgassing, low magnetism connectors conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and DSCC specification 85039. All three series' female contacts feature the PosiBand® closed entry design suitable for high performance applications including space flight.



AD Series Size 20 “Open Entry” Contact Design

HAD Series Size 20 PosiBand® “Closed Entry” Contact Design

Connector Saver



AD and HAD series connectors are suitable for use in any applications requiring high performance characteristic. The normal density AD and HAD series are available in five standard connector variants of 9, 15, 25, 37 and 50 contacts.

AD and HAD series connectors utilize precision machined contacts for strength and durability. AD series female contact features a rugged open entry design. HAD series female contact features the PosiBand closed entry design for even higher reliability, see page 1 for details.

AD and HAD series connectors can be mated to a connector which would normally experience high numbers of mating cycles. The AD/HAD connector can be easily replaced, “saving” a connector which is not easily replaced.

These connectors can also be used as a “gender changer”. Connectors are available in high density versions, see page 75.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:

AD series:	Nylon resin, UL 94V-0, black color.
HAD series:	Glass-filled DAP per ASTM-D-5948, UL 94V-0.

Contacts: Precision machined copper alloy.

Contact Plating: Gold flash over nickel plate. Other finishes available upon request.

Shells: Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts: Size 20 contacts, male - 0.040 inch [1.02 mm] mating diameter. AD series female contact offers open entry design. HAD series female contact features PosiBand closed entry design, see page 1 for details.

Connector Saver: Male to female or male to male.

Contact Retention: 9 lbs. [40 N].

Shells: Male shells may be dimpled for EMI/ESD ground paths.

Polarization: Trapezoidally shaped shells.

Mechanical Operations:

AD series:	500 operations, minimum, per IEC 60512-5.
HAD series:	1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

Open Entry Contacts:	7.5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	
	18 amperes, 2 contacts energized.
	14 amperes, 6 contacts energized.
	11 amperes, 15 contacts energized.
	10 amperes, 25 contacts energized.
	9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance: 0.008 ohms, maximum for AD series.
0.004 ohms, maximum for HAD series.

Proof Voltage: 1,000 V r.m.s.

Insulation Resistance: 5 G ohms.

Clearance and Creepage Distance: 0.039 inch [1.0 mm], minimum.

Working Voltage: 300 V r.m.s.

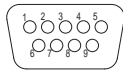
CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

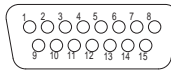
AD AND HAD SERIES SIZE 20 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

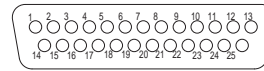
FACE VIEW OF MALE OR USE MIRROR IMAGE FOR FEMALE



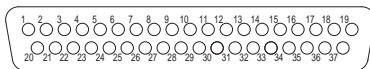
SIZE 9



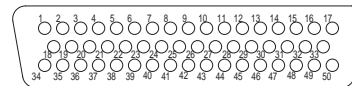
SIZE 15



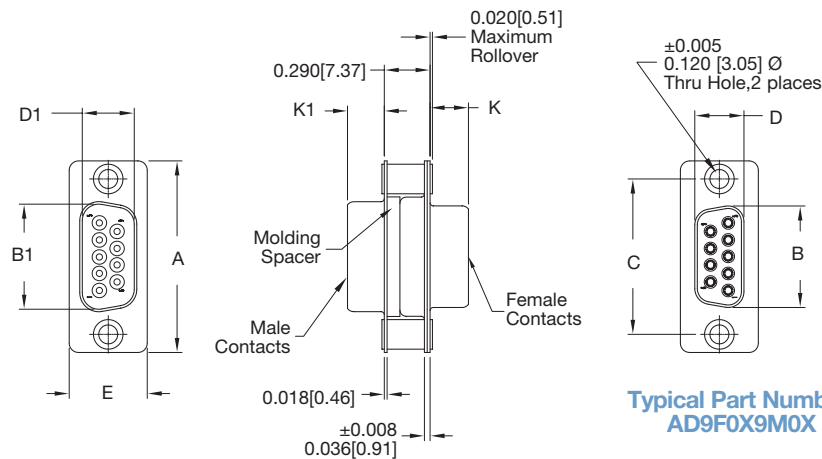
SIZE 25



SIZE 37



SIZE 50

STANDARD SHELL ASSEMBLY DIMENSIONS
SIZE 20 CONTACTSTypical Part Number:
AD9FOX9M0X

CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
9 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
25 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
37 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		0.230 [5.84]
50 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	



Positronic
connectpositronic.com

STANDARD DENSITY CONNECTOR SAVERS / GENDER CHANGERS

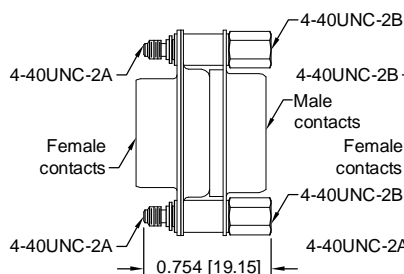
D-Sub

JACKSCREW SYSTEMS

CODE E, E6, T AND T6

ROTATING
MALE AND FEMALE
JACKSCREWS

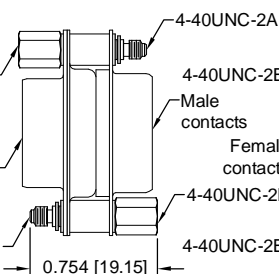
E



Example Part Number:
AD9FEX9M0X

ROTATING
MALE AND FEMALE
POLARIZED
JACKSCREWS

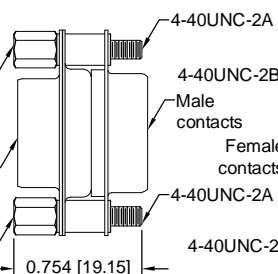
E6



Example Part Number:
AD9FE6X9M0X

FIXED
MALE AND FEMALE
JACKSCREWS

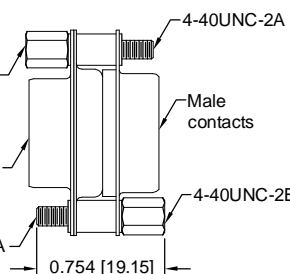
T



Example Part Number:
AD9FTX9M0X

FIXED
MALE AND FEMALE
POLARIZED
JACKSCREWS

T6



Example Part Number:
AD9FT6X9M0X

MATERIAL: Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.

Connectors Designed To Customer Specifications

*Positronic D-subminiature connectors
can be modified to customer specifications.*

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances;
longer printed circuit board terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	AD	9	F	S	X	9	M	S	X	/AA	-14

STEP 1 - BASIC SERIES

AD series - Open entry female contacts, nylon insulator

HAD series - PosiBand closed entry female contacts, DAP insulator.

Military plating options available.

STEP 2 - CONNECTOR VARIANT

9, 15, 25, 37, 50

STEP 3 - 1ST CONNECTOR GENDER

M - Male

F - Female

***1 STEP 4 - 1ST CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 8)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 8)

*3 T - Fixed male and female jackscrews (Select 0 in Step 8)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 8)

STEP 5 - 1ST CONNECTOR SHELL OPTION

0 - Zinc plated, with chromate seal.

*4 S - Stainless steel, passivated.

X - Tin plated.

Z - Tin plated and dimpled (male connectors only).

STEP 6 - 2ND CONNECTOR VARIANT

9, 15, 25, 37, 50

STEP 7 - 2ND CONNECTOR GENDER

M - Male

***2 STEP 8 - 2ND CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 4)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 4)

*3 T - Fixed male and female jackscrews (Select 0 in Step 4)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 4)

STEP 9 - 2ND CONNECTOR SHELL OPTION

0 - Zinc plated, with chromate seal.

*4 S - Stainless steel, passivated.

X - Tin plated.

Z - Tin plated and dimpled (male connectors only).

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: AD9FSX9MSX

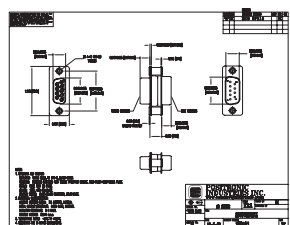
STEP 11 - SPECIAL OPTIONS

-14 - 0.000030 [0.76μ] gold over nickel.

-15 - 0.000050 [1.27μ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

- *1 Connector mating style for both connectors must be the same if 0 or S is used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must be 0.
- *2 Connector variant for both connectors must be the same.
- *3 For hardware information, see page 73.
- *4 For stainless steel dimpled male versions contact Technical Sales.



DAD Series Size 22 “Open Entry” or PosiBand® “Closed Entry” Contact Design

Connector Saver



DAD series connectors are suitable for use in any applications requiring high performance characteristic. The high density DAD series is available in six standard connector variants of 15, 26, 44, 62, 78 and 104 contacts.

DAD series connectors utilize precision machined contacts for strength and durability. The female contact features a rugged open entry design. Female PosiBand closed entry contacts can be chosen for even higher reliability, see page 1 for details.

DAD series connectors can be mated to a connector which would normally experience high numbers of mating cycles. The DAD connector can be easily replaced, “saving” a connector which is not easily replaced.

Connectors are available in standard density versions, see page 71.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Polyester glass-filled per ASTM D5927, UL 94V-0.
Contacts:	Precision machined copper alloy.
Contact Plating:	Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel or brass with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 22 contacts - male 0.030 inch [0.76 mm] mating diameter. Female contact: open entry or PosiBand closed entry design, see page 1 for details.
Connector Saver:	Male to female.
Contact Retention:	9 lbs. [40 N].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.

Mechanical Operations:	500 operations, minimum, per IEC 60512-5 for open entry. 1000 operations, minimum, per IEC 60512-5 for closed entry.
-------------------------------	---

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

Open Entry Contacts:	5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	12 amperes, 2 contacts energized. 10 amperes, 6 contacts energized. 7.5 amperes, 26 contacts energized. 6.5 amperes, 62 contacts energized. 5.0 amperes, 104 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.010 ohms, maximum for open entry 0.005 ohms, maximum for closed entry
Proof Voltage:	1,000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.042 inch [1.06 mm], minimum.
Working Voltage:	300 V r.m.s.

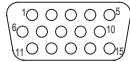
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
---------------------------	------------------

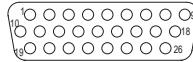
DAD SERIES SIZE 22 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

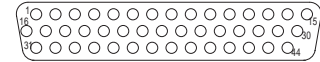
FACE VIEW OF MALE OR USE MIRROR IMAGE FOR FEMALE



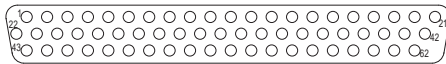
DAD 15



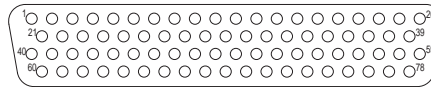
DAD 26



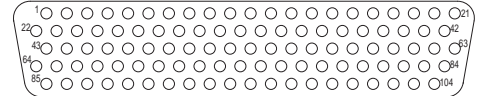
DAD 44



DAD 62



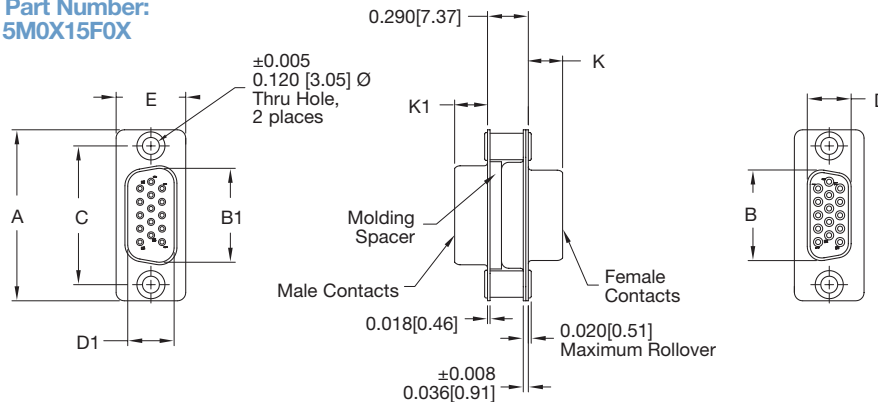
DAD 78



DAD 104

STANDARD SHELL ASSEMBLY DIMENSIONS

SIZE 22 CONTACTS

Typical Part Number:
DAD15M0X15FOX

CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 F 15 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
26 F 26 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
44 F 44 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
62 F 62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		0.230 [5.84]
78 F 78 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	
104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]		0.230 [5.84]
104 F 104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	0.243 [6.17]	



Positronic
connectpositronic.com

HIGH DENSITY CONNECTOR SAVERS / GENDER CHANGERS

D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	DAD	15	M	S	X	15	F	S	X	/AA	-14

STEP 1 - BASIC SERIES

DAD series

STEP 2 - CONNECTOR VARIANT

15, 26, 44, 62, 78, 104

STEP 3 - 1ST CONNECTOR GENDER

M - Male

*2 STEP 4 - 1ST CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *3 E - Rotating male and female jackscrews (Select 0 in Step 8)
- *3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 8)
- *3 T - Fixed male and female jackscrews (Select 0 in Step 8)
- *3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 8)

STEP 5 - 1ST CONNECTOR SHELL OPTION

- 0 - Zinc plated, with chromate seal.
- *5 S - Stainless steel, passivated.
- X - Tin plated.
- Z - Tin plated and dimpled (male connectors only).

*1 Male option available only on connector variant 78.

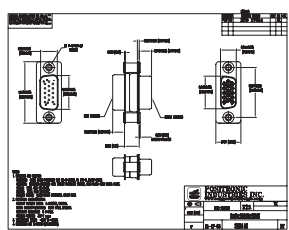
*2 Connector mating style for both connectors must be the same if 0 or S is used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must be 0.

*3 For hardware information, see page 73.

*4 Connector variant for both connectors must be the same as in Step 2.

*5 For stainless steel dimpled male versions contact Technical Sales.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

STEP 11 - SPECIAL OPTIONS

- 14 - 0.000030 [0.76μ] gold over nickel.
- 15 - 0.000050 [1.27μ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: DAD15MSX15FSX

STEP 9 - 2ND CONNECTOR SHELL OPTION

- 0 - Zinc plated, with chromate seal.
- *5 S - Stainless steel, passivated.
- X - Tin plated.
- Z - Tin plated and dimpled (male connectors only).

**STEP 8 - 2ND CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *3 E - Rotating male and female jackscrews (Select 0 in Step 4)
- *3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 4)
- *3 T - Fixed male and female jackscrews (Select 0 in Step 4)
- *3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 4)

STEP 7 - 2ND CONNECTOR GENDER

- *1 M - Male
- F - Female - Professional Level - open entry contacts
- S - Female - Industrial Level - PosiBand closed entry contacts

Military plating options available.

*4 STEP 6 - 2ND CONNECTOR VARIANT

15, 26, 44, 62, 78, 104



Positronic
connectpositronic.com

COMBO-D CONNECTOR SAVERS GENDER CHANGERS

Combo-D
D-Sub

Professional Quality Connectors
ACBDP Series
Size 20 "Open Entry" or
PosiBand® "Closed Entry"
Contact Design

Industrial /Military Quality Connectors
- ACBMP Series
Size 20 PosiBand®
"Closed Entry" Contact Design
Connector Saver



ACBDP and ACBMP series connectors are suitable for use in any applications requiring high performance characteristic. The normal density ACBDP and ACBMP series are available in standard Combo-D connector variants.

ACBDP and ACBMP series connectors utilize precision machined contacts for strength and durability. The ACBDP female contact features a rugged "Open Entry" design or PosiBand "Closed Entry" design for even higher reliability. ACBMP connectors features PosiBand "Closed Entry" contacts and military contact plating.

ACBDP and ACBMP series connectors can be mated to a connector which would normally experience high numbers of mating cycles. The ACBDP/ACBMP connector can be easily replaced, "Saving" a connector which is not easily replaced.

These connectors can also be used as a "gender changer". Connector Savers are also available in standard and high density D-subminiature versions, please consult our Professional, Industrial and Military Performance D-subminiature Connectors catalog for more information.

For high density 8W2, 19W1 and 45W2 adapter variants contact Technical Sales.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94V-0, blue color.
SIGNAL CONTACTS:	
ACBDP Series:	Precision machined high tensile copper alloy open entry design.
ACBMP Series:	Precision machined copper alloy PosiBand closed entry design.
POWER CONTACTS:	Precision machined copper alloy closed entry design.
Contact Plating:	
ACBDP Series:	Gold flash over nickel plate.
ACBMP Series:	0.000050 [1.27μ] gold over nickel plate.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.

Jackscrew Systems: Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

FIXED CONTACTS:

SIGNAL CONTACTS:	Size 20 contacts, male - 0.040 inch [1.02 mm] diameter. ACBDP series has female open entry contact or PosiBand closed entry contacts optional, see page 69 for details. ACBMP series offer female PosiBand closed entry contacts.
POWER CONTACTS:	Size 8 contacts, male - 0.142 inch [3.61 mm] diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member.

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . .

MECHANICAL CHARACTERISTICS, continued:

Connector Saver:	Male to female or male to male.
Contact Retention:	
Signal:	9 lbs. [40 N].
Power:	22 lbs. [98 N].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.
Mechanical Operations:	
ACBDP Series:	500 operations, minimum, per IEC 60512-5.
ACBMP Series:	1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes, nominal.
Initial Contact Resistance:	0.008 ohms, maximum.
Proof Voltage:	1,000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

Contact Current Rating:	70 amperes, per UL 1977. See Temperature Rise Curves on pages 1-2.
Initial Contact Resistance:	0.0005 ohms, maximum
Proof Voltage:	1,000 V r.m.s.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

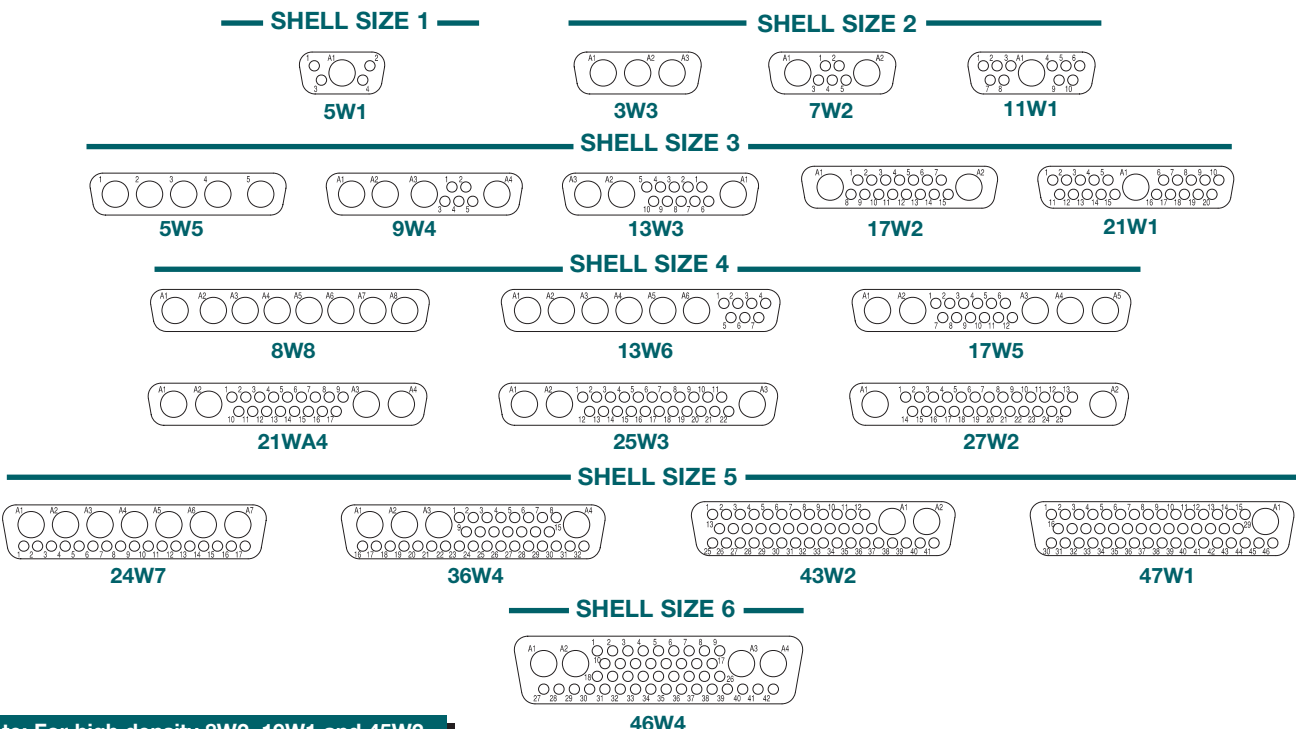
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
--------------------	------------------

ACBDP/ACBMP SERIES SIZE 20 AND SIZE 8 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



Note: For high density 8W2, 19W1 and 45W2 variants contact Technical Sales for availability.



Positronic
connectpositronic.com

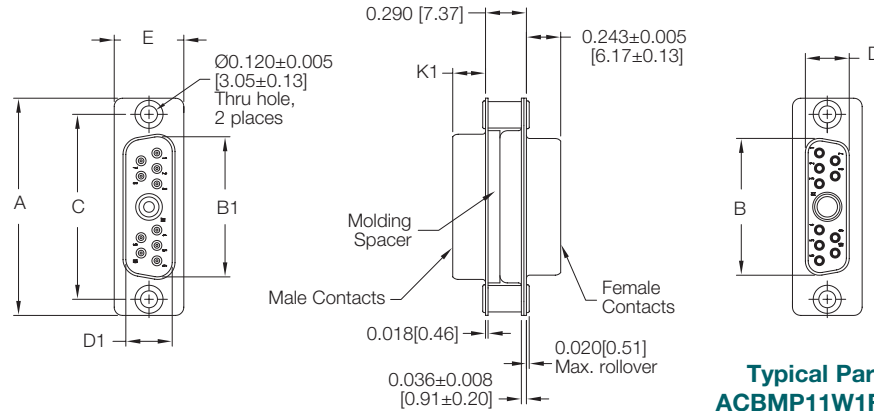
COMBO-D CONNECTOR SAVERS GENDER CHANGERS

Combo-D
D-Sub

STANDARD SHELL ASSEMBLY DIMENSIONS SIZE 20 AND SIZE 8 CONTACTS CODE 0 AND S

NOTE:

Code S = Swaged
spacer with 4-40
UNC-2B threads.

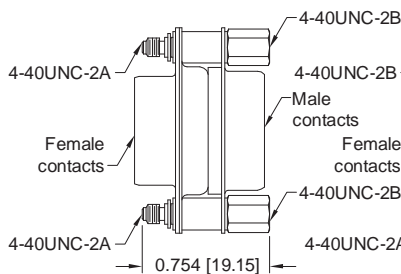


CONNECTOR SIZE	A ±0.015	B ±0.005	B1 ±0.005	C ±0.005	D ±0.005	D1 ±0.005	E ±0.015	K1 ±0.005
SHELL SIZE 1	1.213 [30.81]	0.643 [16.33]	0.666 [16.92]	0.984 [24.99]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
SHELL SIZE 2	1.541 [39.14]	0.971 [24.66]	0.994 [25.25]	1.312 [33.32]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
SHELL SIZE 3			1.534 [38.96]	1.852 [47.04]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
SHELL SIZE 4	2.729 [69.32]	2.159 [54.84]	2.182 [55.42]	2.500 [63.50]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
SHELL SIZE 5	2.635 [66.93]	2.064 [52.43]	2.079 [52.81]	2.406 [61.11]	0.423 [10.74]	0.441 [11.20]	0.605 [15.37]	0.230 [5.84]
SHELL SIZE 6	2.729 [69.32]	2.189 [55.60]	2.212 [56.18]	2.500 [63.50]	0.485 [12.32]	0.503 [12.78]	0.668 [16.97]	0.230 [5.84]

JACKSCREW SYSTEMS CODE E, E6, T AND T6

ROTATING MALE AND FEMALE JACKSCREWS

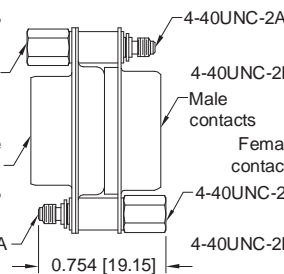
E



Example Part Number:
ACBDP5W1FEX5W1M0X

ROTATING MALE AND FEMALE POLARIZED JACKSCREWS

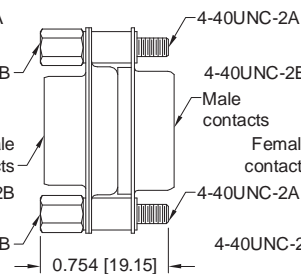
E6



Example Part Number:
ACBDP5W1FE6X5W1M0X

FIXED MALE AND FEMALE JACKSCREWS

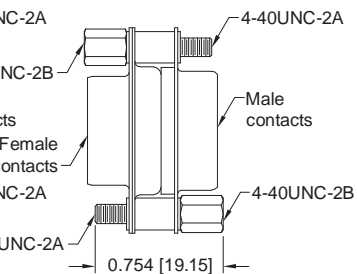
T



Example Part Number:
ACBDP5W1FTX5W1M0X

FIXED MALE AND FEMALE POLARIZED JACKSCREWS

T6



Example Part Number:
ACBDP5W1FT6X5W1M0X



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	ACBDP	11W1	F	S	X	11W1	M	S	X	/AA	-14

STEP 1 - BASIC SERIES

ACBDP – Professional / Industrial Quality, see Step 3.

ACBMP – Military conformance with “closed entry” female signal contacts plated 0.000050 [1.27µ] gold over nickel plate. Choose “S” or “M” in Step 3.

STEP 2 - CONNECTOR VARIANT

Shell Size 1
5W1

Shell Size 2
3W3, 7W2, 11W1

Shell Size 3
5W5, 9W4, 13W3, 17W2, 21W1

Shell Size 4
8W8, 13W6, 17W5, 21WA4, 25W3, 27W2

Shell Size 5
24W7, 36W4, 43W2, 47W1

Shell Size 6
46W4

Note: For high density 8W2, 19W1 and 45W2 variants contact Technical Sales for availability.

STEP 3 - 1ST CONNECTOR GENDER

F - Female - Professional Level - Open Entry Signal Contacts

*M - Male

S - Female - Industrial / Military Level - PosiBand Closed Entry Signal Contacts. Military gold plating is optional.

***2 STEP 4 - 1ST CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05µ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 8)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 8)

*3 T - Fixed male and female jackscrews (Select 0 in Step 8)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 8)

STEP 5 - 1ST CONNECTOR SHELL OPTION

0 - Zinc Plated, with Chromate Seal.

*S - Stainless Steel, passivated.

X - Tin Plated.

Z - Tin Plated and Dimpled (male connectors only).

STEP 6 - 2ND CONNECTOR VARIANT

Select same variant as chosen in STEP 2.

STEP 7 - 2ND CONNECTOR GENDER

M - Male

***2 STEP 8 - 2ND CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05µ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 4)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 4)

*3 T - Fixed male and female jackscrews (Select 0 in Step 4)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 4)

STEP 9 - 2ND CONNECTOR SHELL OPTION

0 - Zinc Plated, with Chromate Seal.

*S - Stainless Steel, passivated.

X - Tin Plated.

Z - Tin Plated and Dimpled (male connectors only).

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: ACBDP11W1FSX11W1MSX

STEP 11 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.

NOTES

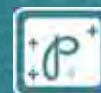
*1 Male option in Step 3 available only on connector variants 5W1, 3W3, 7W2, 11W1, 17W2, 21W1, 21WA4, 27W2, 24W7, 46W4.

*2 Connector mating style for both connectors must be the same if 0 or S is used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must be 0.

*3 For hardware information, see page 59.

*4 For stainless steel dimpled male versions, contact Technical Sales.

*5 Connector variant for both connectors must be the same.



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 **fixed** contacts.
- ✓ Female closed entry contacts utilize the "PosiBand®" system.
See page 1 for details.
- ✓ Five connector variants include 9, 15, 25, 37, and 50 contacts.
- ✓ Suitable for use as connector saver or gender changer.
- ✓ A wide variety of jackscrew options allows for mechanical keying.

**Conforming To Applicable
Material, Dimensional and
Performance Requirements:**

- GSFC S-311-P4 & GSFC S-311-P10
- MIL-DTL-24308 Class M

**Conforming To Outgassing
Requirements:**

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insulator: Glass-filled DAP per ASTM-D-5948, UL 94V-0, ASTM E-595, NASA-RP-1124.

Contacts: Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

Connector Housing (Shells), Spacers and Jackscrew Systems: Brass with 0.000050 inch [1.27 microns] gold over copper plate.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed: Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.*

Connector Saver: Male to female, or male to male.

Contact Retention: 9 lbs. [40 N].

Connector Housing (Shells): Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization: Trapezoidally-shaped connector housings.

Mechanical Operations: 1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes, nominal.

Initial Contact Resistance: 0.008 ohms, maximum.

Proof Voltage: 1,000 V r.m.s.

Insulator Resistance: 5 G ohms.

Clearance and Creepage Distance: 0.039 inch [1.0 mm], minimum.

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



Positronic Industries
connectpositronic.com

SAD SERIES

MILITARY / SPACE FLIGHT QUALITY

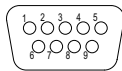
STANDARD DENSITY CONNECTOR SAVER

High
Performance
D-sub

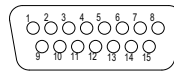
SAD SERIES SIZE 20 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

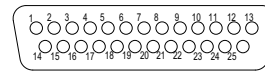
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



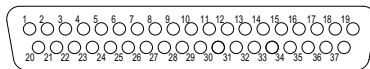
SAD 9



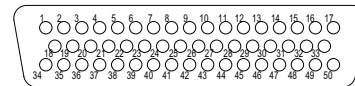
SAD 15



SAD 25



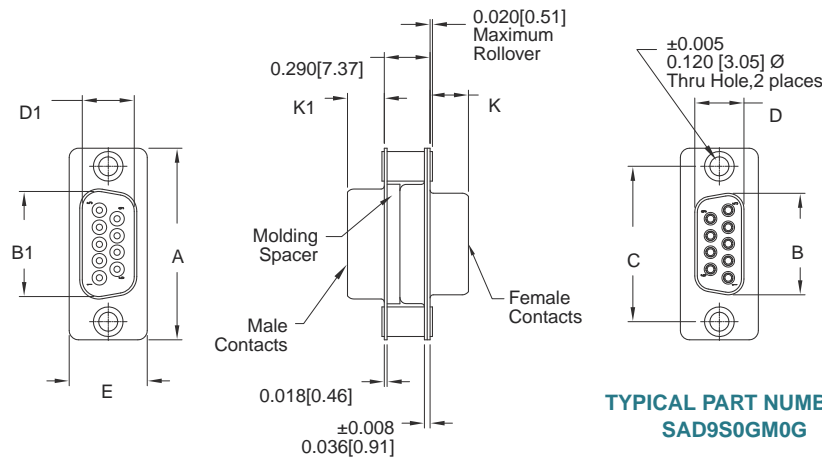
SAD 37



SAD 50

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY DIMENSIONS

SIZE 20 CONTACTS



TYPICAL PART NUMBER:
SAD9S0GM0G

CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		
50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	

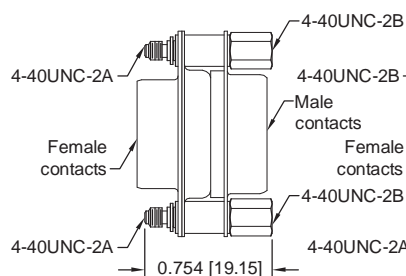


JACKSCREW SYSTEMS

CODE E, E6, T AND T6

ROTATING
MALE AND FEMALE
JACKSCREWS

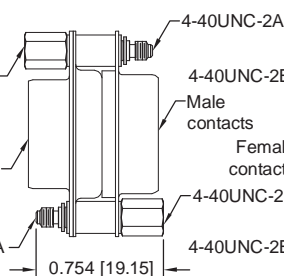
E



EXAMPLE PART NUMBER:
SAD9SEGM0G

ROTATING
MALE AND FEMALE
POLARIZED
JACKSCREWS

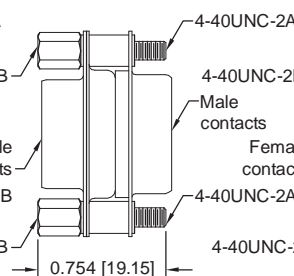
E6



EXAMPLE PART NUMBER:
SAD9SE6GM0G

FIXED
MALE AND FEMALE
JACKSCREWS

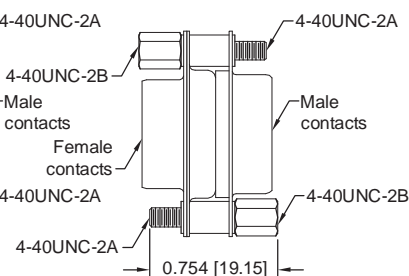
T



EXAMPLE PART NUMBER:
SAD9STGM0G

FIXED
MALE AND FEMALE
POLARIZED
JACKSCREWS

T6



EXAMPLE PART NUMBER:
SAD9ST6GM0G



SAD15S0GM0G connector saver mated to
SND15S5R70T2G connector.



Positronic Industries
connectpositronic.com

SAD SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY CONNECTOR SAVER

High
Performance
D-sub



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8		9
EXAMPLE	SAD	9	S	S	G	M	S	D	—	

STEP 1 - BASIC SERIES

SAD series

STEP 2 - CONNECTOR VARIANT

9, 15, 25, 37, 50

STEP 3 - 1ST CONNECTOR GENDER

M - Male
S - Female - PosiBand closed entry contacts,
see page 1 for more information.

*1 STEP 4 - 1ST CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *2 E - Rotating male and female jackscrews
(Select 0 in Step 7)
- *2 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 7)
- *2 T - Fixed male and female jackscrews
(Select 0 in Step 7)
- *2 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 7)

STEP 5 - 1ST CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - 2ND CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

*1 STEP 7 - 2ND CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *2 E - Rotating male and female jackscrews
(Select 0 in Step 4)
- *2 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 4)
- *2 T - Fixed male and female jackscrews
(Select 0 in Step 4)
- *2 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 4)

STEP 6 - 2ND CONNECTOR GENDER

M - Male

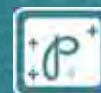
NOTES

*1 Connector mating style for both connectors must be the same if 0 or S is used. If E or E6 is used in either Step 4 or 8 the other step must be 0.

*2 For hardware information, see page 64.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 22 **fixed** contacts.
- ✓ Female closed entry contacts utilize the "PosiBand®" system. *See page 1 for details.*
- ✓ Five connector variants include 15, 26, 44, 62, 78, and 104 contacts.
- ✓ Suitable for use as connector saver or gender changer.
- ✓ A wide variety of jackscrew options allows for mechanical keying.

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4
- MIL-DTL-24308 Class M

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insulator:	Polyester glass-filled per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124.
Contacts:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Connector Housing (Shells), Spacers and Jackscrew Systems:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed:	Male contact - 0.030 inch [0.76 mm] mating diameter. Female contact - Posi-Band closed entry design; <i>see page 1 for details.</i>
Connector Saver:	Male to female (or male to male, Size 78 only).
Contact Retention:	9 lbs. [40 N].

Connector Housing (Shells):

Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization:

Trapezoidally-shaped connector housings.

Mechanical Operations:

1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	5 amperes, nominal.
Initial Contact Resistance:	0.008 ohms, maximum.
Proof Voltage:	1,000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
---------------------------	------------------

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



Positronic Industries
connectpositronic.com

SADD SERIES

MILITARY / SPACE FLIGHT QUALITY

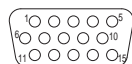
HIGH DENSITY CONNECTOR SAVER

High
Performance
D-sub

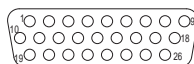
SADD SERIES SIZE 22 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

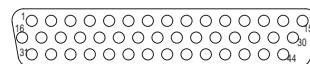
FACE VIEW OF MALE OR USE MIRROR IMAGE FOR FEMALE



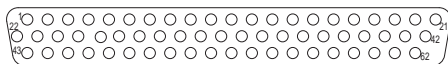
SADD 15



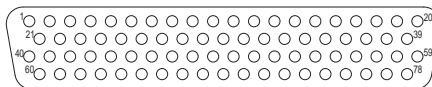
SADD 26



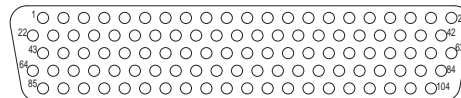
SADD 44



SADD 62



SADD 78

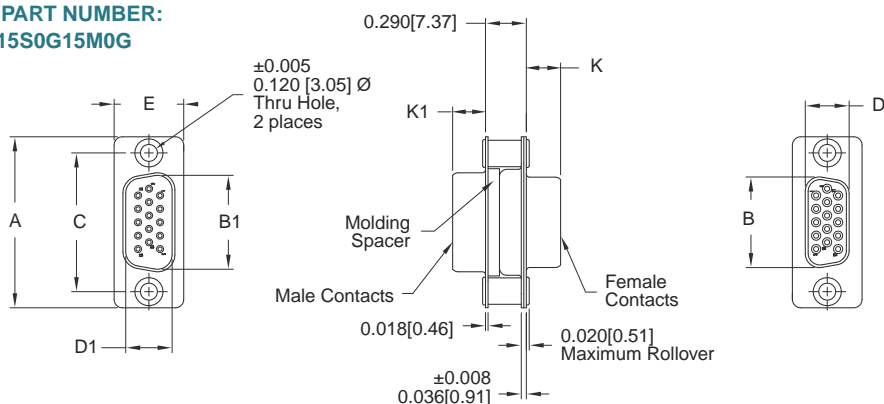


SADD 104

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY DIMENSIONS

SIZE 22 CONTACTS

TYPICAL PART NUMBER:
SADD15S0G15M0G



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
26 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
44 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		
78 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	
104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]		0.230 [5.84]
104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	0.243 [6.17]	



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SADD	15	S	S	G	M	S	D	

STEP 1 - BASIC SERIES

SADD series

STEP 2 - CONNECTOR VARIANT

15, 26, 44, 62, 78, 104

STEP 3 - 1ST CONNECTOR GENDER

^{*3} M - Male
S - Female - PosiBand closed entry contacts,
see page 1 for more information.

*1 STEP 4 - 1ST CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- ^{*2} E - Rotating male and female jackscrews
(Select 0 in Step 7)
- ^{*2} E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 7)
- ^{*2} T - Fixed male and female jackscrews
(Select 0 in Step 7)
- ^{*2} T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 7)

STEP 5 - 1ST CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - 2ND CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

*1 STEP 8 - 2ND CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- ^{*2} E - Rotating male and female jackscrews
(Select 0 in Step 4)
- ^{*2} E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 4)
- ^{*2} T - Fixed male and female jackscrews
(Select 0 in Step 4)
- ^{*2} T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 4)

STEP 6 - 2ND CONNECTOR GENDER

M - Male

NOTES

- ^{*1} Connector mating style for both connectors must be the same if 0 or S is used. If E or E6 is used in either Step 4 or 8 the other step must be 0.
- ^{*2} For hardware information, see page 64.
- ^{*3} Male option available only on connector variant 78.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!



Positronic Industries
connectpositronic.com

SACBMP SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY COMBO-D CONNECTOR SAVER

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 and Size 8 **fixed** contacts.
- ✓ All female closed entry signal contacts utilize the "PosiBand®" system. *See page 1 for details.*
- ✓ Twenty-two connector variants with a mixture of signal, power, shielded and high voltage contacts.
- ✓ Suitable for use as connector saver or gender changer.
- ✓ Current ratings: signal level to 7.5 amperes. *See temperature rise curves on page 2 for details.*
- ✓ A wide variety of jackscrew options allows for mechanical keying.

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- DSCC Specification 85039

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

T E C H N I C A L C H A R A C T E R I S T I C S

MATERIALS AND FINISHES:

Connector Insulator:	Glass-filled polyester per ASTM-D-5927, UL 94-V0, ASTM E-595, NASA-RP-1124, blue color.
Contacts:	
Size 20:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 8:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Connector Housing (Shells), Spacers and Jackscrew Systems:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed:	Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; <i>see page 1 for details.</i>
Size 8 Fixed:	Male - 0.142 inch [3.61mm] mating diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Closed crimp barrel.
Connector Saver:	Male to female, male to male see page 72 for available variants.
Contact Retention:	9 lbs. [40 N].
Connector Housing (Shells):	Male connector housings may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally-shaped connector housings.
Mechanical Operations:	1,000 operations, minimum, per IEC 60512-5.

... continued on next page



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes, nominal
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

Contact Current Rating:	40 amperes, nominal
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
--------------------	------------------

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

SACBMP SERIES SIZE 20 AND SIZE 8 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

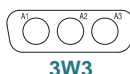
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

SHELL SIZE 1

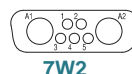


5W1

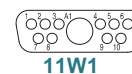
SHELL SIZE 2



3W3

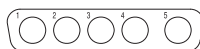


7W2



11W1

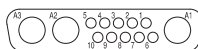
SHELL SIZE 3



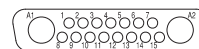
5W5



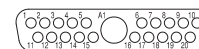
9W4



13W3

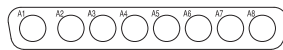


17W2

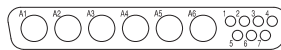


21W1

SHELL SIZE 4



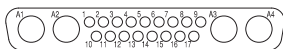
8W8



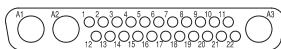
13W6



17W5



21WA4

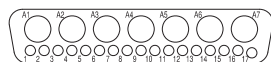


25W3

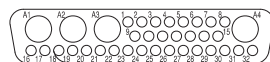


27W2

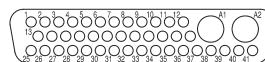
SHELL SIZE 5



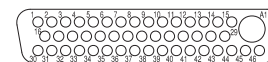
24W7



36W4

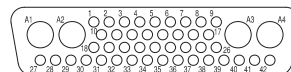


43W2



47W1

SHELL SIZE 6



46W4

Note: For high density 8W2, 19W1, 15W4 and 45W2 variants contact Technical Sales for availability.



Positronic Industries
connectpositronic.com

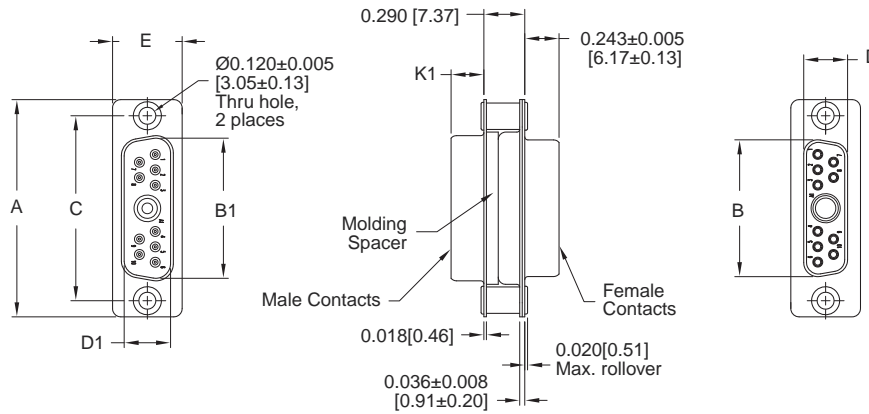
SACBMP SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY COMBO-D CONNECTOR SAVER

High
Performance
D-sub

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY DIMENSIONS SIZE 20 AND SIZE 8 CONTACTS



NOTE:

Code S = Swaged
spacer with 4-40
UNC-2B threads.

TYPICAL PART NUMBER:
SACBMP11W1S0GM0G

SHELL SIZES	CONNECTOR VARIANT	A ± 0.015 [0.38]	B ± 0.005 [0.13]	B1 ± 0.005 [0.13]	C ± 0.005 [0.13]	D ± 0.005 [0.13]	D1 ± 0.005 [0.13]	E ± 0.015 [0.38]	K1 ± 0.005 [0.13]
1	5W1	1.213 [30.81]	0.643 [16.33]	0.666 [16.92]	0.984 [24.99]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
2	3W3, 7W2, 11W1	1.541 [39.14]	0.971 [24.66]	0.994 [25.25]	1.312 [33.32]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
3	5W5, 9W4, 13W3, 17W2, 21W1	2.088 [53.04]	1.511 [38.38]	1.534 [38.96]	1.852 [47.04]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
4	8W8, 13W6, 17W5, 21WA4, 25W3, 27W2	2.729 [69.32]	2.159 [54.84]	2.182 [55.42]	2.500 [63.50]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
5	24W7, 36W4, 43W2, 47W1	2.635 [66.93]	2.064 [52.43]	2.079 [52.81]	2.406 [61.11]	0.423 [10.74]	0.441 [11.20]	0.605 [15.37]	0.230 [5.84]
6	46W4	2.729 [69.32]	2.189 [55.60]	2.212 [56.18]	2.500 [63.50]	0.485 [12.32]	0.503 [12.78]	0.668 [16.97]	0.230 [5.84]



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8		9
EXAMPLE	SACBMP	11W1	S	S	G	M	S	D	—	

STEP 1 - BASIC SERIES

SACBMP series

STEP 2 - CONNECTOR VARIANT

Shell Size 1

5W1

Shell Size 2

3W3, 7W2, 11W1

Shell Size 3

5W5, 9W4, 13W3, 17W2, 21W1

Shell Size 4

8W8, 13W6, 17W5, 21WA4, 25W3, 27W2

Shell Size 5

24W7, 36W4, 43W2, 47W1

Shell Size 6

46W4

Note: For high density 8W2, 19W1,
15W4 and 45W2 variants contact
Technical Sales for availability.

STEP 3 - 1ST CONNECTOR GENDER

*1 M - Male

S - Female - PosiBand closed entry contacts,
see page 1 for more information.

*2 STEP 4 - 1ST CONNECTOR MATING STYLE

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews
(Select 0 in Step 7)

*3 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 7)

*3 T - Fixed male and female jackscrews
(Select 0 in Step 7)

*3 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 7)

STEP 5 - 1ST CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled
(male connectors only).

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - 2ND CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled
(male connectors only).

*2 STEP 8 - 2ND CONNECTOR MATING STYLE

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews
(Select 0 in Step 4)

*3 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 4)

*3 T - Fixed male and female jackscrews
(Select 0 in Step 4)

*3 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 4)

STEP 6 - 2ND CONNECTOR GENDER

M - Male

NOTES

*1 Male option in Step 3 available only on connector variants 5W1, 3W3,
7W2, 11W1, 17W2, 21W1, 21WA4, 27W2, 24W7, 46W4.

*2 Connector mating style for both connectors must be the same if 0 or S is
used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must
be 0.

*3 For hardware information, see page 64.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24

Current Ratings: To 200 amperes per contact

Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in a variety of package sizes
PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

Compliance:

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22

Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven connector housing sizes

Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22

Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22

Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare wire harness connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22

Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.

LOCATIONS

For most current sales office information, please visit www.connectpositronic.com/locations



Positronic®
global connector solutions

Regional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi RD 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

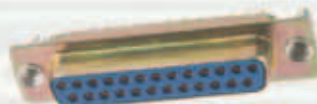
Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/locations

www.connectpositronic.com

D-SUBMINIATURE

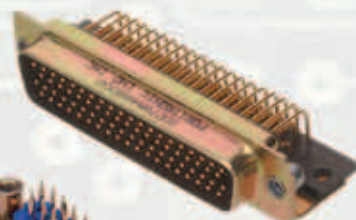
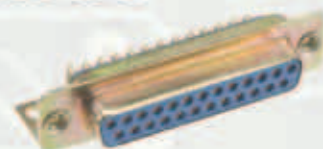


Positronic®
global connector solutions



Professional, Industrial and Military Performance

**THREE PERFORMANCE LEVELS FOR
BEST COST/PERFORMANCE RATIO**



Catalog C-001 Rev. G

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261[†] #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

[†]Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.



CONNECTOR DESCRIPTIONS

MELO-D and EURO-D CONNECTORS

MD series and ED series, professional level, fixed contacts. Solder cup, wrap post, and printed board contact terminations for inch and metric printed board hole patterns. Six connector variants, 9 through 50 contacts. Female open entry contacts. Connectors conform to IEC 60807-2, Performance Level Two.



MDX SERIES CONNECTORS

MDX series, industrial level, fixed contacts. Solder cup, straight and right angle (90°) printed board mount contact terminations. Five connector variants, 9 through 50 contacts. PosiBand closed entry female contacts. Connectors conform to IEC 60807-2, Performance Level One.

SOLI-D CONNECTORS

SD series, professional level, removable contacts. Solder cup, crimp and straight printed board mount contact terminations. Five connector variants, 9 through 50 contacts. PosiBand® closed entry female contacts. Connectors conform to IEC 807-3, Performance Level Two.



ORD SERIES CONNECTORS

ORD series, professional and industrial levels, removable contacts. Crimp contact terminations. Thermocouple contact options available. Six connector variants, 9 through 50 contacts. IEC 60807-3, Performance Level One or Two.

HARMO-D CONNECTORS

HDC series, MIL-DTL-24308 level, fixed contact. Solder cup, wrap post and straight and right angle (90°) printed board contact terminations. Thermocouple contact options available. Five connector variants, 9 through 50 contacts.

RHAPSO-D CONNECTORS

RD series, MIL-DTL-24308 / SAE AS39029 levels, removable contacts. Crimp contact terminations. Thermocouple contact options available. Six connector variants, 9 through 50 contacts.



ODD SERIES CONNECTORS

ODD series, professional and industrial levels, removable contacts. Solder cup, crimp and straight and right angle (90°) printed board contact terminations. Thermocouple contact options available. Six connector variants, 15 through 104 contacts.

DENSI-D CONNECTORS

DD series, MIL-DTL-24308 / SAE AS39029 levels, removable contacts. Solder cup, crimp and straight and right angle (90°) printed board contact terminations. Thermocouple contact options available. Six connector variants, 15 through 104 contacts.

STANDARD DENSITY COMPLIANT PRESS-FIT CONNECTORS

PCD series, professional, industrial and military levels, machined contact, compliant termination. Five connector variants, 9 through 50 contacts. IEC 60807-2, Performance Levels One or Two. Military contact plating optional.



HIGH DENSITY COMPLIANT PRESS-FIT CONNECTORS

PCDD series, professional, industrial and military levels, machined contact, compliant termination. Five connector variants, 15 through 104 contacts. Military contact plating optional.



Positronic
connectpositronic.com

TABLE OF CONTENTS

D-Sub

Connector Descriptions	i
Wire Harness Connectors	v
Other D-subminiature Products	95

GENERAL INFORMATION

What Makes Positronic's New "PosiBand®" Contact Interface a Significant Improvement?	1
The PosiBand® contact system has many advantages over the legacy split tine design.	2
Exploded Views of Typical Mated D-subminiature Connector Assemblies	3
Connector Component Description and Terminology	4

MD SERIES

Technical Characteristics	5
Contact Variants and Standard Shell Assembly	6
Solder Cup Termination - Code 2; Straight Printed Board Mount Termination - Code 3, 32 and 33; Ferrite Inductor Bar For EMI/RFI Noise Suppression - Code F and Q; and Wrap Post Termination - Code 6	7
Right Angle (90°) Printed Board Mount Termination - Code 5 and Code 59	8
Right Angle (90°) Printed Board Mount Termination - Code 4; and Right Angle (90°) and Straight Printed Board Contact Hole Pattern	9
Ordering Information	10

MDX SERIES

Technical Characteristics	11
Contact Variants and Standard Shell Assembly	12
Solder Cup Termination - Code 2; Straight Printed Board Mount Termination - Code 3, 32 and 33; and Right Angle (90°) Printed Board Mount Termination - Code 4	13
Right Angle (90°) Printed Board Mount Termination - Code 5; and Right Angle (90°) and Straight Printed Board Contact Hole Pattern	14
Ordering Information	15

ED SERIES

Technical Characteristics	16
Contact Variants and Standard Shell Assembly	17
Solder Cup Termination - Code 2; Straight Printed Board Mount Termination - Code 36; and Right Angle (90°) Printed Board Mount Termination - Code 42 and 52	18
Right Angle (90°) Printed Board Mount Termination - Code 44; and Right Angle (90°) and Straight Printed Board Contact Hole Pattern	19
Ordering Information	20

SD SERIES

Technical Characteristics	21
Contact Variants and Standard Shell Assembly	22
Removable Crimp Contacts - Code 1 and 12; and Removable Crimp Contacts - 18 AWG	23
Straight Printed Board Mount Termination	24
Straight Printed Board Contact Hole Pattern	25
Ordering Information	26



HDC SERIES

Technical Characteristics	27
Contact Variants and Standard Shell Assembly	28
Solder Cup Termination - Code 2; Straight Printed Board Mount Termination - Code 3, 32, 33 and 36; and Wrap Post Termination - Code 6	29
Right Angle (90°) Printed Board Mount Termination - Code 5 and Code 42	30
Right Angle (90°) and Straight Printed Board Contact Hole Pattern	31
Ordering Information	32

RD SERIES

Technical Characteristics	33
Contact Variants and Standard Shell Assembly	34
Removable Crimp Contacts - Code 1 and 12	35
Removable Crimp Contacts - 18 AWG; and Removable Thermocouple Crimp Contacts	36
Ordering Information	37

ORD SERIES

Technical Characteristics	38
Contact Variants and Standard Shell Assembly	39
Removable Crimp Contacts - Code 1	40
Removable Crimp Contacts - 18 AWG; and Removable Thermocouple Crimp Contacts	41
Ordering Information	42

ODD SERIES

Technical Characteristics	43
Contact Variants and Standard Shell Assembly	44
Removable Crimp Contacts - Code 1	45
Removable Crimp Contacts - 20 AWG; and Removable Thermocouple Crimp Contacts	46
Removable Solder Cup Contacts - Code 2	47
Fixed Solder Cup Termination - Code 21; and Straight Printed Board Mount Termination - Code 3 and 32	48
Right Angle (90°) Printed Board Mount Termination - Code 5 and Code 4	49
Right Angle (90°) Printed Board Mount Termination - Contact Variant 104 - Code 5 and Code 4	50
Right Angle (90°) and Straight Printed Board Contact Hole Pattern	51
Ordering Information	52

DD SERIES

Technical Characteristics	53
Contact Variants and Standard Shell Assembly	54
Removable Crimp Contacts - Code 1	55
Removable Crimp Contacts - 20 AWG; and Removable Thermocouple Crimp Contacts	56
Removable Solder Cup Contacts - Code 2; and Straight Printed Board Mount Contacts - Code 3, 32 and 33	57
Right Angle (90°) Printed Board Mount Termination - Code 4; and Contact Variant 104 - Code 4	58
Right Angle (90°) and Straight Printed Board Contact Hole Pattern	59
Ordering Information	60



P C D S E R I E S

Technical Characteristics	61
Contact Variants and Standard Shell Assembly	62
Right Angle (90°) Compliant Press-Fit Termination - Code 62; and Straight Compliant Press-Fit Termination - Code 98	63
Right Angle (90°) and Straight Compliant Press-Fit Printed Board Contact Hole Pattern	64
Ordering Information	65

P C D D S E R I E S

Technical Characteristics	66
Contact Variants and Standard Shell Assembly	67
Right Angle (90°) Compliant Press-Fit Termination - Code 62; and Straight Compliant Press-Fit Termination - Code 98	68
Right Angle (90°) and Straight Compliant Press-Fit Printed Board Contact Hole Pattern	69
Ordering Information	70

C O N N E C T O R S A V E R S / G E N D E R C H A N G E R S

AD and HAD Series Technical Characteristics	71
AD and HAD Series Contact Variants and Standard Shell Assembly Dimensions	72
Jackscrew Systems	73
AD and HAD Ordering Information	74
DAD Series Technical Characteristics	75
DAD Series Contact Variants and Standard Shell Assembly Dimensions	76
DAD Ordering Information	77

A P P L I C A T I O N T O O L S

Introduction	78
Reels for Automatic Pneumatic Crimp Tools	78
Contact Application Tools Cross Reference List	79
Compliant Press-fit Connectors Installation Tools	80
Suggested Printed Hole Sizes for Compliant Press-Fit Termination	81

Q P L L I S T I N G

Positronic offers a wide variety of QPL connector products.	82
---	----

*Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/dsub/catalog*

WIRE HARNESS CONNECTORS

SAVE TIME AND MONEY!

Let Positronic support you by cablizing your
SD / RD / ORD / ODD / DD connector selection.

Cable Assembly Design Support

We work closely with customers to:

1. Design assemblies in accordance with customer specifications.
2. Prepare wire harness connector configuration and performance specifications.
3. Design each system in accordance with applicable customer, domestic, and international standards.
4. Define and conduct performance and verification testing.



Technical Sales Support



Engineering Support



Puerto Rico Cable Assembly



Quality Assurance

FOR MORE DETAILS CONTACT **TECHNICAL SALES**
OR VISIT OUR **WEB SITE** AT:
CONNECTPOSITRONIC.COM/CABLE-ASSEMBLIES



Positronic
connectpositronic.com

GENERAL INFORMATION

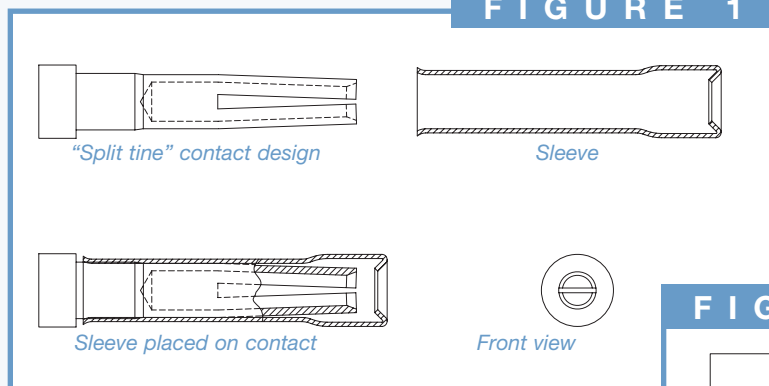
D-Sub



What Makes Positronic's New "PosiBand®" Contact Interface a Significant Improvement?

High reliability connectors utilize female **closed entry contacts** that provide an unbroken ring of solid material at the face of the contact. The closed entry feature is **crucial in preventing damage** to female contacts used in harsh environments, repeated mating cycles, blind mate applications and applications requiring highest reliability.

FIGURE 1



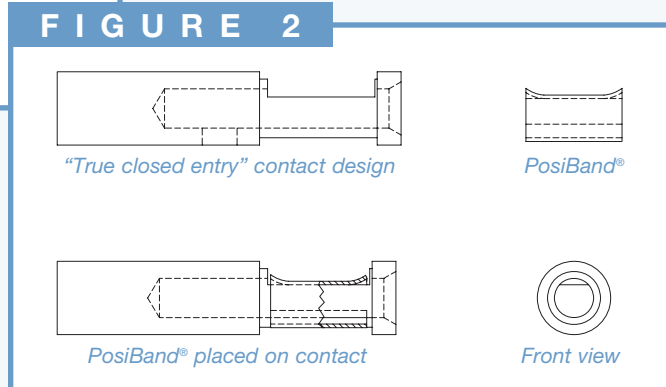
The most common **closed entry design** utilized by connector manufacturers is a split tine and sleeve concept. **See figure 1.** With this design, both the mechanical forces and

electrical interface are provided only at the tip of the female contact.

Positronic's new **PosiBand technology** takes a unique approach to closed entry female contacts.

PosiBand contacts utilize a two-piece contact design. **See figure 2.** Each piece serves a separate function, providing a more mechanically robust contact and more consistent electrical performance.

FIGURE 2



The main body of the **PosiBand** contact provides a true closed entry opening to enhance robustness. The **PosiBand** spring clip provides normal force on the male contact. Consistent electrical performance is supported through a larger area of contact interface between the male and female contact along the entire "floor" of the contact body. **PosiBand** contacts are QPL listed under **SAE AS39029** and qualified under **GSFC S-311-P4** to the higher 40 gram contact separation test requirement.

continued on next page . . .



continued from previous page . . .

The PosiBand® contact system has many advantages over the legacy split line design.

- X** **PosiBand** is more robust than the split line contact, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- X** **PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- X** **PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- X** The **PosiBand's** contact body does not require annealing of the crimp barrels, as does the split line design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- X** **PosiBand** is qualified under **SAE AS39029** specification. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C** to the higher 40 gram contact separation test requirement.
- X** **PosiBand** is protected by US Patent 7,115,002.

For more details about the **advantages of the PosiBand** system, please view the detailed white paper at www.connectpositronic.com/white-papers or visit our web site at www.connectpositronic.com.



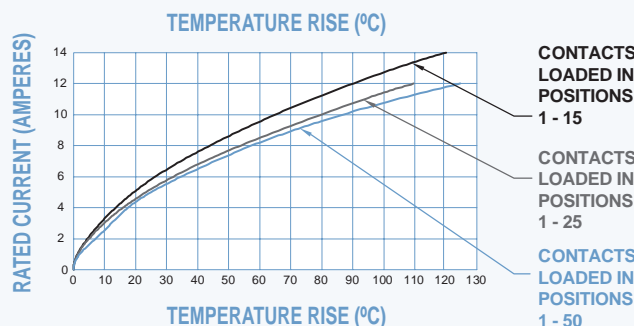
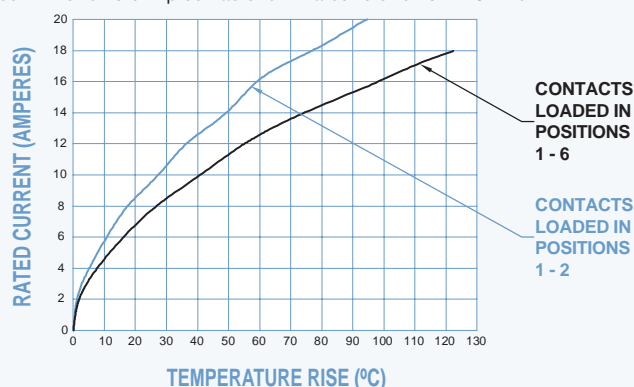
TEMPERATURE RISE CURVES

Test conducted in accordance with UL1977.

Size 20 PosiBand Contacts

Initial Contact Resistance: 0.004 ohms, maximum.

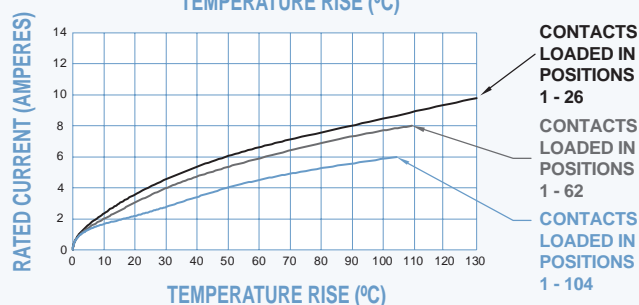
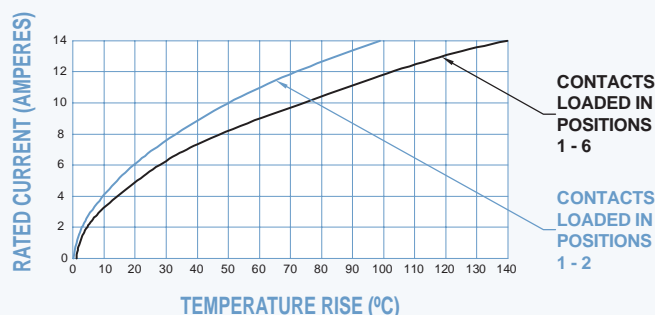
Curve developed using Standard Density D-subminiature connectors loaded with size 20 crimp contacts terminated to size 20 AWG wire.



Size 22 PosiBand Contacts

Initial Contact Resistance: 0.005 ohms, maximum.

Curve developed using High Density D-subminiature connectors loaded with size 22 crimp contacts terminated to size 22 AWG wire.



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

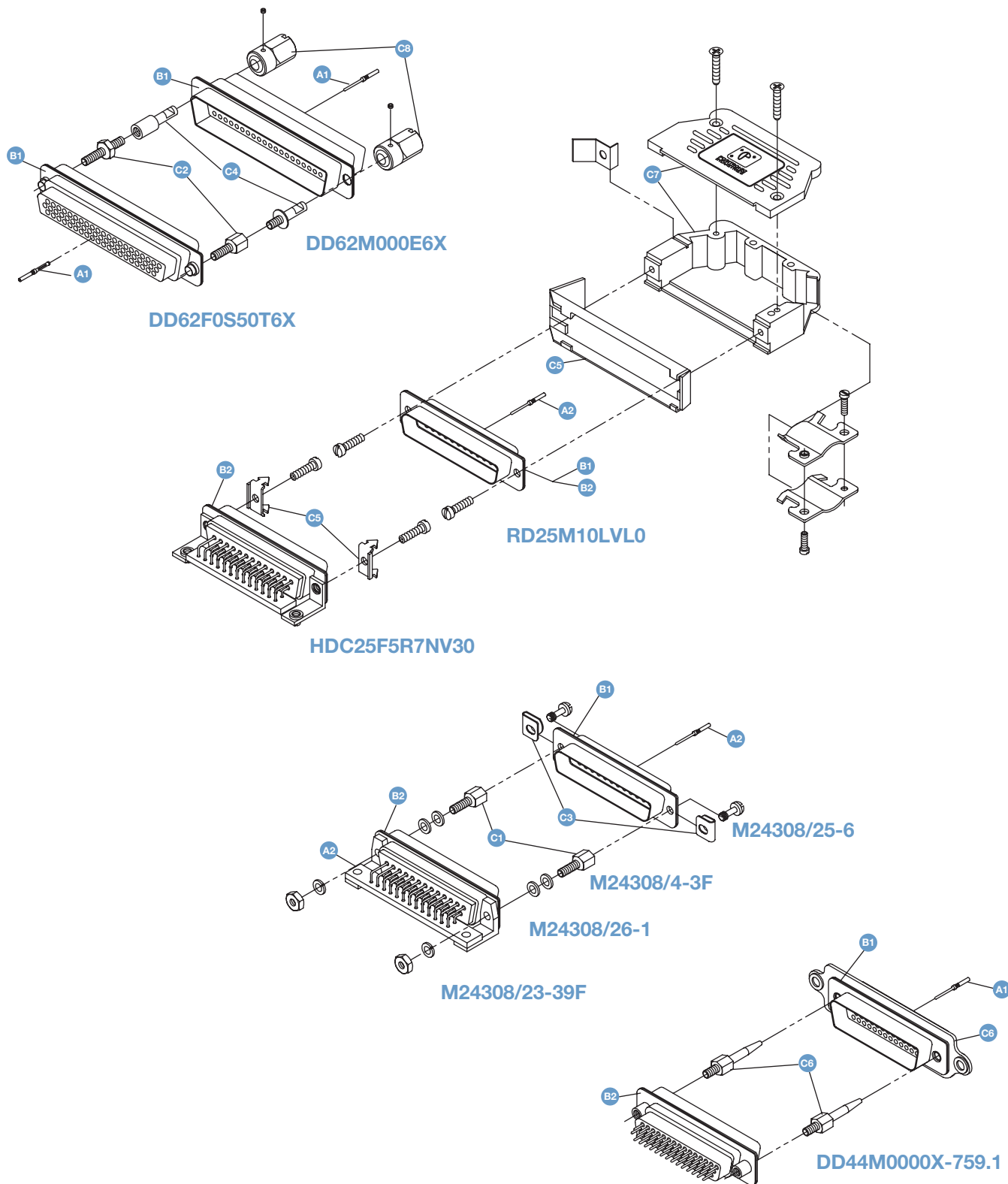


Positronic
connectpositronic.com

GENERAL INFORMATION

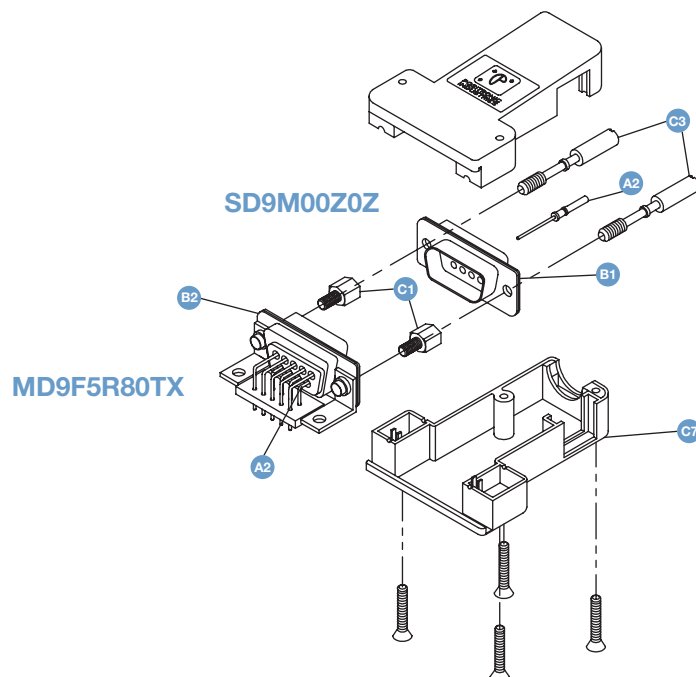
D-Sub

EXPLODED VIEWS OF TYPICAL MATED D-SUBMINIATURE CONNECTOR ASSEMBLIES





EXPLODED VIEWS OF TYPICAL MATED D-SUBMINIATURE CONNECTOR ASSEMBLIES



CONNECTOR COMPONENT DESCRIPTION AND TERMINOLOGY

- A1** - Male and female signal contacts, size 22. Terminations may be crimp, solder cup and printed board mount.
- A2** - Male and female signal contacts, size 20. Terminations may be crimp, solder cup, wrap post, compliant press-fit and printed board mount.
- B1** - Unloaded connector insulators, male and female. Insulator retention system retains all contact termination types. Insulator may be used as a free or fixed connector.
- B2** - Loaded connector insulators, male and female. Insulators may be preloaded per customer requirements with contacts having terminations of right angle (90°) or straight solder printed board mount, wrap post, solder cup and press-fit. Insulator contact positions may be selectively loaded with contacts. Connectors are normally fixed panel or printed board connectors.
- C1** - Fixed female jackscrews are the stationary threaded members of the non-polarized jackscrew system.
- C2** - Fixed male and female jackscrews are the stationary threaded members of the polarized jackscrew system.
- C3** - Rotating male jackscrews and screwlocks are the rotating threaded members of the non-polarized jackscrew system.
- C4** - Rotating male and female jackscrews are the rotating threaded members of the polarized jackscrew system.
- C5** - Vibration locking system consists of lock tabs on fixed connector and slide lock lever on free cable connector.
- C6** - Blind mating connector system with pilot probes on free connector and receptacle guides on panel mounted fixed connector.
- C7** - Cable adapters [Hoods] are used on the free cable connector to provide cable support and contact protection.
- C8** - Knobs of the polarized rotating jackscrew system are affixed to the rotating jackscrew by a set screw.



Positronic
connectpositronic.com

PROFESSIONAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

Size 20 Contacts, Fixed

IEC Publication 60807-2 Performance Level Two

UL Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
UL File #E140980



Melo-D series connectors are professional quality connectors recommended for use in sheltered, non-corrosive indoor or outdoor environments having normal ventilation, but without temperature or humidity controls. These fixed contact connectors meet the dimensional and performance requirements of IEC 60807-2, Performance Level Two.

Melo-D series connectors utilize precision machined contacts which are fixed within the connector body. The female contact is an open entry design contact, precision machined of high tensile phosphor bronze.

Six standard connector variants are offered in arrangements

of 9, 15, 25, 29, 37 and 50 contacts. Each Melo-D connector variant is available with contact terminations for solder cup, wrap post, and straight and right angle (90°) printed board mount terminations featuring a choice of three printed board footprints. Melo-D series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

A wide assortment of printed board mounting hardware, cable support hoods and locking systems is available from stock.

MELO-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Nylon resin, UL 94V-0, black color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional performance Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated; polyester.
Push-On Fasteners:	Phosphor bronze or beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contact - rugged open entry design.
Contact Retention In Insulator:	6 lbs. [27N]
Resistance To Solder Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6.

Contact Terminations:	Solder cup contacts - 0.042 inch [1.06mm] minimum hole diameter for 20 AWG [0.5mm ²] wire maximum. Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter. Right Angle (90°) Printed Board Mount - 0.028 inch [0.71mm] termination diameter for all printed board footprints. Wrap Post - 0.025 inch [0.64mm] square.
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting To Angle Brackets:	Jackscrews and riveted fasteners with a 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.
Mounting To Printed Board:	Rapid installation push-on fasteners and threaded posts.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Insulation Resistance:	5 G ohms.
Proof Voltage:	1000 V r.m.s.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

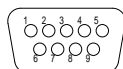
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

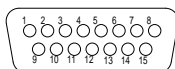
MD series connectors can be supplied with interfacial seals and sealed between shell and insulator. This provides an additional degree of moisture resistance. See Accessories catalog for details.

CONTACT VARIANTS

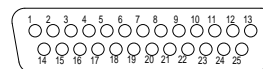
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



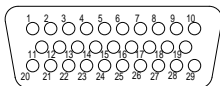
MD 9



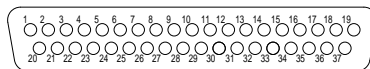
MD 15



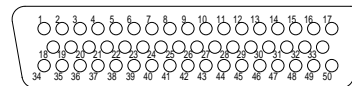
MD 25



MD 29

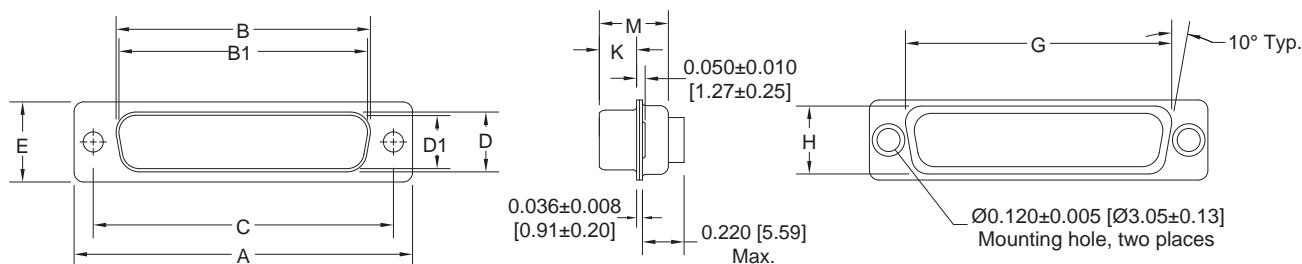


MD 37

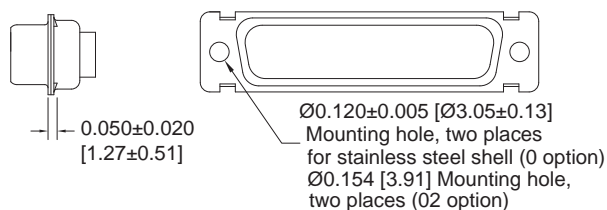


MD 50

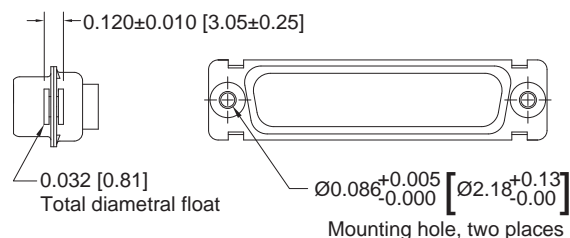
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
9 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
15 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
25 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
29 M	1.770 [44.96]		1.274 [32.36]	1.534 [38.96]		0.450 [11.43]	0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.230 [5.84]	0.426 [10.82]
29 F	1.770 [44.96]	1.251 [31.78]		1.534 [38.96]	0.431 [10.95]		0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.237 [6.02]	0.429 [10.90]
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
37 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
50 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

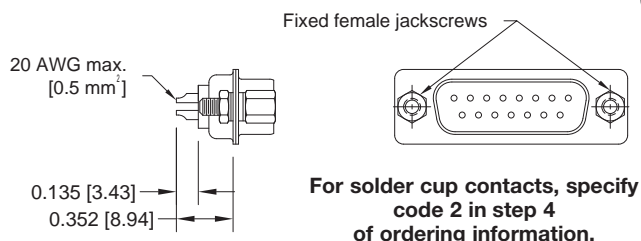


Positronic
connectpositronic.com

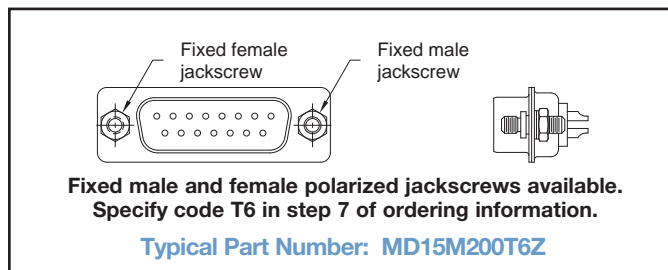
PROFESSIONAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

SOLDER CUP TERMINATION CODE 2



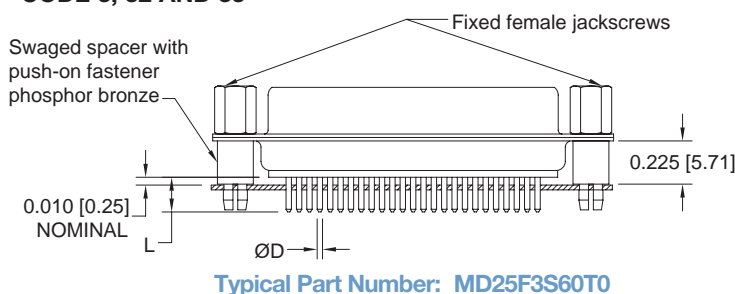
Typical Part Number: MD15M200T2Z



STRAIGHT PRINTED BOARD MOUNT TERMINATION CODE 3, 32 AND 33

CODE NUMBER	L	ØD
3	0.150 [3.81]	0.028 [0.71]
32	0.375 [9.53]	0.028 [0.71]
33	0.500 [12.70]	0.028 [0.71]

For straight printed board mount
contacts, specify code number in
step 4 of ordering information.

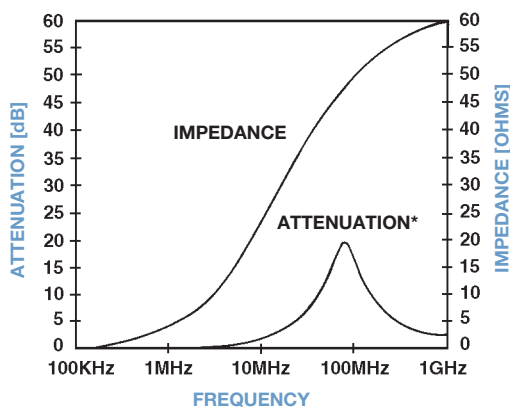


FERRITE INDUCTOR BAR FOR EMI/RFI NOISE SUPPRESSION

CODE F AND Q

STRAIGHT PRINTED BOARD MOUNT CONNECTOR

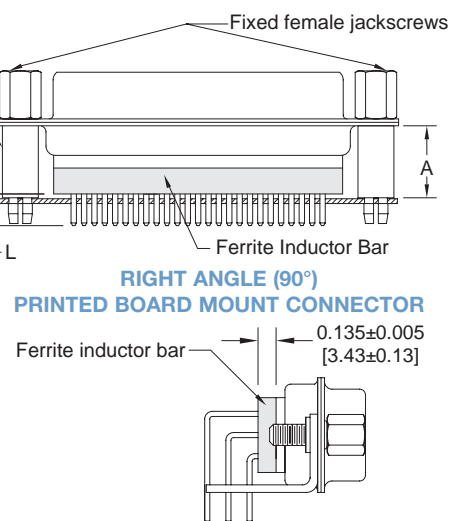
FILTERING CHARACTERISTICS



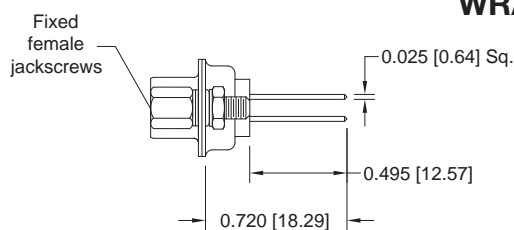
MATERIAL: Nickel zinc ceramic

SERIES	CODE NO.	A	L
MD, MDX, HDC	32	0.375 [9.53]	0.240 [6.10]
ODD		0.375 [9.53]	0.165 [4.19]
DD		0.515 [13.08]	0.165 [4.19]
ED, HDC	36	0.375 [9.53]	0.101 [2.57]
MD, MDX	4	-----	-----
ODD	5	-----	-----
MD	59	-----	-----
MD, HDC	6	0.375 [9.53]	0.360 [9.14]

Specify code F or Q in step 6 of ordering
information. F for ferrite inductor and Q for
ferrite inductor with push-on fastener.



WRAP POST TERMINATION CODE 6



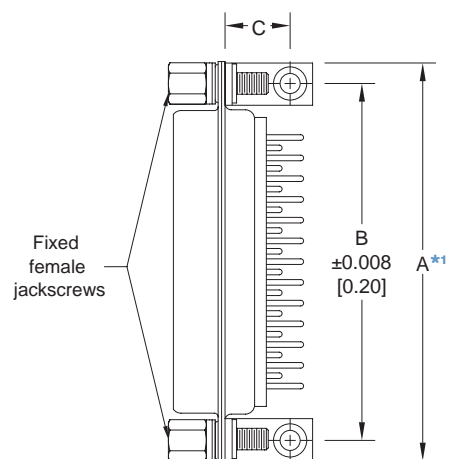
Typical Part Number: MD15F600T20

For wrap post contacts,
specify code 6 in step 4
of ordering information.

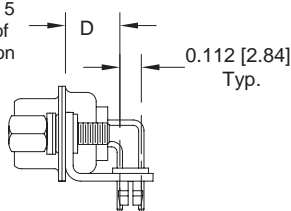


MD25M6S50T0

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 5, 0.283 [7.19] CONTACT EXTENSION



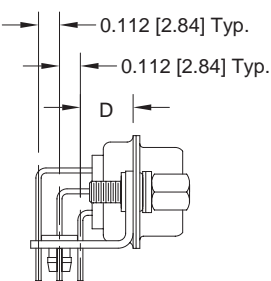
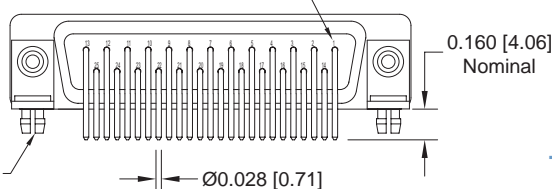
Specify code 5
in step 4 of
ordering information



Typical Part Number:
MD25M5R4NT2X

Push-on fastener
beryllium copper

Numbering shown is rear view
of male and face view of female.



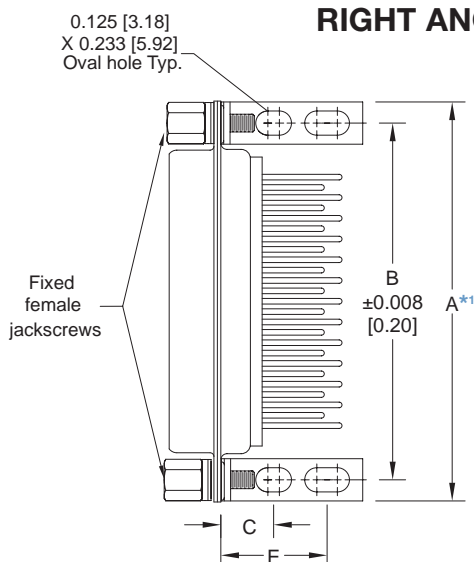
Typical Part Number:
MD50M5R4NT2X

MD**5*** 0.283 [7.19] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
MD9*5***	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
MD15*5***	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
MD25*5***	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
MD29*5***	1.754 [44.55]	1.534 [38.96]	0.395 [10.03]	0.283 [7.19]
MD37*5***	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
MD50*5***	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]

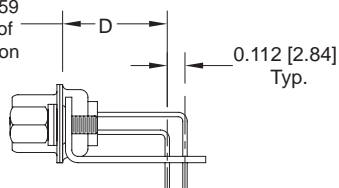
NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 59, 0.545 [13.84] CONTACT EXTENSION

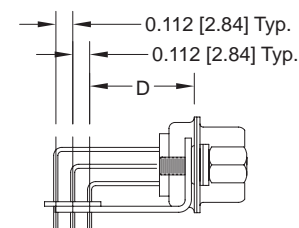
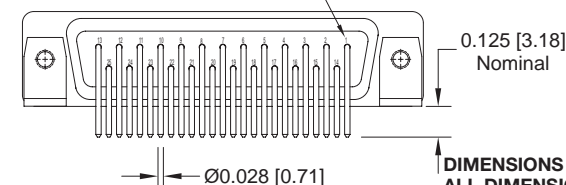


Specify code 59
in step 4 of
ordering information



Typical Part Number:
MD25M59B0T2X

Numbering shown is rear view
of male and face view of female.



Typical Part Number:
MD29M59B0T2X

MD**59*** 0.545 [13.84] CONTACT EXTENSION					
PART NUMBER	A*1	B	C	D	E
MD9*59***	1.204 [30.58]	0.984 [24.99]	0.275 [6.99]	0.545 [13.84]	0.601 [15.27]
MD15*59***	1.532 [38.91]	1.312 [33.32]	0.275 [6.99]	0.545 [13.84]	0.601 [15.27]
MD25*59***	2.072 [52.63]	1.852 [47.04]	0.275 [6.99]	0.545 [13.84]	0.601 [15.27]
MD29*59***	1.754 [44.55]	1.534 [38.96]	0.275 [6.99]	0.545 [13.84]	0.657 [16.69]
MD37*59***	2.720 [69.09]	2.500 [63.50]	0.275 [6.99]	0.545 [13.84]	0.601 [15.27]
MD50*59***	2.626 [66.70]	2.406 [61.11]	0.275 [6.99]	0.545 [13.84]	0.657 [16.69]

NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

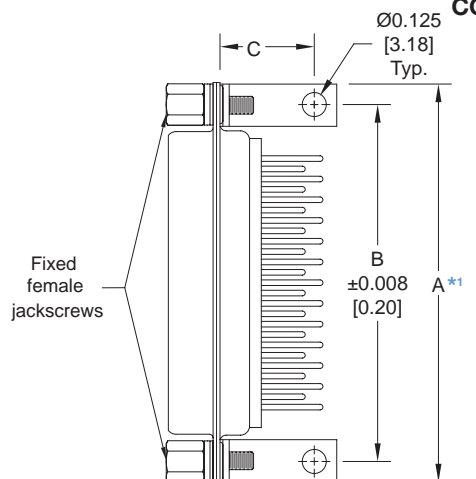


Positronic
connectpositronic.com

PROFESSIONAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

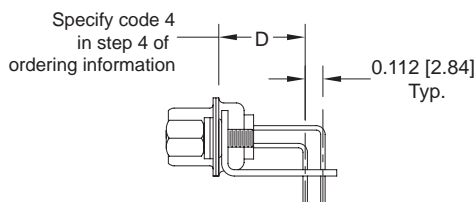
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 4, 0.450 [11.43] CONTACT EXTENSION



MD**4**** 0.450 [11.43] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
MD9*4****	1.204 [30.58]	0.984 [24.99]	0.506 [12.85]	0.450 [11.43]
MD15*4****	1.532 [38.91]	1.312 [33.32]	0.506 [12.85]	0.450 [11.43]
MD25*4****	2.072 [52.63]	1.852 [47.04]	0.506 [12.85]	0.450 [11.43]
MD29*4****	1.754 [44.55]	1.534 [38.96]	0.562 [14.27]	0.450 [11.43]
MD37*4****	2.720 [69.09]	2.500 [63.50]	0.506 [12.85]	0.450 [11.43]
MD50*4****	2.626 [66.70]	2.406 [61.11]	0.562 [14.27]	0.450 [11.43]

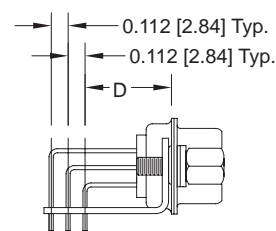
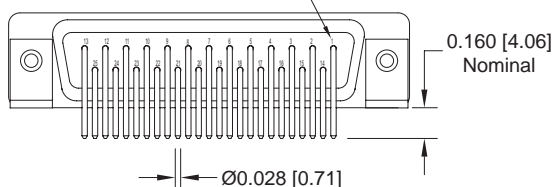
NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



Specify code 4
in step 4 of
ordering information

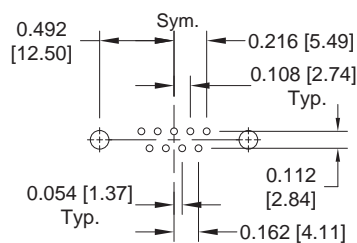
Numbering shown is rear view
of male and face view of female.



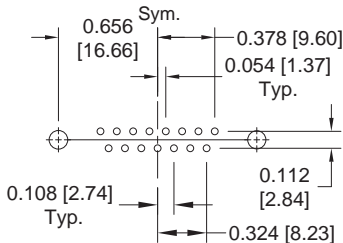
Typical Part Number:
MD50M4B0T20

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

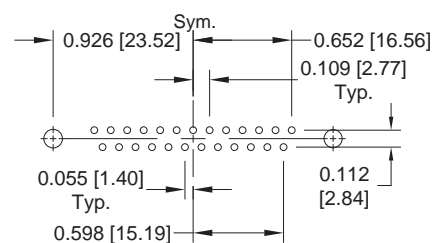
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



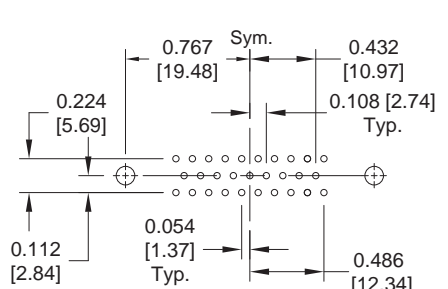
MD9



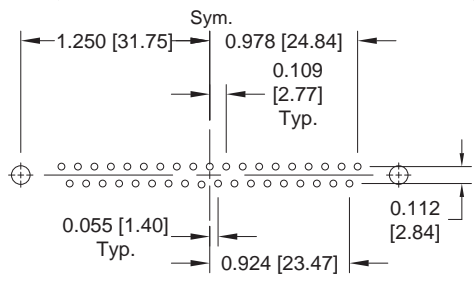
MD15



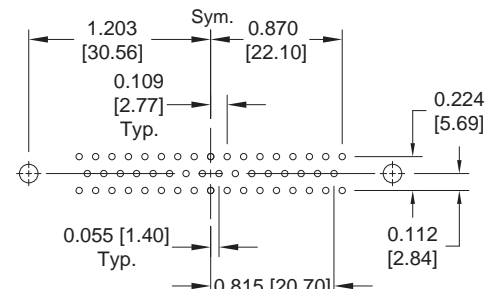
MD25



MD29



MD37



MD50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for contact termination positions.
Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	MD	25	F	59	R7	N	T6	X	/AA	-14
<div>STEP 1 - BASIC SERIES</div> <div>MD series.</div>										<div>STEP 10 - SPECIAL OPTIONS</div> <div>-14 - 0.000030 [0.76μ] gold over nickel.</div> <div>-15 - 0.000050 [1.27μ] gold over nickel.</div> <div>CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS</div>
<div>STEP 2 - CONNECTOR VARIANTS</div> <div>9, 15, 25, 29, 37, 50</div>										<div>STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS</div> <div>/AA - RoHS Compliant</div> <div>NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: MD25F59R7NT6X</div>
<div>STEP 3 - CONNECTOR GENDER</div> <div>M - Male</div> <div>F - Female</div>										
<div>STEP 4 - CONTACT TERMINATION TYPE</div> <div>2 - Solder cup.</div> <div>3 - Solder, Straight Printed Board Mount with 0.150 [3.81] Tail Length.</div> <div>32 - Solder, Straight Printed Board Mount with 0.375 [9.52] Tail Length.</div> <div>33 - Solder, Straight Printed Board Mount with 0.500 [12.70] tail length.</div> <div>4 - Solder, Right Angle (90°) Printed Board Mount with 0.450 [11.43] Contact Extension.</div> <div>5 - Solder, Right Angle (90°) Printed Board Mount with 0.283 [7.19] Contact Extension.</div> <div>59 - Solder, Right Angle (90°) Printed Board Mount with 0.545 [13.84] Contact Extension.</div> <div>6 - Wrap Post.</div>										
<div>*1 STEP 5 - MOUNTING STYLE</div> <div>0 - Mounting Hole, 0.120 [3.05] Ø.</div> <div>02 - Mounting Hole, 0.154 [3.91] Ø.</div> <div>B - Bracket, Mounting, Right Angle (90°) Metal.</div> <div>B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar.</div> <div>B7 - Bracket, Mounting, Right Angle (90°) Plastic.</div> <div>B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar.</div> <div>F - Float Mounts, Universal.</div> <div>P - Threaded Post, Brass, 0.225 [5.71] Length.</div> <div>P2 - Threaded Post, Nylon, 0.225 [5.71] Length.</div> <div>R - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews.</div> <div>R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar.</div> <div>R3 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole.</div> <div>R4 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads.</div> <div>R5 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut.</div> <div>R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar.</div> <div>R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar.</div> <div>R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar.</div> <div>S - Swaged Spacer, 4-40 Threads, 0.225 [5.71] Length.</div> <div>S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length.</div> <div>S5 - Swaged Locknut, 4-40 Threads.</div> <div>S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.225 [5.71] Length.</div> <div>S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.375 [9.53] Length.</div>										<div>STEP 8 - Shell Options</div> <div>0 - Zinc plated, with chromate seal.</div> <div>*4 S - Stainless steel, passivated.</div> <div>X - Tin plated.</div> <div>Z - Tin plated and dimpled (male connectors only).</div>
<div>*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS</div> <div>0 - None.</div> <div>*3 V3 - Lock Tab, connector front panel mounted.</div> <div>*3 V5 - Lock Tab, connector rear panel mounted.</div> <div>*3 VL - Lock Lever, used with Hoods only.</div> <div>T - Fixed Female Jackscrews.</div> <div>T2 - Fixed Female Jackscrews.</div> <div>T6 - Fixed Male and Female Polarized Jackscrews.</div> <div>E - Rotating Male Jackscrews.</div> <div>E2 - Rotating Male Screw Locks.</div> <div>E3 - Rotating Male with Internal Hex for 3/32 Hex Drives</div> <div>E6 - Rotating Male and Female Polarized Jackscrews.</div>										
<div>*1 STEP 6 - HOODS AND PUSH-ON FASTENERS</div> <div>0 - None.</div> <div>J - Hood, Top Opening, Plastic.</div> <div>L - Hood, Side Opening, Plastic.</div> <div>Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only.</div> <div>Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only.</div> <div>Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 9, 15, 25, 37, and 50 only.</div> <div>H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50 only</div> <div>G - Hood, EMI/RFI, Die Cast Zinc. Available in size 9, 15, 25, 37, and 50 only.</div> <div>*5 AN - Lightweight Aluminum Hood, nickel finish.</div> <div>*5 AC - Lightweight Aluminum Hood, no finish.</div> <div>W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only.</div> <div>N - Push-on fastener for right angle (90°) mounting brackets.</div> <div>*2 F - Ferrite inductor.</div> <div>*2 Q - Ferrite inductor for use with push-on fastener and right angle (90°) mounting brackets.</div>										

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 Ferrite inductor is available on contact types 32, 33, 4, 59 and 6 only. For more information on ferrite inductors, see page 7.

*3 VL, V3 and V5 locking systems are not available for connector variants

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 Ferrite inductor is available on contact types 32, 33, 4, 59 and 6 only. For more information on ferrite inductors, see page 7.

*3 VL, V3 and V5 locking systems are not available for connector variants 37 and 50. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*4 For stainless steel dimpled male versions contact Technical Sales.

*5 AN and AC hood are not available for connector variant 29. Consult Technical Sales for availability.



Positronic
connectpositronic.com

INDUSTRIAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

Size 20 Contacts, Fixed

PosiBand® Closed Entry

IEC Publication 60807-2
Performance Level One

Consult Technical Sales for
UL Recognition



MDX series connectors are industrial quality connectors recommended for use in sheltered, non-corrosive indoor or outdoor environments having normal ventilation, but without temperature or humidity controls. These fixed contact connectors meet the dimensional and performance requirements of IEC 60807-2, Performance Level One.

MDX series connectors utilize precision machined contacts which are fixed within the connector body. The female utilizes Positronic's unique PosiBand closed entry contact system, see page 1 for details.

Five standard connector variants are offered in arrangements of 9, 15, 25, 37 and 50 contacts. Each variant is available with contact terminations for solder cup and straight and right angle (90°) printed board mount terminations. MDX series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

A wide assortment of printed board mounting hardware, cable support hoods and locking systems is available from stock.

MDX SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D5927, UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional performance Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated; polyester.
Push-On Fasteners:	Phosphor bronze or beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 20 contact, female contact - PosiBand closed entry design, see page 1 for details.
Contact Retention In Insulator:	6 lbs. [27N]

Contact Terminations:	Solder cup contacts - 0.042 inch [1.06mm] minimum hole diameter for 20 AWG [0.5mm ²] wire maximum. Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter. Right Angle (90°) Printed Board Mount - 0.028 inch [0.71mm] termination diameter for all printed board footprints.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting To Angle Brackets:	Jackscrews and riveted fasteners with a 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.
Mounting To Printed Board:	Rapid installation push-on fasteners and threaded posts.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	1000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

18 amperes, 2 contacts energized.
14 amperes, 6 contacts energized.
11 amperes, 15 contacts energized.
10 amperes, 25 contacts energized.
9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

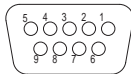
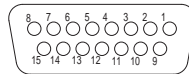
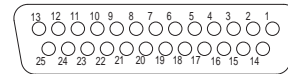
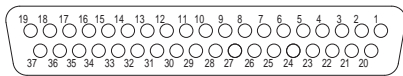
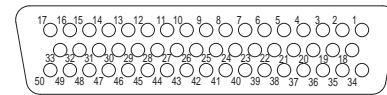
Initial Contact Resistance:	0.004 ohms maximum.
Insulation Resistance:	5 G ohms.
Proof Voltage:	1000 V r.m.s.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

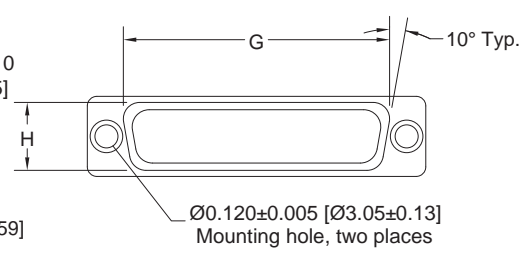
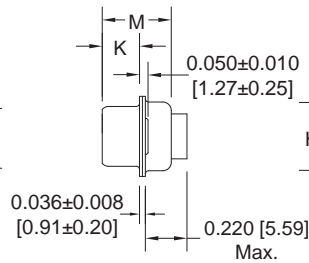
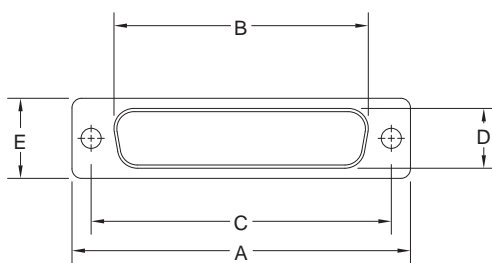
Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

CONTACT VARIANTS

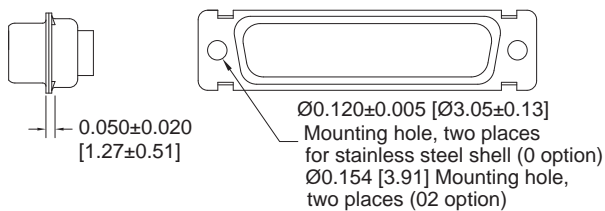
FACE VIEW OF FEMALE

**MDX 9****MDX 15****MDX 25****MDX 37****MDX 50**

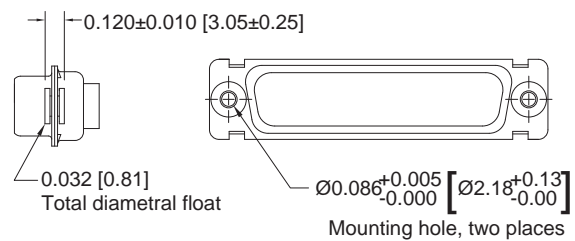
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
9 S	1.213 [30.81]	0.643 [16.33]	0.984 [24.99]	0.311 [7.90]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
15 S	1.541 [39.14]	0.971 [24.66]	1.312 [33.32]	0.311 [7.90]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
25 S	2.088 [53.04]	1.511 [38.38]	1.852 [47.04]	0.311 [7.90]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
37 S	2.729 [69.32]	2.159 [54.84]	2.500 [63.50]	0.311 [7.90]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
50 S	2.635 [66.93]	2.064 [52.43]	2.406 [61.11]	0.423 [10.74]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

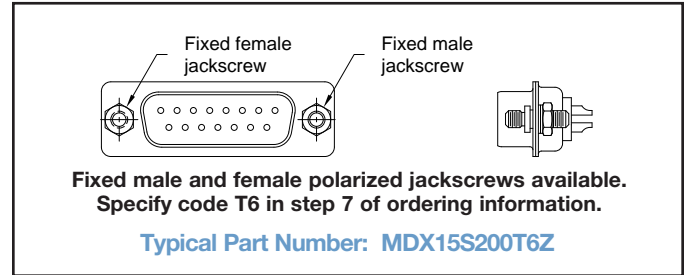
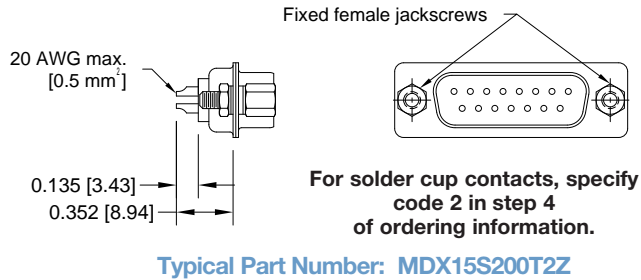


Positronic
connectpositronic.com

INDUSTRIAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

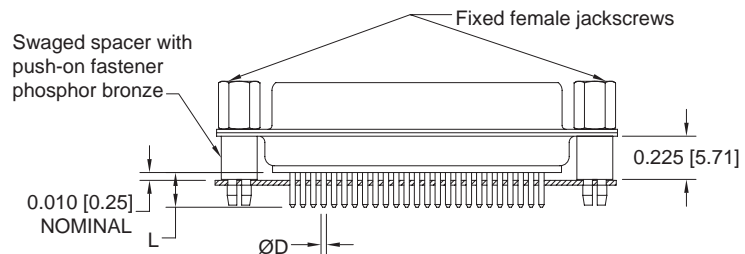
SOLDER CUP TERMINATION CODE 2



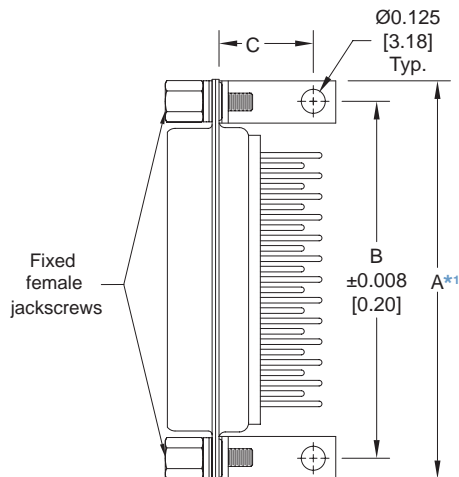
STRAIGHT PRINTED BOARD MOUNT TERMINATION CODE 3, 32 AND 33

CODE NUMBER	L	ØD
3	0.170 [4.32]	0.028 [0.71]
32	0.375 [9.53]	0.028 [0.71]
33	0.500 [12.70]	0.028 [0.71]

For straight printed board mount
contacts, specify code number in
step 4 of ordering information.



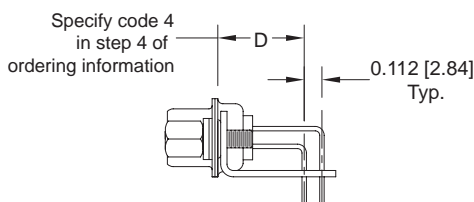
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 4, 0.450 [11.43] CONTACT EXTENSION



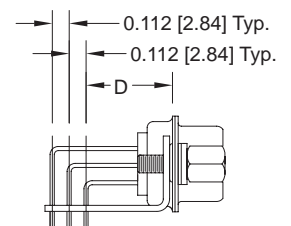
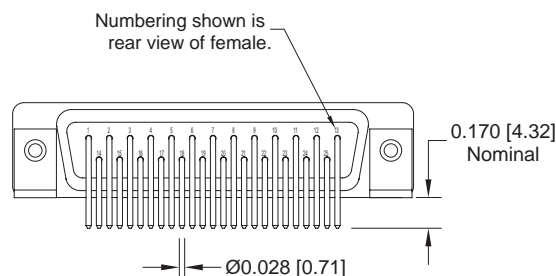
MDX**4*** 0.450 [11.43] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
MDX9S4***	1.204 [30.58]	0.984 [24.99]	0.506 [12.85]	0.450 [11.43]
MDX15S4***	1.532 [38.91]	1.312 [33.32]	0.506 [12.85]	0.450 [11.43]
MDX25S4***	2.072 [52.63]	1.852 [47.04]	0.506 [12.85]	0.450 [11.43]
MDX37S4***	2.720 [69.09]	2.500 [63.50]	0.506 [12.85]	0.450 [11.43]
MDX50S4***	2.626 [66.70]	2.406 [61.11]	0.562 [14.27]	0.450 [11.43]

NOTE:

*1 "A" dimension applies for
metal angle brackets only.
Consult Accessories
D-subminiature catalog for
"A" dimension when plastic
brackets are used.

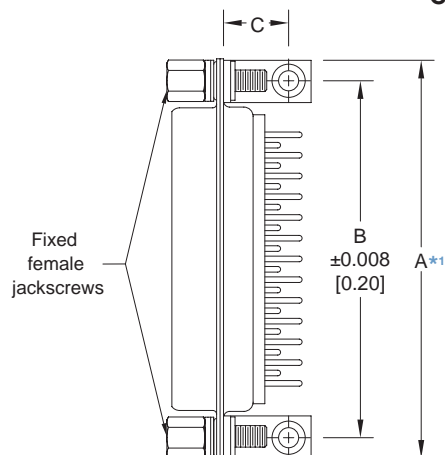


Typical Part Number:
MDX25S4B0T20



Typical Part Number:
MDX50S4B0T20

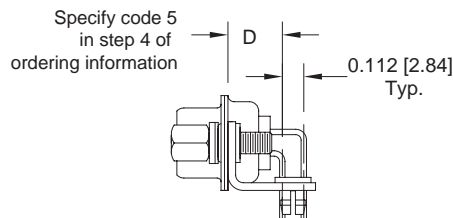
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 5, 0.283 [7.19] CONTACT EXTENSION



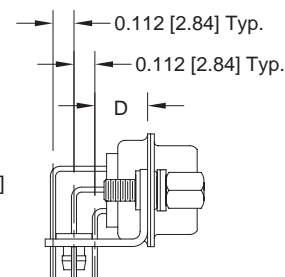
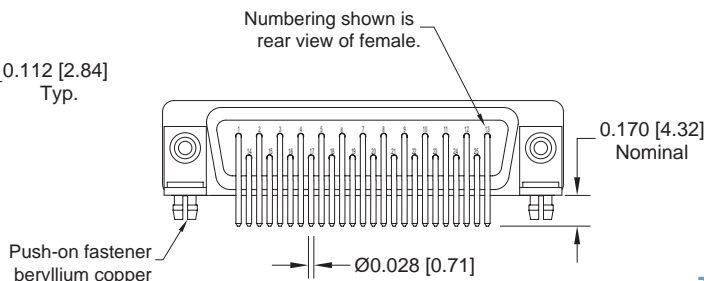
MDX**5*** 0.283 [7.19] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
MDX9S5***	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
MDX15S5***	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
MDX25S5***	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
MDX37S5***	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
MDX50S5***	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]

NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



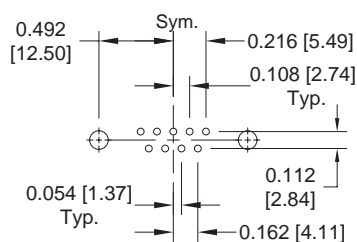
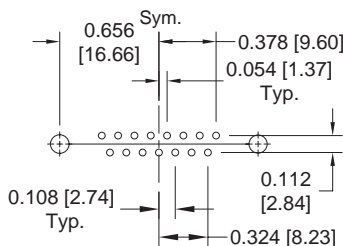
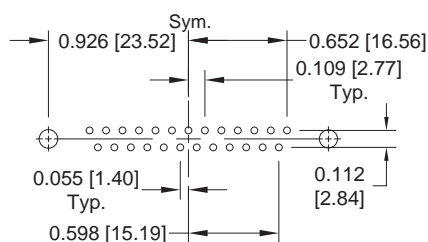
Specify code 5
in step 4 of
ordering information



Typical Part Number:
MDX50S5R4NT2X

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

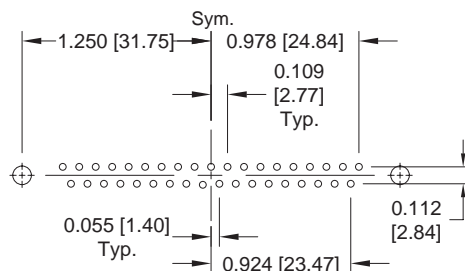
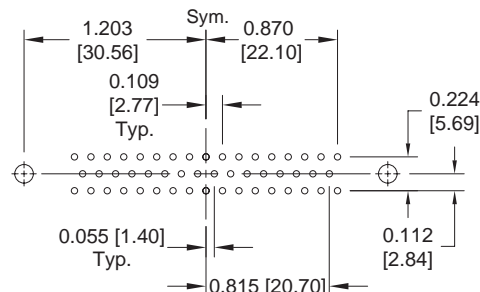
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.

**MDX9****MDX15****MDX25**

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for contact termination positions.

Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.

**MDX37****MDX50**



Positronic
connectpositronic.com

INDUSTRIAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	MDX	25	S	5	R7	N	T6	X	/AA	-14
<div> <div> STEP 1 - BASIC SERIES MDX series. </div> <div> STEP 2 - CONNECTOR VARIANTS 9, 15, 25, 37, 50 </div> <div> STEP 3 - CONNECTOR GENDER S - Female - Industrial Level PosiBand closed entry contacts </div> <div> STEP 4 - CONTACT TERMINATION TYPE 2 - Solder cup. 3 - Solder, Straight Printed Board Mount with 0.170 [4.32] Tail Length. ^{**4} 32 - Solder, Straight Printed Board Mount with 0.375 [9.52] Tail Length. ^{**4} 33 - Solder, Straight Printed Board Mount with 0.500 [12.70] tail length. ^{**4} 4 - Solder, Right Angle (90°) Printed Board Mount with 0.450 [11.43] Contact Extension. 5 - Solder, Right Angle (90°) Printed Board Mount with 0.283 [7.19] Contact Extension. </div> <div> ^{*1} STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø. 02 - Mounting Hole, 0.154 [3.91] Ø. B - Bracket, Mounting, Right Angle (90°) Metal. B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar. B7 - Bracket, Mounting, Right Angle (90°) Plastic. B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar. F - Float Mounts, Universal. P - Threaded Post, Brass, 0.225 [5.71] Length. P2 - Threaded Post, Nylon, 0.225 [5.71] Length. R - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews. R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R3 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole. R4 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads. R5 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut. R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. S - Swaged Spacer, 4-40 Threads, 0.225 [5.71] Length. S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length. S5 - Swaged Locknut, 4-40 Threads. S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.225 [5.71] Length. S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.375 [9.53] Length. </div> </div> <div> STEP 10 - SPECIAL OPTIONS -14 - 0.000030 [0.76µ] gold over nickel. -15 - 0.000050 [1.27µ] gold over nickel. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS </div> <div> STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: MDX25S5R7NT6X </div> <div> STEP 8 - Shell Options 0 - Zinc plated, with chromate seal. S - Stainless steel, passivated. X - Tin plated. Z - Tin plated and dimpled (male connectors only). </div> <div> ^{*1} STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. ^{**3} V3 - Lock Tab, connector front panel mounted. ^{**3} V5 - Lock Tab, connector rear panel mounted. ^{**3} VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with Internal Hex for 3/32 Hex Drives E6 - Rotating Male and Female Polarized Jackscrews. </div> <div> ^{*1} STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None. J - Hood, Top Opening, Plastic. L - Hood, Side Opening, Plastic. Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only. Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only. Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 9, 15, 25, 37, and 50 only. H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50 only. G - Hood, EMI/RFI, Die Cast Zinc. Available in size 9, 15, 25, 37, and 50 only. AN - Lightweight Aluminum Hood, nickel finish. AC - Lightweight Aluminum Hood, no finish. W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only. N - Push-on fastener for right angle (90°) mounting brackets. ^{**2} F - Ferrite inductor. ^{**2} Q - Ferrite inductor for use with push-on fastener and right angle (90°) mounting brackets. </div>										

^{*1} For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

^{*2} Ferrite inductor is available on contact types 32, 33, 4, 59 and 6 only. For more information on ferrite inductors, see page 7.

^{*3} VL, V3 and V5 locking systems are not available for connector variants 37 and 50. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

^{*4} Consult technical sales for availability.

DIMENSIONS ARE IN INCHES [MILLIMETERS].

15 ALL DIMENSIONS ARE SUBJECT TO CHANGE.



**Size 20 Contacts, Fixed
European Standard
Printed Circuit Board Layout
IEC Publication 60807-2
Performance Level Two**

UL Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
UL File #E140980



Euro-D series connectors are professional quality connectors recommended for use in sheltered, non-corrosive indoor or outdoor environments having normal ventilation, but without temperature or humidity controls. These fixed contact connectors meet the dimensional and performance requirements of IEC 60807-2, Performance Level Two.

Euro-D series connectors utilize precision machined contacts which are fixed within the connector body. The female contact is an open entry design contact, precision machined of high tensile phosphor bronze.

Six standard connector variants are offered in

arrangements of 9, 15, 25, 29, 37 and 50 contacts. Each Euro-D connector variant is available with contact terminations for solder cup, wrap post and straight and right angle (90°) printed board mount terminations per standard European metric footprints. Euro-D series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

A wide assortment of printed board mounting hardware, cable support hoods and locking systems is available from stock.

EURO-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Nylon resin, UL 94V-0, black color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional performance Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated; polyester.
Push-On Fasteners:	Phosphor bronze or beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contact - rugged open entry design.
Contact Retention In Insulator:	6 lbs. [27N]
Resistance To Solder Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6.

Contact Terminations:	Solder cup contacts - 0.042 inch [1.06mm] minimum hole diameter for 20 AWG [0.5mm ²] wire maximum. Straight Printed Board Mount - 0.024 inch [0.61mm] termination diameter. Right Angle (90°) Printed Board Mount - 0.024 inch [0.61mm] termination diameter for European Metric Footprints.
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting To Angle Brackets:	Jackscrews and riveted fasteners with a 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.
Mounting To Printed Board:	Rapid installation push-on fasteners and threaded posts.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Insulation Resistance:	5 G ohms.
Proof Voltage:	1000 V r.m.s.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

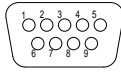


Positronic
connectpositronic.com

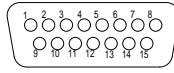
PROFESSIONAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

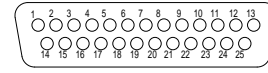
CONTACT VARIANTS FACE VIEW OF MALE OR REAR VIEW OF FEMALE



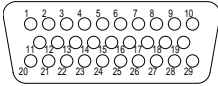
ED 9



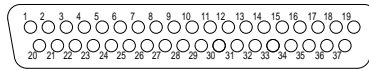
ED 15



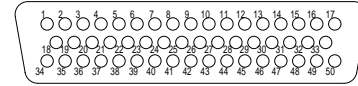
ED 25



ED 29

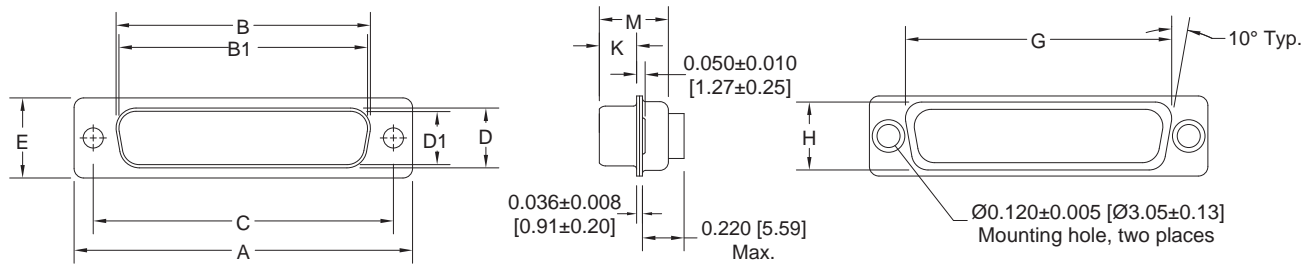


ED 37

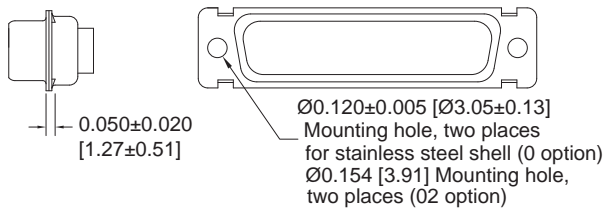


ED 50

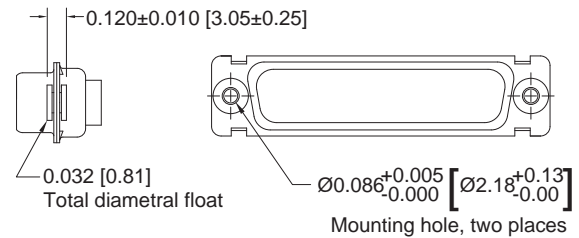
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



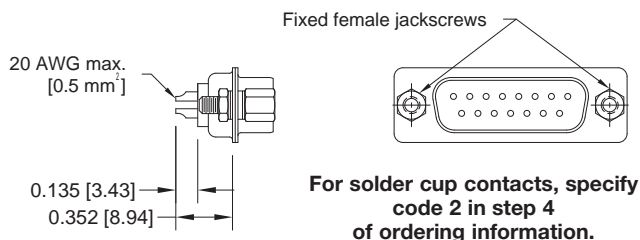
OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



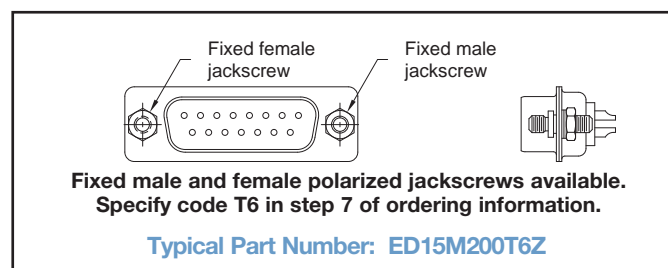
CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
9 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
15 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
25 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
29 M	1.770 [44.96]		1.274 [32.36]	1.534 [38.96]		0.450 [11.43]	0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.230 [5.84]	0.426 [10.82]
29 F	1.770 [44.96]	1.251 [31.78]		1.534 [38.96]	0.431 [10.95]		0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.237 [6.02]	0.429 [10.90]
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
37 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
50 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

SOLDER CUP TERMINATION CODE 2



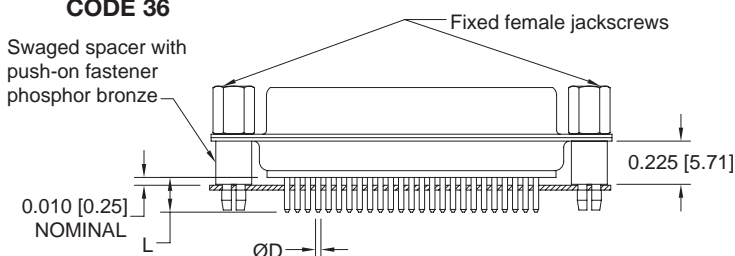
Typical Part Number: **ED15M200T2Z**



STRAIGHT PRINTED BOARD MOUNT TERMINATION CODE 36

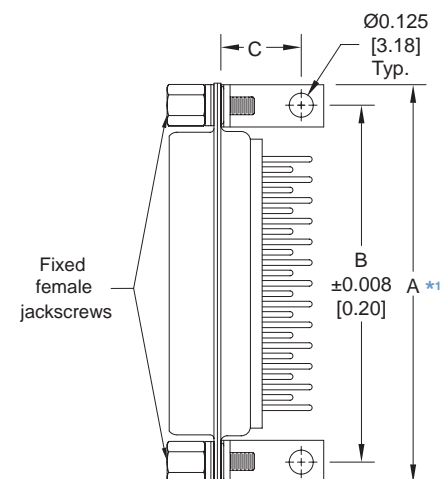
CODE NUMBER	L	ØD
36	0.236 [5.99]	0.024 [0.61]

For straight printed board mount
contacts, specify code number in
step 4 of ordering information.



Typical Part Number: **ED25F36S60T0**

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 42 AND 52, 0.370 [9.40] CONTACT EXTENSION



ED**(42 or 52)**** 0.370 [9.40] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
ED9*(42 or 52)****	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]
ED15*(42 or 52)****	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]
ED25*(42 or 52)****	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]
ED29*(42 or 52)****	1.754 [44.55]	1.534 [38.96]	0.470 [11.94]	0.370 [9.40]
ED37*(42 or 52)****	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]
ED50*(42 or 52)****	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]

NOTE:

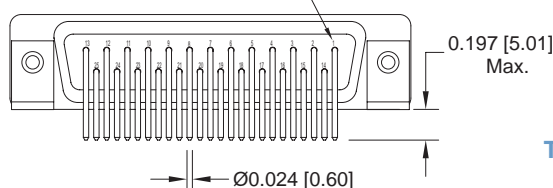
*1 "A" dimension applies for
metal angle brackets only.
Consult Accessories
D-subminiature catalog for
"A" dimension when plastic
brackets are used.

Specify code 42
or 52 in step 4 of
ordering information

0.100 [2.54] Typ.
for code 42 contacts
0.112 [2.84] Typ.
for code 52 contacts

Typical Part Number:
ED25M42B0T2X

Numbering shown is
rear view of male and face
view of female.



Typical Part Number:
ED50M52B0T2X

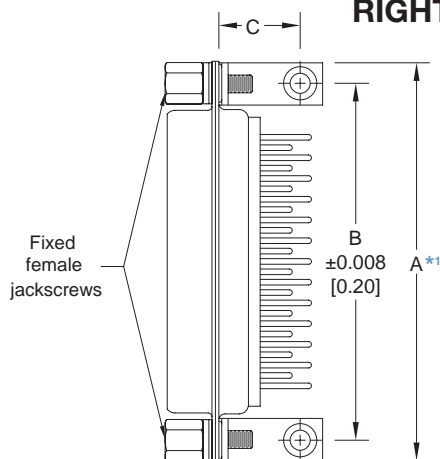


Positronic
connectpositronic.com

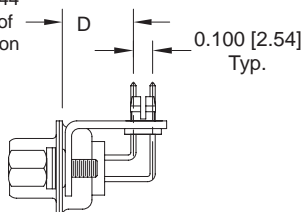
PROFESSIONAL QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 44, 0.370 [9.40] CONTACT EXTENSION

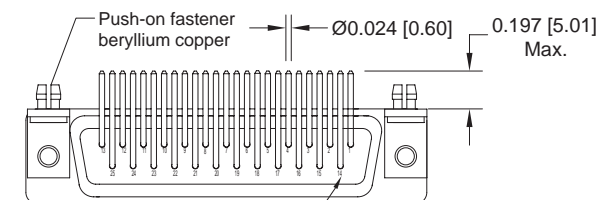


Specify code 44
in step 4 of
ordering information



Typical Part Number:
ED25M44B0NT2X

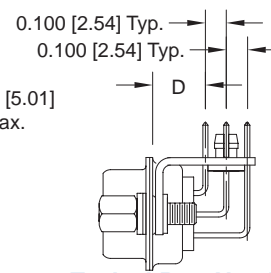
ED**44**** 0.370 [9.40] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
ED9*44****	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]
ED15*44****	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]
ED25*44****	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]
ED29*44****	1.754 [44.55]	1.534 [38.96]	0.470 [11.94]	0.370 [9.40]
ED37*44****	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]
ED50*44****	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]



Numbering shown is rear view
of male and face view of female.

NOTE:

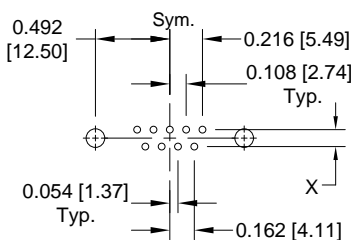
*1 "A" dimension applies for
metal angle brackets only.
Consult Accessories
D-subminiature catalog for
"A" dimension when plastic
brackets are used.



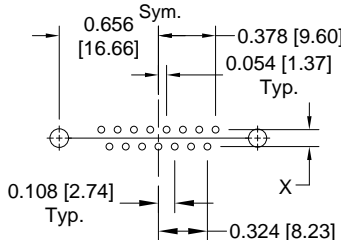
Typical Part Number:
ED29M44B0NT2X

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

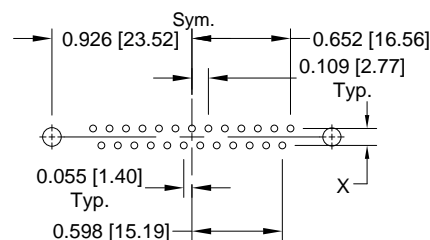
FOR CODE 42 AND 52 CONTACTS, MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.
FOR CODE 44 CONTACTS, MOUNT CONNECTOR WITH MATING FACE POSITIONED TO OPPOSE DIRECTION OF ARROW.



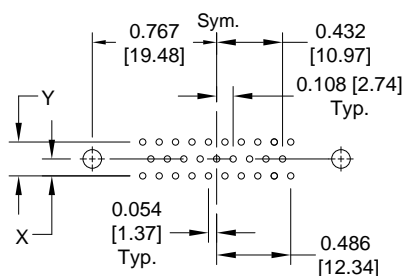
ED9



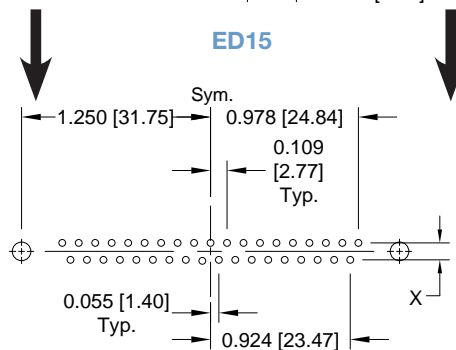
ED15



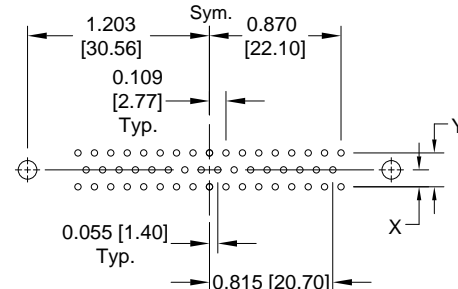
ED25



ED29



ED37



ED50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.040 [1.02] Ø hole for contact termination positions.

Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.

CODE NUMBER	X	Y
36	0.112 [2.84]	0.224 [5.69]
42	0.100 [2.54]	0.200 [5.08]
44	0.100 [2.54]	0.200 [5.08]
52	0.112 [2.84]	0.224 [5.69]



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	ED	9	M	36	0	0	0	0	/AA	-14
<div> <div> STEP 1 - BASIC SERIES ED series. </div> <div> STEP 2 - CONNECTOR VARIANTS 9, 15, 25, 29, 37, 50 </div> <div> STEP 3 - CONNECTOR GENDER M - Male F - Female </div> <div> STEP 4 - CONTACT TERMINATION TYPE 2 - Solder cup. 36 - Solder, Straight Printed Board Mount with 0.236 [5.99] Tail Length. 42 - Solder, Right Angle (90°) Printed Board Mount with 0.370 [9.40] Contact Extension. 44 - Solder, Inverted Right Angle (90°) Printed Board Mount with 0.370 [9.40] Contact Extension. 52 - Solder, Right Angle (90°) Printed Board Mount with 0.370 [9.40] Contact Extension. </div> <div> *1 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø. 02 - Mounting Hole, 0.154 [3.91] Ø. B - Bracket, Mounting, Right Angle (90°) Metal. B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar. B7 - Bracket, Mounting, Right Angle (90°) Plastic. B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar. F - Float Mounts, Universal. P - Threaded Post, Brass, 0.225 [5.71] Length. P2 - Threaded Post, Nylon, 0.225 [5.71] Length. R - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews. R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R3 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole. R4 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads. R5 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut. R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. S - Swaged Spacer, 4-40 Threads, 0.225 [5.71] Length. S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length. S5 - Swaged Locknut, 4-40 Threads. S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.225 [5.71] Length. S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.375 [9.53] Length. </div> <div> *1 STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None. J - Hood, Top Opening, Plastic. L - Hood, Side Opening, Plastic. Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only. Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only. Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 9, 15, 25, 37, and 50 only. H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50 only. G - Hood, EMI/RFI, Die Cast Zinc. Available in size 9, 15, 25, 37, and 50 only. *5 AN - Lightweight Aluminum Hood, nickel finish. *5 AC - Lightweight Aluminum Hood, no finish. W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only. N - Push-on Fastener, for Right Angle (90°) Mounting Brackets. *2 F - Ferrite inductor. *2 Q - Ferrite inductor for use with Push-on Fastener and Right Angle (90°) Mounting Brackets. </div> <div> *1 STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. *3 V3 - Lock Tab, connector front panel mounted. *3 V5 - Lock Tab, connector rear panel mounted. *3 VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with Internal Hex for 3/32 Hex Drives E6 - Rotating Male and Female Polarized Jackscrews. </div> <div> STEP 8 - Shell Options 0 - Zinc plated with chromate seal. *4 S - Stainless steel, passivated. X - Tin plated. Z - Tin plated and dimpled (male connectors only). </div> <div> STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: ED9M360000 </div> <div> STEP 10 - SPECIAL OPTIONS -14 - 0.000030 [0.76µ] gold over nickel. -15 - 0.000050 [1.27µ] gold over nickel. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS </div> </div>										

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 Ferrite inductor is available on contact types 36 only. For more information on ferrite inductors, see page 7.

*3 VL, V3 and V5 locking systems are not available for connector variants 37 and 50. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*4 For stainless steel dimpled male versions contact Technical Sales.

*5 AN and AC hood are not available for connector variant 29. Consult Technical Sales for availability.



Positronic
connectpositronic.com

PROFESSIONAL QUALITY REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

**Size 20 Contacts,
Removable**

**IEC Publication 60807-3
Performance Level Two**

UL Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
UL File #E140980



Soli-D series connectors are professional quality connectors recommended for use in sheltered, non-corrosive indoor or outdoor environments having normal ventilation, but without temperature or humidity controls. This crimp removable contact connector will meet the Performance Level Two requirements of IEC 60807-3.

Soli-D series connectors utilize precision machined contacts with closed barrel, crimp terminations. The female contact features a rugged open entry design. Other contact terminations such as solder cup and

printed board terminations are also available. The removable contact feature provides for rapid assembly and permits contact repairs or wiring changes.

Five standard contact variants are offered in arrangements of 9, 15, 25, 37 and 50 contacts. Soli-D series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

A wide assortment of cable support hoods and locking systems is available from stock.

SOLI-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled nylon resin, UL 94V-0, black color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional performance - gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Push-On Fasteners:	Phosphor bronze with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

MECHANICAL CHARACTERISTICS:

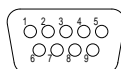
Removable Contacts:	Insert contact to rear face of insulator and release from rear face of insulator. Size 20 contacts, male - 0.040 inch [1.02mm] mating diameter. Female - rugged open entry design.
Contact Retention In Insulator:	6 lbs. [27 N].
Contact Terminations:	Closed barrel crimp, wire sizes 18 AWG [1.0mm ²] through 32 AWG [0.03mm ²]. Straight printed board terminations.
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Printed Board Mount:	Rapid installation push-on fasteners.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

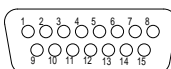
Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

CONTACT VARIANTS

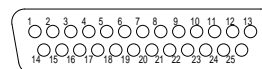
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



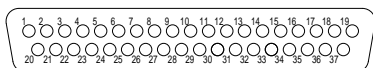
SD 9



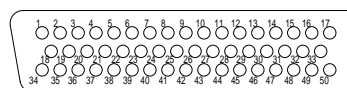
SD 15



SD 25

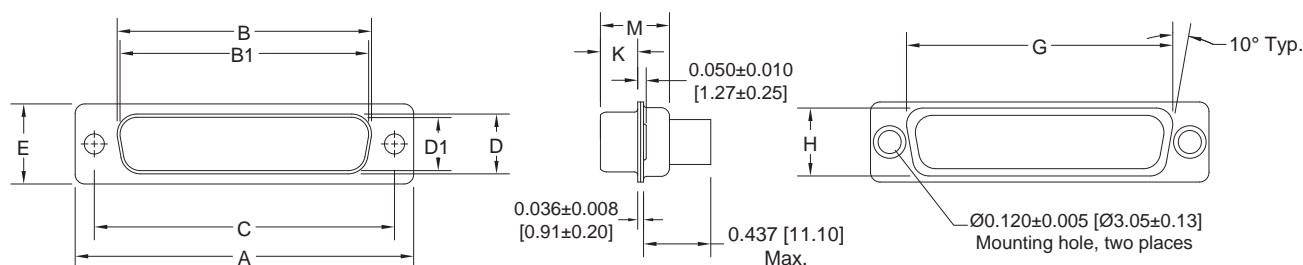


SD 37

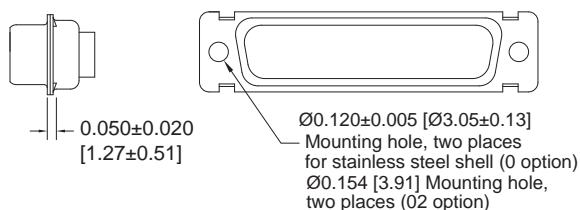


SD 50

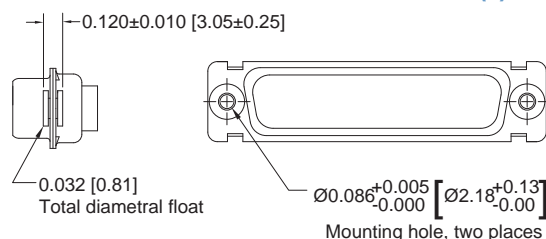
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
SD 9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SD 9 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SD 15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SD 15 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SD 25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SD 25 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SD 37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SD 37 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SD 50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
SD 50 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

PROFESSIONAL QUALITY REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

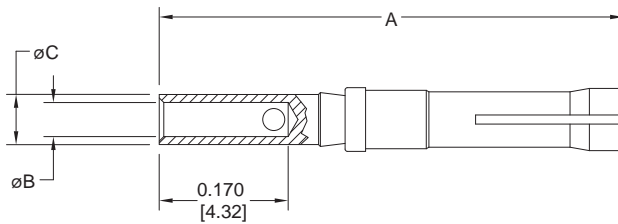
REMOVABLE CRIMP CONTACTS

CODE 1 AND 12

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

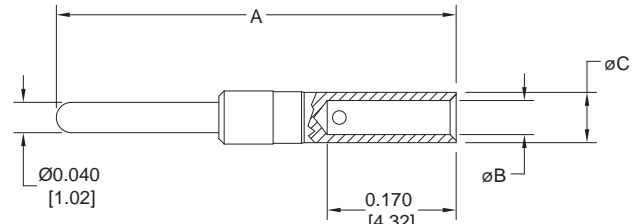
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
FC7520D	20 / 22 / 24 [0.5/0.3/0.25]	0.612 [15.54]	0.045 [1.14]	0.066 [1.68]
FC7526D	26 / 28 / 30 [0.12/0.08/0.05]	0.612 [15.54]	0.026 [0.66]	0.066 [1.68]

MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
MC7520D	20 / 22 / 24 [0.5/0.3/0.25]	0.618 [15.70]	0.045 [1.14]	0.066 [1.68]
MC7526D	26 / 28 / 30 [0.12/0.08/0.05]	0.618 [15.70]	0.026 [0.66]	0.066 [1.68]

Note: *C75**D contacts can not be used in the RD series.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. Example: FC7520D-14
0.000050 inch [1.27 µ] gold over nickel by adding "-15" suffix onto part number. Example: MC7526D-15

The crimp area of this contact is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Wire cannot be removed from molding after insertion. Not suitable for fully loaded connector.

REMOVABLE CRIMP CONTACTS

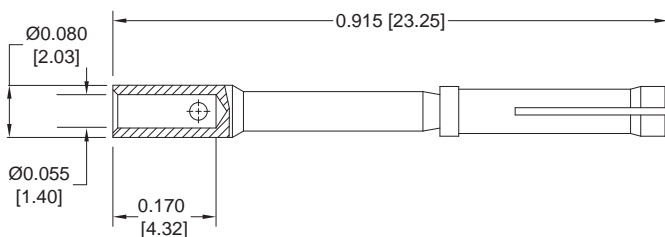
18 AWG CRIMP CONTACTS

18 AWG [1.0mm²]

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

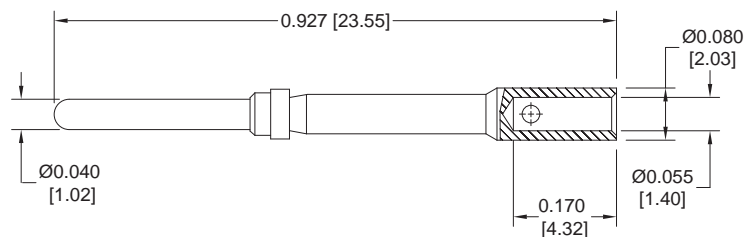
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT



FC7518D

MALE CONTACT



MC7518D

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. Example: FC7518D-14
0.000050 inch [1.27 µ] gold over nickel by adding "-15" suffix onto part number. Example: MC7518D-15

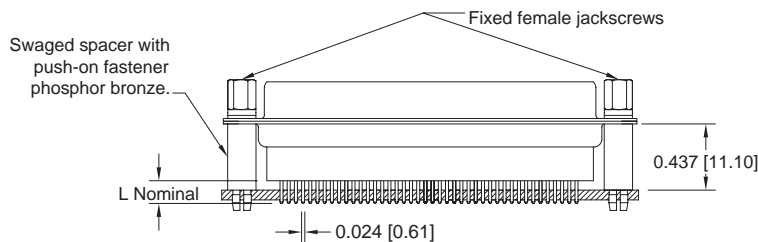
For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.

STRAIGHT PRINTED BOARD MOUNT TERMINATION

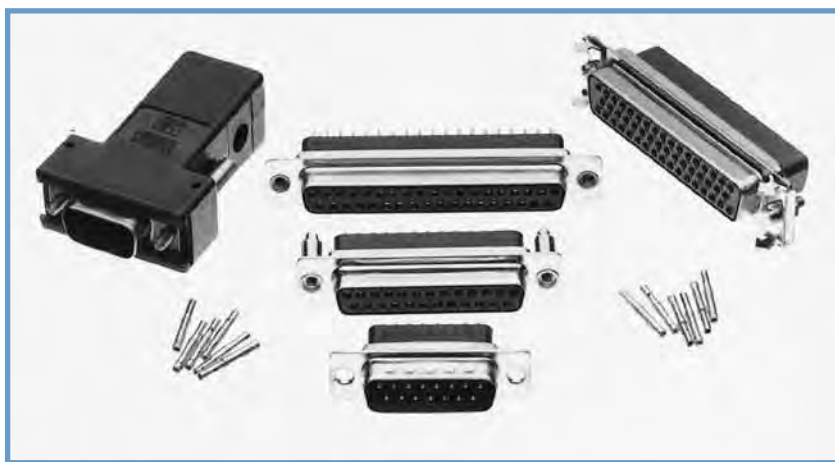
CODE 3 AND 32

CODE NUMBER	L
3	0.125 [3.18]
32	0.188 [4.78]

For straight printed board mount contacts specify code number in Step 4 of ordering information.



Typical Part Number:
SD37F3S60T2X



Connectors Designed To Customer Specifications

Positronic D-subminiature connectors can be modified to customer specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.

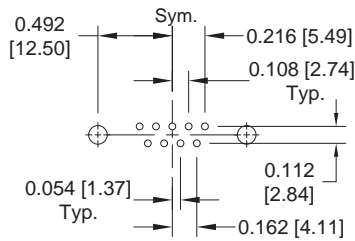


Positronic
connectpositronic.com

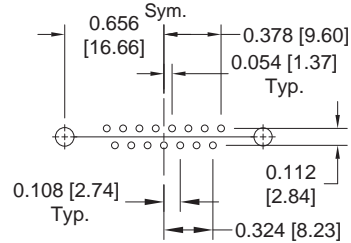
PROFESSIONAL QUALITY REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

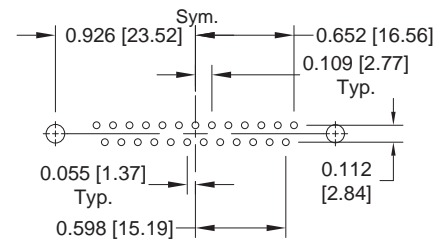
STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN



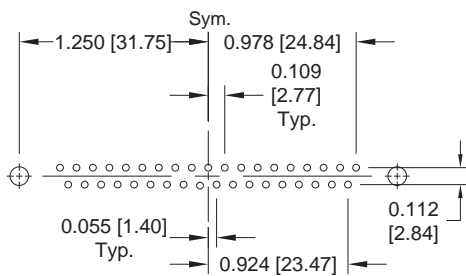
SD9



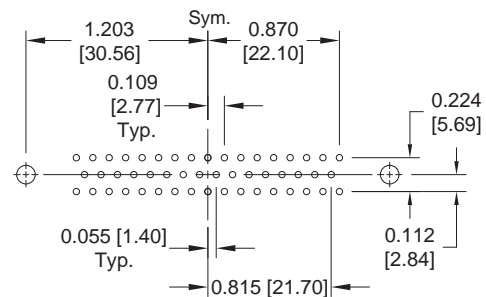
SD15



SD25



SD37



SD50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for contact termination positions.
Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



SD37M3S600Z



SD25F3S600X

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	SD	15	F	0	0	0	0	X	/AA	-14

STEP 1 - BASIC SERIES
SD series.

STEP 2 - CONNECTOR VARIANTS
9, 15, 25, 37, 50

STEP 3 - CONNECTOR GENDER
M - Male
F - Female

STEP 4 - CONTACT TERMINATION TYPE
0 - Contacts ordered separately, see page 23.
1 - Crimp, 20 AWG-24 AWG [0.5mm²-0.25mm²].
12 - Crimp, 26 AWG-30 AWG [0.12mm²-0.05mm²].
3 - Solder, Straight Printed Board Mount with 0.125 [3.18] Tail Length.
32 - Solder, Straight Printed Board Mount with 0.188 [4.78] Tail Length.

***1 STEP 5 - MOUNTING STYLE**
0 - Mounting Hole, 0.120 [3.05] Ø.
02 - Mounting Hole, 0.154 [3.91] Ø.
F - Float Mounts, Universal.
P - Threaded Post, Brass, 0.437 [11.10] Length.
P2 - Threaded Post, Nylon, 0.437 [11.10] Length.
S - Swaged Spacer, 4-40 Threads, 0.437 [11.10] Length.
S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length.
S5 - Swaged Locknut, 4-40 Threads.
S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.437 [11.10] Length.

***1 STEP 6 - HOODS**
0 - None.
J - Hood, Top Opening, Plastic.
L - Hood, Side Opening, Plastic.
Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only.
Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only.
Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews.
H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50 only.
G - Hood, EMI/RFI, Die Cast Zinc.
AN - Lightweight Aluminum Hood, nickel finish.
AC - Lightweight Aluminum Hood, no finish.
W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only.

STEP 10 - SPECIAL OPTIONS
-14 - 0.000030 [0.76µ] gold over nickel.
-15 - 0.000050 [1.27µ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS
/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: SD15F0000X

STEP 8 - Shell Options
0 - Zinc Plated, with Chromate Seal.
*3 S - Stainless steel, passivated.
X - Tin Plated.
Z - Tin Plated and Dimpled (male connectors only).

***1 STEP 7 - LOCKING AND POLARIZING SYSTEMS**
0 - None.
*2 V3- Lock Tab, connector front panel mounted.
*2 V5- Lock Tab, connector rear panel mounted.
*2 VL - Lock Lever, used with Hoods Only.
T - Fixed Female Jackscrews.
T2 - Fixed Female Jackscrews.
T6 - Fixed Male and Female Polarized Jackscrews.
E - Rotating Male Jackscrews.
E2 - Rotating Male Screw Locks.
E3 - Rotating Male with internal hex for 3/32 hex drives
E6 - Rotating Male and Female Polarized Jackscrews.

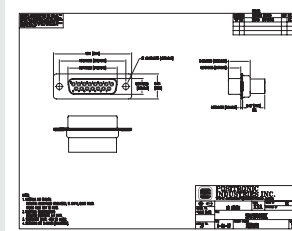
*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 VL, V3 and V5 locking systems are not available for connector variants 37 and 50. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*3 For stainless steel dimpled male versions contact Technical Sales.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model



Positronic
connectpositronic.com

MILITARY QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

**Size 20 Signal and
Thermocouple Contacts, Fixed
PosiBand® Closed Entry
IEC Publication 60807-2
Performance Level One
MIL-DTL-24308**

UL Recognized File #E49351 CSA Recognized File #LR54219

Telecommunication
UL File #E140980



Harmo-D series connectors are military quality connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. Applicable fixed contact connectors are qualified to MIL-DTL-24308 (see page 82 for more information) and meet the performance requirements of IEC 60807-2, Performance Level One.

Harmo-D series connectors utilize precision machined contacts which are fixed within the connector body. The female contact features Positronic's unique PosiBand closed entry design, see page 1 for details.

Five standard connector variants are offered in arrangements of 9, 15, 25, 37 and 50 contacts. Each connector variant is available with contact terminations for solder cup, wrap post and straight and right angle (90°) printed board mount terminations with Inch and Metric footprints. Harmo-D series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

A wide assortment of printed board mounting hardware, cable support hoods and locking systems is available from stock.

HARMO-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948, SDG-F, UL 94V-0, green color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Military performance - 0.000050 inch [1.27 µ] gold over copper plate. IEC 60807-2, Performance Level One - gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc and cadmium plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated; polyester.
Push-On Fasteners:	Phosphor bronze or beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contact - PosiBand closed entry design, see page 1 for details.
Contact Retention In Insulator:	9 lbs. [40 N].
Resistance To Solder Iron Heat:	650°F [350°C] for 10 seconds duration per IEC 60512-6.
Contact Terminations:	Solder cup contacts - 0.042 inch [1.06mm] minimum hole diameter in solder style contact for 20 AWG [0.5mm ²] wire maximum. Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter and 0.024 inch [0.61mm] termination diameter.

Shells:
Polarization:

Mounting To Angle Brackets:

Mounting To Printed Board:

Locking Systems:

Mechanical Operations:

Right Angle (90°) Printed Board Mount - 0.028 [0.71mm] termination diameter for Inch System footprint, and 0.024 [0.61mm] termination diameter for European Metric footprint.

Wrap Post - 0.025 inch [0.64mm] square

Male shells may be dimpled for EMI/ESD ground paths.

Trapezoidally shaped shells and polarized jackscrews.

Jackscrews and riveted fasteners with 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.

Rapid installation push-on fasteners an mounting posts.

Jackscrews and vibration locking systems.

1000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

18 amperes, 2 contacts energized.
14 amperes, 6 contacts energized.
11 amperes, 15 contacts energized.
10 amperes, 25 contacts energized.
9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.004 ohms maximum.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	56 days.

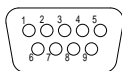
THERMOCOUPLE CONTACTS:

Straight and right angle (90°) printed circuit board mount contacts are available, please contact Technical Sales for details.

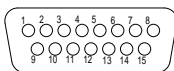
Size 20 crimp contacts are available in RD series, see page 36 for details.

CONTACT VARIANTS

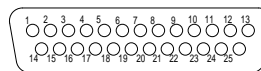
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



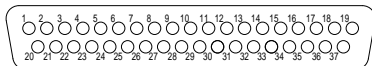
HDC 9



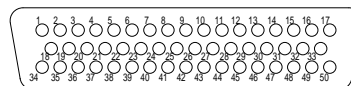
HDC 15



HDC 25

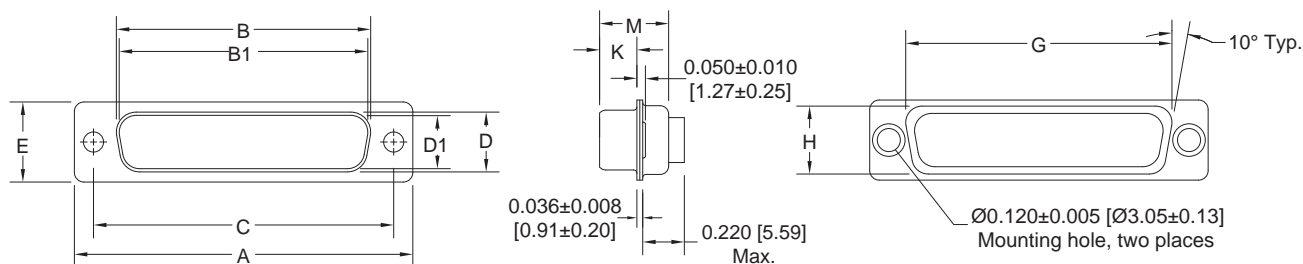


HDC 37

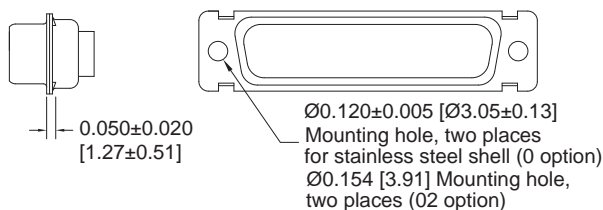


HDC 50

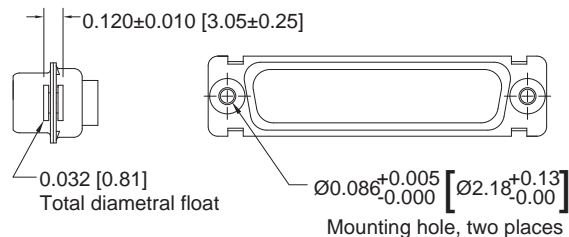
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
HDC 9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
HDC 9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
HDC 15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
HDC 25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
HDC 37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
HDC 50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
HDC 50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

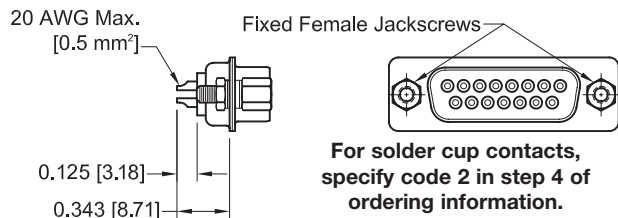


Positronic
connectpositronic.com

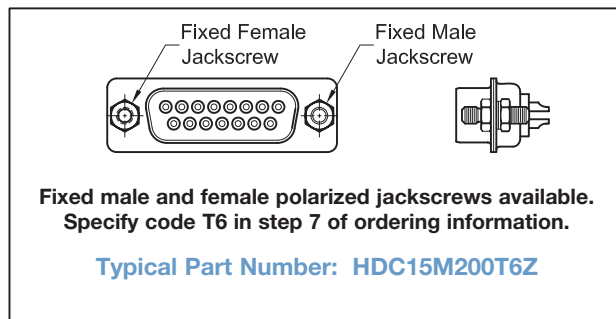
MILITARY QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

SOLDER CUP TERMINATION CODE 2



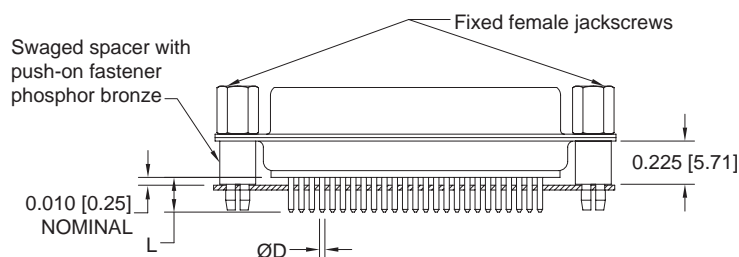
Typical Part Number: **HDC15M200T2Z**



STRAIGHT PRINTED BOARD MOUNT TERMINATION CODE 3, 32, 33, AND 36

CODE NUMBER	L	ØD
3	0.170 [4.32]	0.028 [0.71]
32	0.375 [9.53]	0.028 [0.71]
33	0.500 [12.70]	0.028 [0.71]
36	0.236 [6.00]	0.024 [0.61]

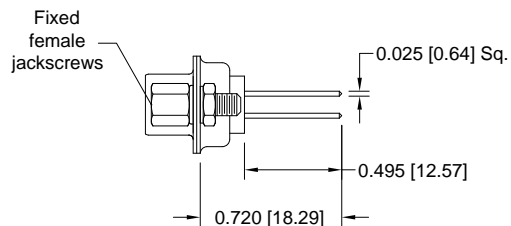
For straight printed board
mount contacts, specify code no. in step
4 of ordering information.



Typical Part Number: **HDC25S3S60T0**

WRAP POST TERMINATION CODE 6

For wrap post contacts,
specify code 6 in step 4
of ordering information.

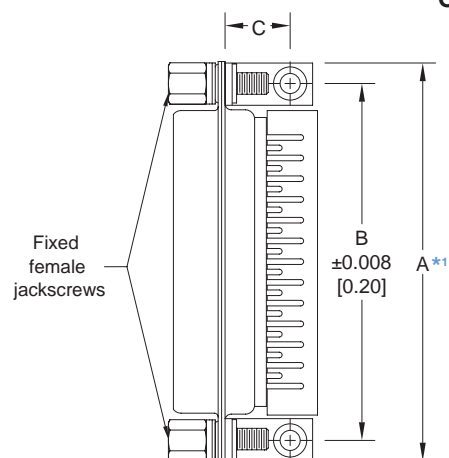


Typical part number: **HDC15S600T0**



HDC25M6S50T0

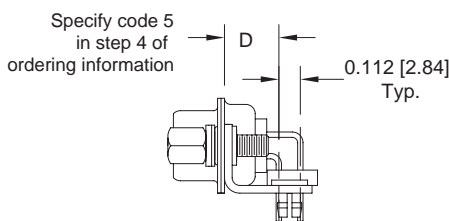
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 5, 0.283 [7.19] CONTACT EXTENSION



HDC**5*** 0.283 [7.19] CONTACT EXTENSION					
PART NUMBER	A*1	B	C	D	E
HDC9*5***	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC15*5***	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC25*5***	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC37*5***	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]	0.112 [2.84]
HDC50*5***	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]	0.112 [2.84]

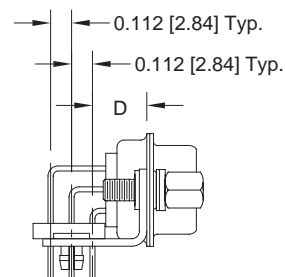
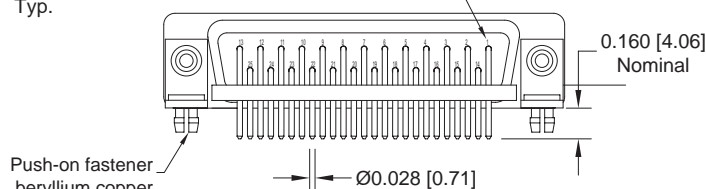
NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



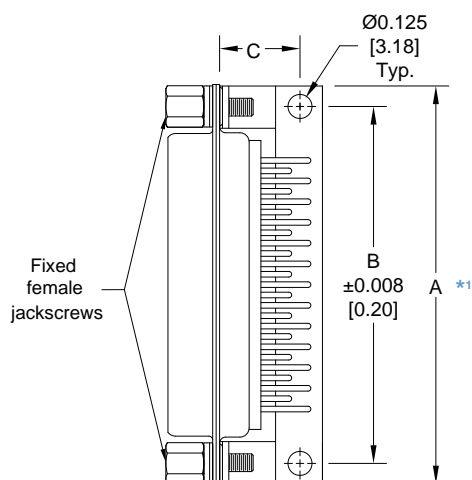
Typical Part Number:
HDC25M5R7NT2X

Numbering shown is rear view of male and face view of female.



Typical Part Number:
HDC50S5R7NTX

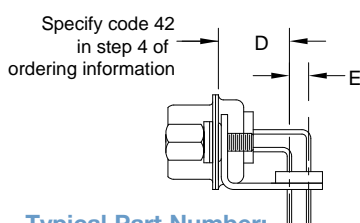
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 42, 0.370 [9.40] CONTACT EXTENSION



HDC**42*** 0.370 [9.40] CONTACT EXTENSION					
PART NUMBER	A*1	B	C	D	E
HDC9*42***	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]	0.100 [2.54]
HDC15*42***	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]	0.100 [2.54]
HDC25*42***	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]	0.100 [2.54]
HDC37*42***	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]	0.100 [2.54]
HDC50*42***	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]	0.100 [2.54]

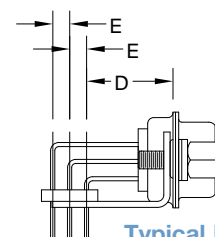
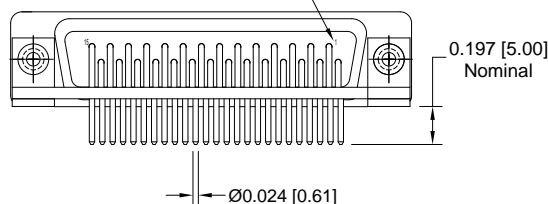
NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



Typical Part Number:
HDC25M42B30T2X

Numbering shown is rear view of male and face view of female.



Typical Part Number:
HDC50M42B30T2X



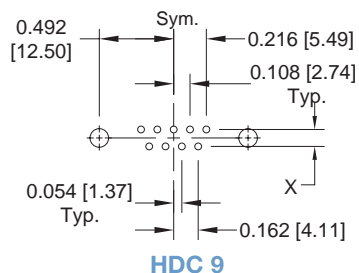
Positronic
connectpositronic.com

MILITARY QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

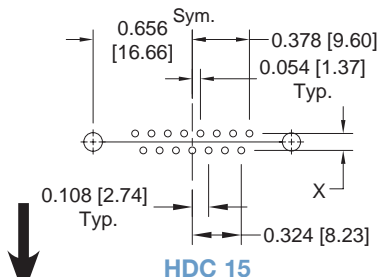
D-Sub

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

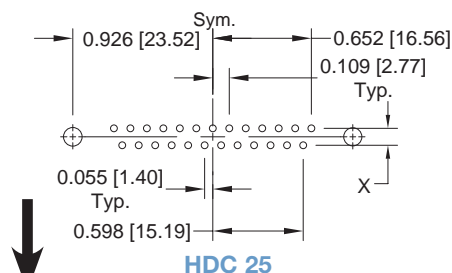
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



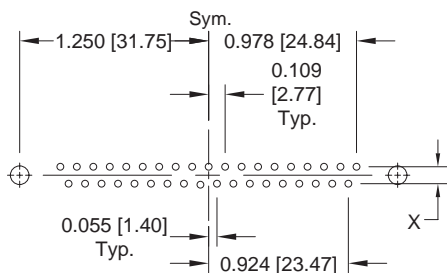
HDC 9



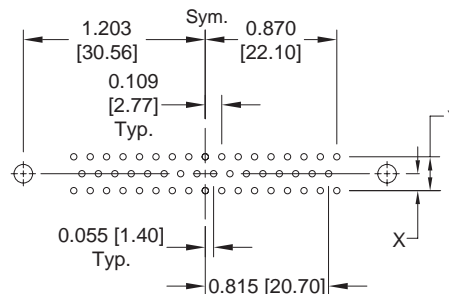
HDC 15



HDC 25



HDC 37



HDC 50

SUGGESTED PRINTED BOARD HOLE SIZES:

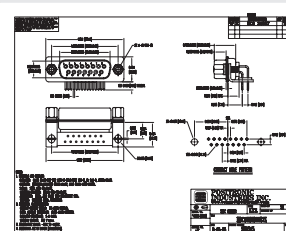
- Suggest 0.039 [0.99] Ø hole for 0.024 [0.61] Ø contact termination positions.
- Suggest 0.045 [1.14] Ø hole for 0.028 [0.71] Ø contact termination positions.
- Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



CODE NUMBER	X	Y
3, 5, 32, 33, 36	0.112 [2.84]	0.224 [5.69]
*42	0.100 [2.54]	0.200 [5.08]

*Metric system,
European contact
hole pattern.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	HDC	37	S	5	B3	0	T	0	/AA	-50

STEP 1 - BASIC SERIES
HDC series.

STEP 2 - CONNECTOR VARIANTS
9, 15, 25, 37, 50

STEP 3 - CONNECTOR GENDER
M - Male
S - Female - PosiBand closed entry contacts

STEP 4 - CONTACT TERMINATION TYPE
 2 - Solder cup.
 3 - Solder, Straight Printed Board Mount with 0.170 [4.32] Tail Length.
 32 - Solder, Straight Printed Board Mount with 0.375 [9.52] Tail Length.
 33 - Solder, Straight Printed Board Mount with 0.500 [12.70] tail length.
 36 - Solder, Straight Printed Board Mount with 0.236 [5.99] Tail Length.
 42 - Solder, Metric System Right Angle (90°) Printed Board Mount with 0.370 [9.40] Contact Extension.
 5 - Solder, Right Angle (90°) Printed Board Mount with 0.283 [7.19] Contact Extension.
 6 - Wrap Post.

***1 STEP 5 - MOUNTING STYLE**
 0 - Mounting Hole, 0.120 [3.05] Ø.
 02 - Mounting Hole, 0.154 [3.91] Ø.
 B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar.
 B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar.
 F - Float Mounts, Universal.
 P - Threaded Post, Brass, 0.225 [5.71] Length.
 P2 - Threaded Post, Nylon, 0.225 [5.71] Length.
 R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar.
 R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar.
 R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar.
 R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar.
 S - Swaged Spacer, 4-40 Threads, 0.225 [5.71] Length.
 S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length.
 S5 - Swaged Locknut, 4-40 Threads.
 S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.225 [5.71] Length.
 S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.375 [9.53] Length.

STEP 10 - SPECIAL OPTIONS
 -14 - 0.000030 [0.76µ] gold over nickel.
 -15 - 0.000050 [1.27µ] gold over nickel.
 -50 - 0.000050 [1.27µ] gold over copper.
CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING:
 Other Special Requirements.
 Straight and Right Angle (90°)
 Thermocouple printed circuit board mount contacts

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS
 /AA - RoHS Compliant
NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: HDC37S5B30T0

STEP 8 - SHELL OPTIONS
 0 - Zinc Plated with Chromate Seal.
 *3 S - Stainless steel, passivated.
 X - Tin Plated.
 Z - Tin Plated and Dimpled (male connectors only).
 C - Cadmium plated with Chromate Seal

***1 STEP 7 - LOCKING AND POLARIZING SYSTEMS**
 0 - None.
 V3 - Lock Tab, connector front panel mounted.
 V5 - Lock Tab, connector rear panel mounted.
 VL - Lock Lever, used with Hoods Only.
 T - Fixed Female Jackscrews.
 T2 - Fixed Female Jackscrews.
 T6 - Fixed Male and Female Polarized Jackscrews.
 E - Rotating Male Jackscrews.
 E2 - Rotating Male Screw Locks.
 E3 - Rotating Male with internal hex for 3/32 hex drives
 E6 - Rotating Male and Female Polarized Jackscrews.

***1 STEP 6 - HOODS AND PUSH-ON FASTENERS**
 0 - None.
 J - Hood, Top Opening, Plastic.
 L - Hood, Side Opening, Plastic.
 Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only.
 Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only.
 Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews.
 H - Hood, Top Opening, Metal. Available in size 15, 25, 37 and 50 only.
 G - Hood, EMI/RFI, Die Cast Zinc.
 AN - Lightweight Aluminum Hood, nickel finish.
 AC - Lightweight Aluminum Hood, no finish.
 W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only.
 N - Push-on Fastener, for Right Angle (90°) Mounting Brackets.
 *2 F - Ferrite Inductor.

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 Ferrite inductor is available on contact types 32, 33, 36 and 6 only. For more information on ferrite inductors, see page 7.

*3 For stainless steel dimpled male versions contact Technical Sales.



Positronic
connectpositronic.com

MILITARY QUALITY CRIMP REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

Size 20 Signal and
Thermocouple Contacts,
Crimp Removable

PosiBand® Closed Entry
IEC Publication 60807-3
Performance Level One,
MIL-DTL-24308 & SAE AS39029

UL Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
UL File #E140980



Rhapso-D series connectors are military quality connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. Applicable crimp removable contact connectors are qualified to MIL-DTL-24308 and SAE AS39029 (see page 82 for more information), and will meet the performance requirements of IEC 60807-3, Performance Level One.

Rhapso-D series connectors utilize precision machined contacts with closed barrel, crimp terminations. The

female utilizes Positronic's unique PosiBand closed entry system, see page 1 for details. Rugged open entry female contacts are also available.

Six standard connector variants are offered in arrangements of 9, 15, 25, 29, 37 and 50 contacts. Rhapso-D series connectors are mateable and compatible with all D-subminiature connectors conforming to MIL-DTL-24308, IEC 60807-2 and IEC 60807-3.

A wide assortment of cable support hoods and locking systems is available from stock.

RHAPSO-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948, SDG-F, UL 94V-0, green color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Military performance - 0.000050 inch [1.27 µ] gold over nickel plate. IEC 60807-3, Performance Level One - gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc and cadmium plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator and release from rear face of insulator. Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female - PosiBand closed entry design, see page 1 for details.
----------------------------	---

Contact Retention

In Insulator:	9 lbs. [40 N].
Contact Terminations:	Closed barrel crimp, wire sizes 18 AWG [1.0mm ²] through 30 AWG [0.05mm ²].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	1000 operations minimum per IEC 60512-5 for PosiBand closed entry female contact.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

18 amperes, 2 contacts energized.
14 amperes, 6 contacts energized.
11 amperes, 15 contacts energized.
10 amperes, 25 contacts energized.
9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.004 ohms maximum.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days.

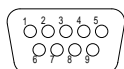
THERMOCOUPLE CONTACTS:

Size 20 crimp contacts are available, see page 36 for details.

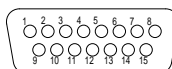
Printed circuit board mount contacts are available in HDC series, see page 27 for details.

CONTACT VARIANTS

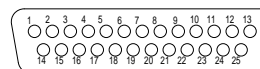
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



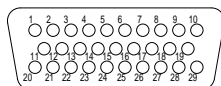
RD 9



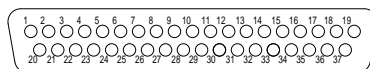
RD 15



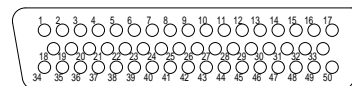
RD 25



RD 29

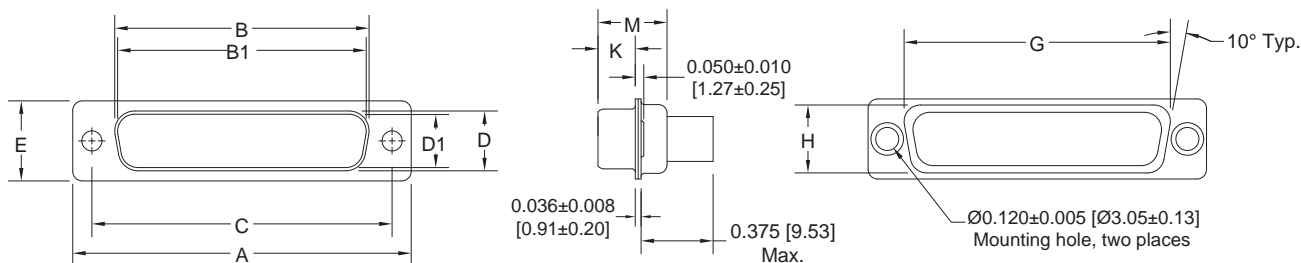


RD 37

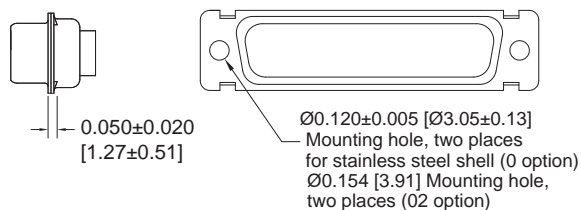


RD 50

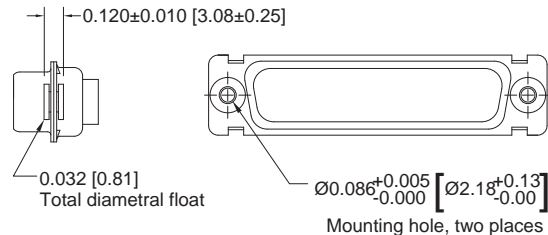
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
RD 9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
RD 9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
RD 15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
RD 15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
RD 25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
RD 25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
RD 29 M	1.770 [44.96]		1.274 [32.36]	1.534 [38.96]		0.450 [11.43]	0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.230 [5.84]	0.426 [10.82]
RD 29 S	1.770 [44.96]	1.251 [31.78]		1.534 [38.96]	0.431 [10.95]		0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.237 [6.02]	0.429 [10.90]
RD 37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
RD 37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
RD 50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
RD 50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]



Positronic
connectpositronic.com

MILITARY QUALITY CRIMP REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

REMOVABLE CRIMP CONTACTS CODE 1 AND 12

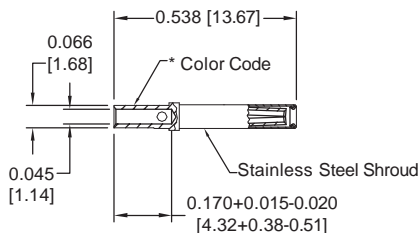
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.
QUALIFIED TO SAE AS39029

*MILITARY SPECIFICATION CONTACTS

STANDARD FINISH:
per SAE AS39029 specifications

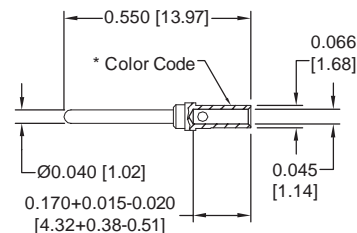
COLOR CODE:
MALE CONTACT:
ORANGE/BLUE/WHITE
FEMALE CONTACT:
ORANGE/BLUE/GRAY

FEMALE CONTACT "CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
*M39029/63-368	20 / 22 / 24 [0.5/0.3/0.25]
Positronic is qualified to supply the legacy design, as well as, the PosiBand design. If the requirement is for the PosiBand design exclusively, notify sales at time of quotation for order placement when requesting M39029 contacts.	

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
*M39029/64-369	20 / 22 / 24 [0.5/0.3/0.25]

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

REMOVABLE CRIMP CONTACTS CODE 1 AND 12

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



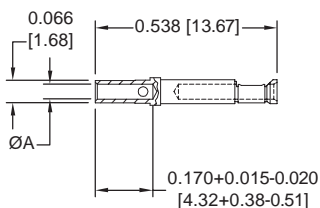
Authentic POSITRONIC
PosiBand®
These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

PLATING:

STANDARD FINISH:
Gold flash over nickel plate.

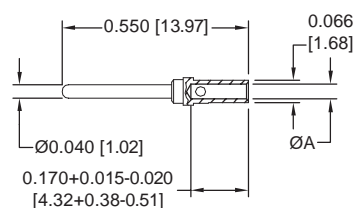
OPTIONAL FINISHES:
0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC6020D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC6026D-15

FEMALE CONTACT "CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
FC6020D2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
FC6026D2	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
MC6020D	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
MC6026D	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

Note: FC602*D2 and MC602*D contacts can be used in the SD series.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Authentic POSITRONIC®

PosiBand®

These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

REMOVABLE CRIMP CONTACTS 18 AWG CRIMP CONTACTS

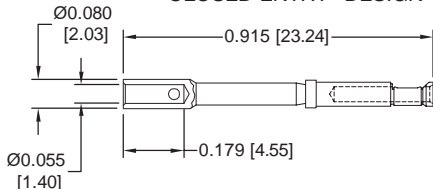
18 AWG [1.0mm²]

The crimp area of this contact is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Wire cannot be removed from molding after insertion. Not suitable for fully loaded connector.

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

FEMALE CONTACT

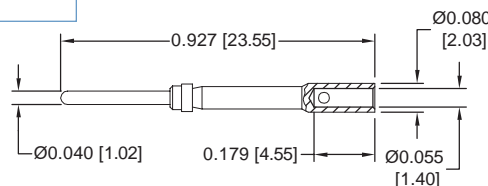
“CLOSED ENTRY” DESIGN



Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

Note: FC6018D2 and MC6018D contacts can be used in the ORD series.

MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC6018D2	18 [1.0] max

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MC6018D	18 [1.0] max

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding “-14” suffix onto part number. Example: FC6018D2-14
0.000050 inch [1.27] gold over nickel by adding “-15” suffix onto part number. Example: MC6018D-15

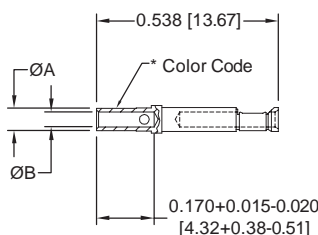
REMOVABLE THERMOCOUPLE CRIMP CONTACT

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

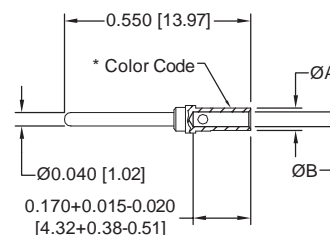
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number..

FEMALE CONTACT

“CLOSED ENTRY” DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]	ØA	ØB
K	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CH	MC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	ALUMEL (-)	FC6020D2AL ^{††}	MC6020DAL [†]	GREEN	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2AL	MC6026DAL		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
T	COPPER (+) with gold flash	FC6020D2CU ^{††}	MC6020DCU [†]	RED	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CU	MC6026DCU		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	CONSTANTAN (-)	FC6020D2CO ^{††}	MC6020DCO [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CO	MC6026DCO		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
E	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CH	MC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	CONSTANTAN (-)	FC6020D2CO ^{††}	MC6020DCO [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CO	MC6026DCO		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]

For more information on the availability of Type J thermocouple contacts, and information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company.

[†]Dimensionally equivalent to M39029/64-369^{††}Dimensionally equivalent to M39029/63-368

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Positronic
connectpositronic.com

MILITARY QUALITY CRIMP REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	RD	25	S	1	0	J	VL	0	/AA	-50

STEP 1 - BASIC SERIES

RD series.

STEP 2 - CONNECTOR VARIANTS

9, 15, 25, 29, 37, 50

STEP 3 - CONNECTOR GENDER

M - Male

S - Female - PosiBand closed entry contacts

STEP 4 - CONTACT TERMINATION TYPE

0 - Contacts ordered separately, see pages 35-36.

1 - Crimp, 20 AWG-24 AWG [0.5mm²-0.25mm²].

12 - Crimp, 26 AWG-30 AWG [0.12mm²-0.05mm²].

*1 STEP 5 - MOUNTING STYLE

0 - Mounting Hole, 0.120 [3.05] Ø.

02 - Mounting Hole, 0.154 [3.91] Ø.

F - Float Mounts, Universal.

S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length.

S5 - Swaged Locknut, 4-40 Threads.

*1 STEP 6 - HOODS

0 - None.

J - Hood, Top Opening, Plastic.

L - Hood, Side Opening, Plastic.

Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only.

Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only.

Z - Hood, Top or Side Opening, Robust Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 9, 15, 25, 37, and 50 only.

H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50 only.

G - Hood, EMI/RFI, Die Cast Zinc. Available in size 9, 15, 25, 37, and size 50 only.

*3 AN - Lightweight Aluminum Hood, nickel finish.

*3 AC - Lightweight Aluminum Hood, no finish.

W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only.

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 For stainless steel dimpled male versions contact Technical Sales.

*3 AN and AC hood are not available for connector variant 29. Consult Technical Sales for availability.

STEP 10 - SPECIAL OPTIONS

-14 - 0.000030 [0.76µ] gold over nickel.

-15 - 0.000050 [1.27µ] gold over nickel.

-50 - 0.000050 [1.27µ] gold over copper.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: RD25S10JVLO

STEP 8 - SHELL OPTIONS

0 - Zinc Plated with Chromate Seal.

*2 S - Stainless steel, passivated.

X - Tin Plated.

Z - Tin Plated and Dimpled (male connectors only).

C - Cadmium plated with Chromate Seal.

*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS

0 - None.

V3 - Lock Tab, connector front panel mounted.

V5 - Lock Tab, connector rear panel mounted.

VL - Lock Lever, used with Hoods Only.

T - Fixed Female Jackscrews.

T2 - Fixed Female Jackscrews.

T6 - Fixed Male and Female Polarized Jackscrews.

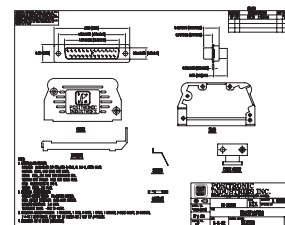
E - Rotating Male Jackscrews.

E2 - Rotating Male Screw Locks.

E3 - Rotating Male with internal hex for 3/32 hex drives

E6 - Rotating Male and Female Polarized Jackscrews.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



**Size 20 Signal and
Thermocouple Contacts,
Crimp Removable**

**Two Performance
Levels For Best Cost /
Performance Ratio**

IEC Publication 60807-3
Performance Level Two - Professional
Performance Level One - Industrial



ORD series connectors are professional / industrial quality connectors with closed barrel crimp removable contacts. ORD series connectors are recommended for use in sheltered, mildly corrosive environments having a wide range of temperatures with normal ventilation where high performance is required.

ORD series connectors utilize precision-machined contacts to provide durability. Female contacts feature the low cost, high performance rugged open entry design, meeting the performance requirements of

IEC 60807-3, Performance Level Two. Female PosiBand closed entry contacts are optional and meet IEC 807-3, Performance Level One.

Six standard contact variants are offered in arrangements of 9, 15, 25, 29, 37, and 50 contacts. ORD series connectors are mateable and compatible with all D-Subminiature connectors conforming to MIL-DTL-24308, IEC 60807-2, and IEC 60807-3.

A wide assortment of cable support hoods and locking systems is available from stock.

ORD SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulators:	Glass filled DAP per ASTM-D-5948, SDG-F, UL 94V-0, green color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Industrial performance - gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator and release from rear face of insulator. Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contacts - rugged open entry design or PosiBand closed entry design, see page 1 for details.
Contact Retention In Insulator:	9 lbs. [40 N].
Contact Terminations:	Closed barrel crimp, wire sizes 18 AWG [1.0mm ²] through 24 AWG [0.25mm ²].
Shells:	Tin-plated male shells may be dimpled for EMI/ESD ground paths.

Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations minimum per IEC 60512-5 for rugged open entry design. 1000 operations minimum per IEC 60512-5 for PosiBand closed entry female contact.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	
Open Entry Contacts:	7.5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	18 amperes, 2 contacts energized. 14 amperes, 6 contacts energized. 11 amperes, 15 contacts energized. 10 amperes, 25 contacts energized. 9 amperes, 50 contacts energized.
<i>See temperature rise curves on page 2 for details.</i>	
Initial Contact Resistance:	0.008 ohms maximum for open entry 0.004 ohms maximum for closed entry
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V r.m.s.

CLIMACTIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

THERMOCOUPLE CONTACTS:

Size 20 crimp contacts are available. See page 41 for details.

Printed circuit board mount contacts are available in HDC series, see page 27 for details.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

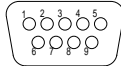


Positronic
connectpositronic.com

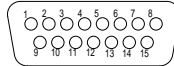
PROFESSIONAL / INDUSTRIAL QUALITY REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

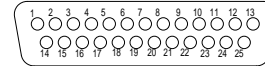
CONTACT VARIANTS FACE VIEW OF MALE OR REAR VIEW OF FEMALE



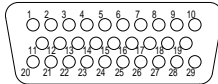
ORD 9



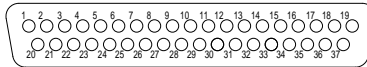
ORD 15



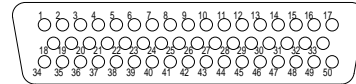
ORD 25



ORD 29

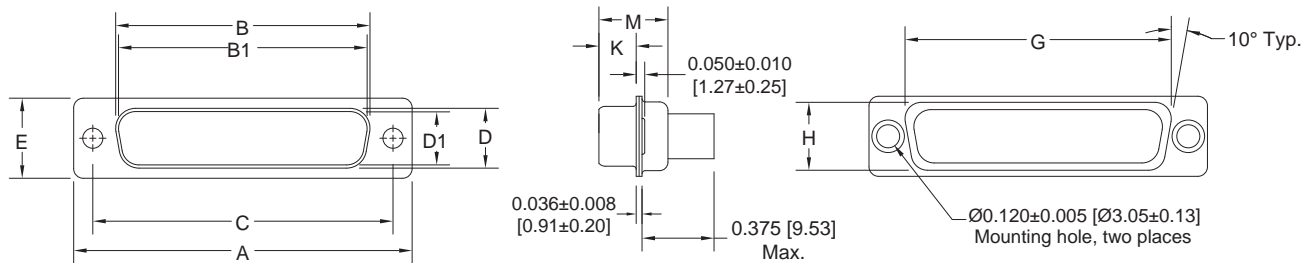


ORD 37

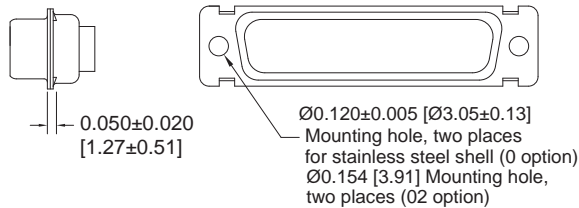


ORD 50

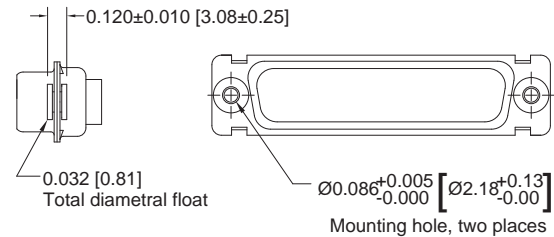
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
ORD 9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
ORD 9 F ORD 9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ORD 15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
ORD 15 F ORD 15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ORD 25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
ORD 25 F ORD 25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ORD 29 M	1.770 [44.96]		1.274 [32.36]	1.534 [38.96]		0.450 [11.43]	0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.230 [5.84]	0.426 [10.82]
ORD 29 F ORD 29 S	1.770 [44.96]	1.251 [31.78]		1.534 [38.96]	0.431 [10.95]		0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.237 [6.02]	0.429 [10.90]
ORD 37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
ORD 37 F ORD 37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ORD 50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
ORD 50 F ORD 50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

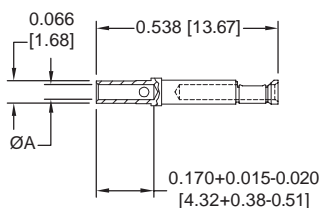
REMOVABLE CRIMP CONTACTS CODE 1

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

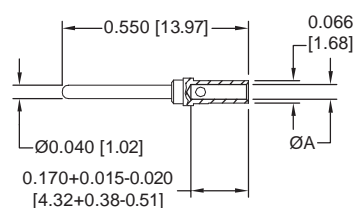


Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
FC6020D2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
FC6026D2	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
MC6020D	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
MC6026D	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

PLATING:

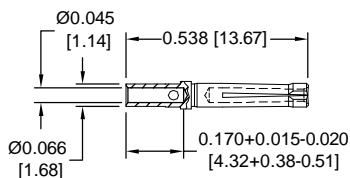
STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC6120D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC6026D-15

REMOVABLE CRIMP CONTACTS CODE 1

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

FEMALE CONTACT "RUGGED OPEN ENTRY" DESIGN



Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC6120D	20 / 22 / 24 [0.5/0.3/0.25]

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC6120D-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: FC6120D-15

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL QUALITY REMOVABLE CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

The crimp area of this contact is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Wire cannot be removed from molding after insertion. Not suitable for fully loaded connector.

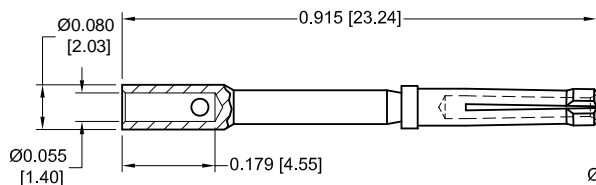
REMOVABLE CRIMP CONTACTS 18 AWG CRIMP CONTACTS 18 AWG [1.0mm²]

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

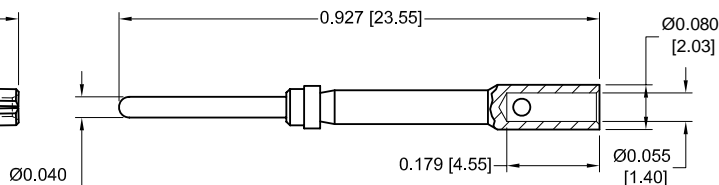
*FEMALE CONTACT

"RUGGED OPEN ENTRY" DESIGN



FC6118D

MALE CONTACT



MC6018D

* FEMALE POSIBAND CLOSED ENTRY CONTACTS ARE AVAILABLE, SEE PAGE 36 FOR DETAILS.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC6118D-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC6018D-15

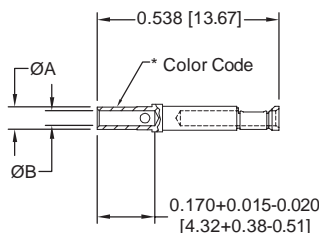
REMOVABLE THERMOCOUPLE CRIMP CONTACTS

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

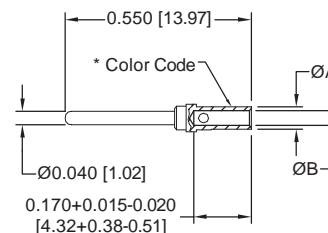
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]	ØA	ØB
K	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CH	MC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	ALUMEL (-)	FC6020D2AL ^{††}	MC6020DAL [†]	GREEN	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2AL	MC6026DAL		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
T	COPPER (+) with gold flash	FC6020D2CU ^{††}	MC6020DCU [†]	RED	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CU	MC6026DCU		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	CONSTANTAN (-)	FC6020D2C0 ^{††}	MC6020DC0 [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2C0	MC6026DC0		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
E	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CH	MC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	CONSTANTAN (-)	FC6020D2C0 ^{††}	MC6020DC0 [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2C0	MC6026DC0		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]

[†]Dimensionally equivalent to M39029/64-369

^{††}Dimensionally equivalent to M39029/63-368

For more information on the availability of Type J thermocouple contacts, and information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	ORD	9	M	0	0	0	0	Z	/AA	-14

STEP 1 - BASIC SERIES
ORD series

STEP 2 - CONNECTOR VARIANTS
9, 15, 25, 29, 37, 50

STEP 3 - CONNECTOR GENDER
M - Male
F - Female - Professional Level
open entry contacts
S - Female - Industrial Level
PosiBand closed entry contacts

STEP 4 - CONTACT TERMINATION TYPE
0 - Contacts ordered separately, see pages 40-41.
1 - Crimp, 20 AWG-24 AWG [0.5mm²-0.25mm²].

***1 STEP 5 - MOUNTING STYLE**
0 - Mounting Hole, 0.120 [3.05] Ø.
02 - Mounting Hole, 0.154 [3.91] Ø.
F - Float Mounts, Universal.
S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length.
S5 - Swaged Locknut, 4-40 Threads.

***1 STEP 6 - HOODS**
0 - None.
J - Hood, Top Opening, Plastic.
L - Hood, Side Opening, Plastic.
Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews.
Available in size 50 only.
Y6 - Hood, Top Opening, Plastic with Rotating Male and Female
Polarized Jackscrews. Available in size 50 only.
Z - Hood, Top or Side Opening, Robust Extended Height,
Composite and Plastic with Rotating Male Jackscrews.
Available in size 9, 15, 25, 37, and 50 only.
H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50
only.
G - Hood, EMI/RFI, Die Cast Zinc. Available in size 9, 15, 25, 37,
and 50 only.
*4 AN - Lightweight Aluminum Hood, nickel finish.
*4 AC - Lightweight Aluminum Hood, no finish.
W - Hood, Top or Side Opening, Plastic. Available in size 9, 15,
and 25 only.

STEP 8 - Shell Options
0 - Zinc plated, with chromate seal.
C - Cadmium plated with chromate seal.
*3 S - Stainless steel, passivated.
X - Tin plated.
Z - Tin plated and dimpled (male connectors only).

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS
/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: ORD9M0000Z

STEP 10 - SPECIAL OPTIONS
-14 - 0.000030 [0.76µ] gold over nickel.
-15 - 0.000050 [1.27µ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

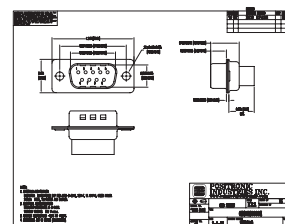
*2 VL, V3 and V5 locking systems are not available for connector variants 37 and 50. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*3 For stainless steel dimpled male versions contact Technical Sales.

*4 AN and AC hood are not available for connector variant 29. Consult Technical Sales for availability.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model



Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

**Size 22 Contacts,
Removable Crimp and
Solder Printed Board Mount**

**Two Performance Levels For
Best Cost / Performance Ratio**

UL Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
UL File #E140980



ODD series connectors are professional / industrial quality high density connectors recommended for use in sheltered, non-corrosive indoor environments having normal ventilation.

ODD series connectors utilize precision machined, removable contacts having closed barrel crimp terminations and solder cup wire terminations. For printed board mount application, straight solder

printed board mount and right angle (90°) angled solder terminations are available.

Six standard contact variants are offered in arrangements of 15, 26, 44, 62, 78, and 104 contacts. ODD series connectors are mateable and compatible with other high density D-subminiature connectors conforming to MIL-DTL-24308, and are UL and CSA recognized.

A wide variety of unique accessories are available.

ODD SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulators:	Glass filled polyester per ASTM D5927, UL 94V-0, black color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional quality - gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Push-On Fasteners:	Phosphor bronze or beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator and release from rear face of insulator. Size 22 contact, male - 0.030 inch [0.76mm] mating diameter. Female - rugged open entry design or PosiBand closed entry design, see page 1 for details.
Fixed Contacts, Board Mounted Applications:	Female open entry contacts - both rugged and standard design available to customer requirements. Closed entry contacts are PosiBand design, see page 1 for details.
Contact Retention In Insulator:	9 lbs. [40 N].
Contact Terminations:	Closed barrel crimp, wire sizes 22 AWG

Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting To Angle Brackets:	Jackscrews and riveted fasteners with 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.
Mounting To Printed Board:	Rapid installation push-on fasteners and mounting posts.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations minimum per IEC 60512-5 for open entry female contact. 1000 operations minimum per IEC 60512-5 for PosiBand closed entry female contact.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	
Open Entry Contacts:	5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	12 amperes, 2 contacts energized. 10 amperes, 6 contacts energized. 7.5 amperes, 26 contacts energized. 6.5 amperes, 62 contacts energized. 5.0 amperes, 104 contacts energized.
<i>See temperature rise curves on page 2 for details.</i>	
Initial Contact Resistance:	0.010 ohms maximum for open entry. 0.005 ohms maximum for closed entry.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.042 inch [1.06mm].
Working Voltage:	300 V r.m.s.

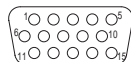
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

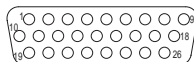
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

CONTACT VARIANTS

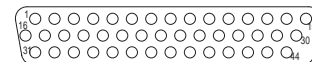
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



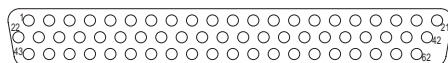
ODD 15



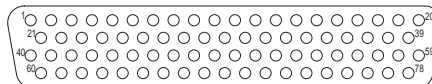
ODD 26



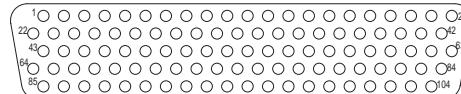
ODD 44



ODD 62

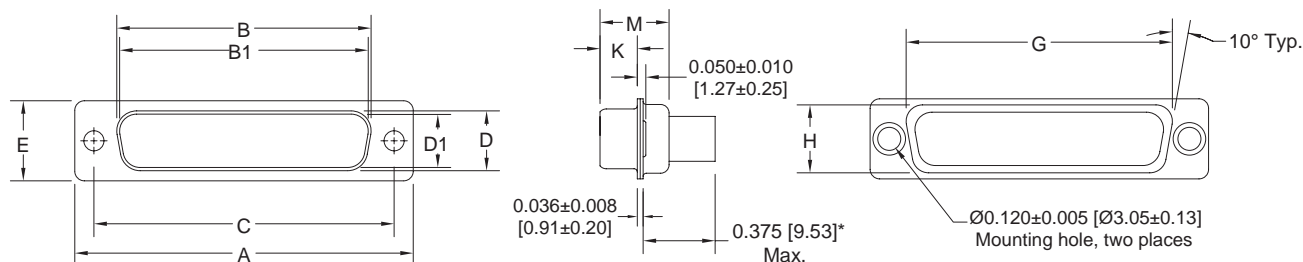


ODD 78



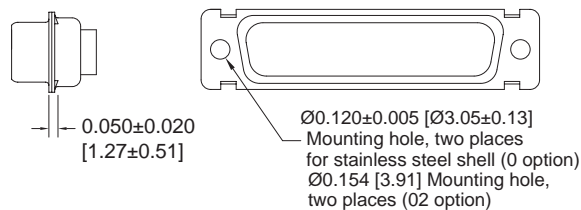
ODD 104

STANDARD SHELL ASSEMBLY

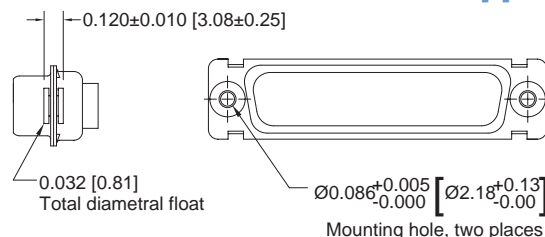


* This dimension is for crimp removable connectors. 0.220 [5.59] maximum for all other connectors.

OPTIONAL SHELL ASSEMBLY [0, 02]



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS [F]



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
ODD 15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
ODD 15 F ODD 15 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ODD 26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
ODD 26 F ODD 26 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ODD 44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
ODD 44 F ODD 44 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ODD 62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
ODD 62 F ODD 62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
ODD 78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
ODD 78 F ODD 78 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
ODD 104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
ODD 104 F ODD 104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

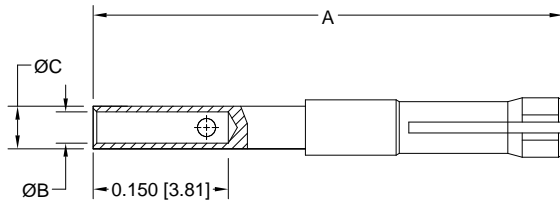
D-Sub

REMOVABLE CRIMP CONTACTS CODE 1

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

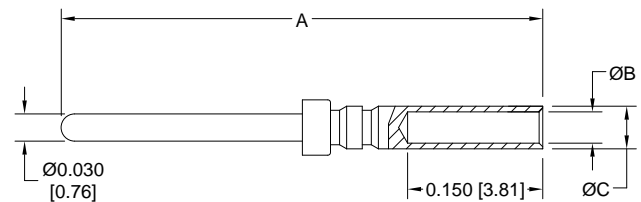
FEMALE CONTACT



Part Number: FC8122D

FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
FC8122D	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]	0.529 [13.44]	0.035 [0.89]	0.047 [1.19]

MALE CONTACT



Part Number: MC8022D

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
MC8022D	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]	0.531 [13.49]	0.035 [0.89]	0.047 [1.19]

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

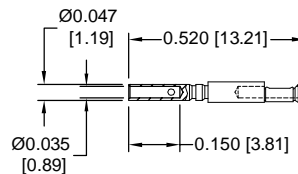
OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8122D-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC8022D-15

REMOVABLE CRIMP CONTACTS CODE 1

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



FEMALE CONTACT "CLOSED ENTRY" DESIGN



Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC8022D2	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8022D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: FC8022D2-15

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.

The crimp area of this contact is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Wire cannot be removed from molding after insertion. Not suitable for fully loaded connector.

REMOVABLE CRIMP CONTACTS

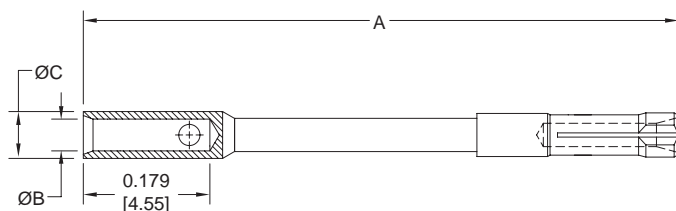
20 AWG CONTACTS

20 AWG [0.5 mm²]

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

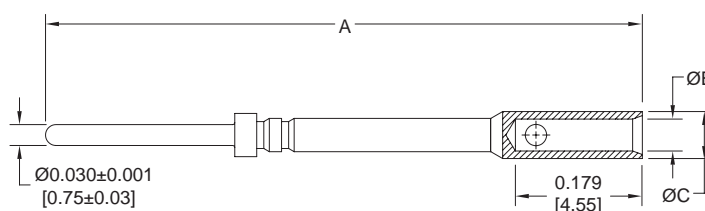
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

*FEMALE CONTACT



Part Number: FC8120D

MALE CONTACT



Part Number: MC8020D

FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
FC8120D	20 [0.5] max	0.852 [21.64]	0.045 [1.14]	0.066 [1.68]

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
MC8020D	20 [0.5] max	0.853 [21.66]	0.045 [1.14]	0.066 [1.68]

* FEMALE POSIBAND CLOSED ENTRY CONTACTS ARE AVAILABLE, SEE PAGE 56 FOR DETAILS.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8120D-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC8020D-15

REMOVABLE THERMOCOUPLE CRIMP CONTACTS

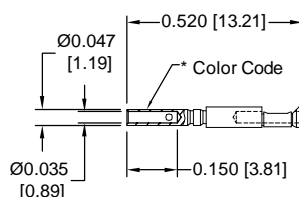
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



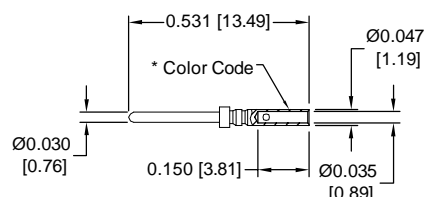
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE*	WIRE SIZE AWG [mm ²]
K	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	ALUMEL (-)	FC8022D2AL	MC8022DAL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
T	COPPER (+) with gold flash	FC8022D2CU	MC8022DCU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

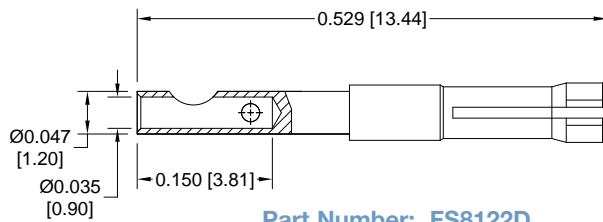
D-Sub

REMOVABLE SOLDER CUP CONTACTS CODE 2

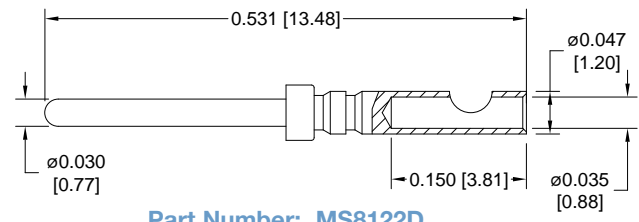
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT



MALE CONTACT



PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FS8122D-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MS8122D-15

REMOVABLE SOLDER CUP CONTACTS CODE 2

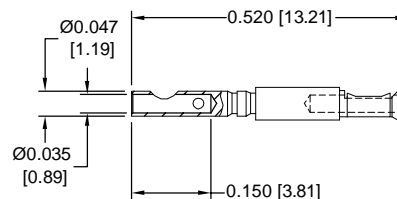
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.



FEMALE CONTACT

"CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FS8022D2	22 [0.3] max

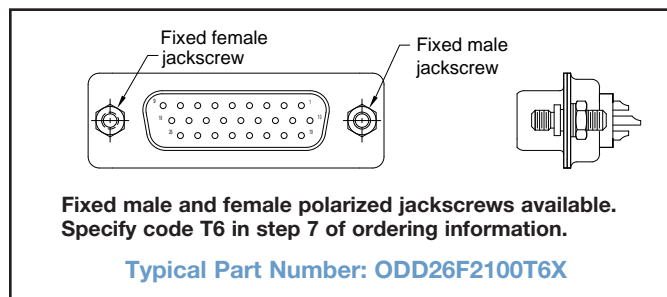
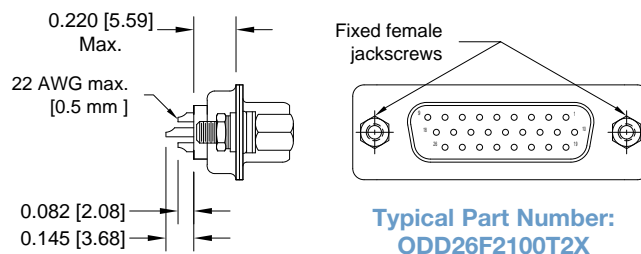
PLATING:

STANDARD FINISH: Gold flash over nickel plate.

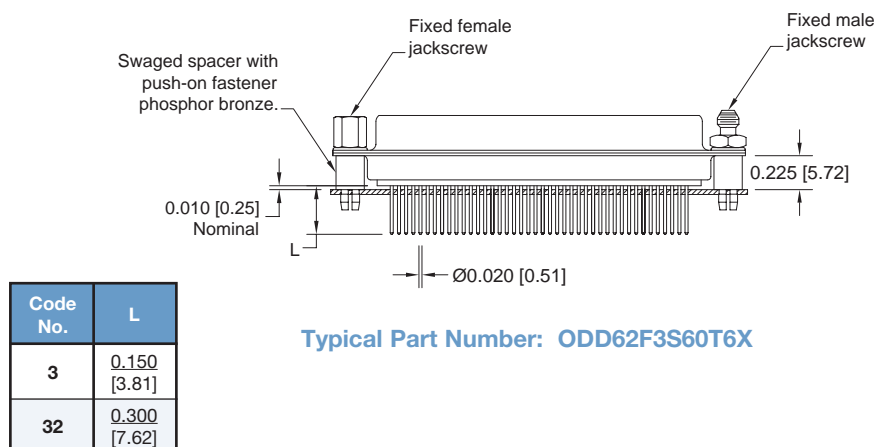
OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FS8022D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: FS8022D2-15

For information regarding **INSERTION & REMOVAL TOOLS**, see page 78.

FIXED SOLDER CUP TERMINATION CODE 21



STRAIGHT PRINTED BOARD MOUNT TERMINATION CODE 3 AND 32



For straight printed
board mount contacts
specify code no. in step
4 of ordering information



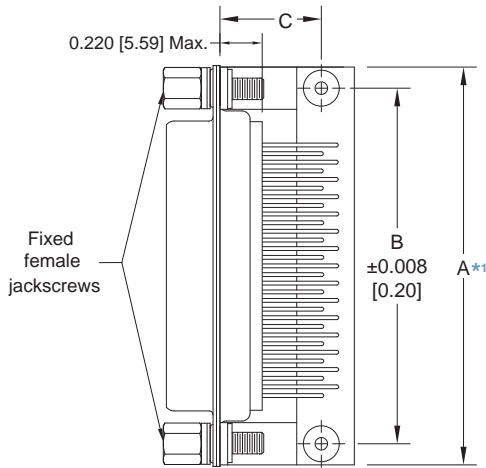
Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

CODE 5, 0.450 [11.43] CONTACT EXTENSION

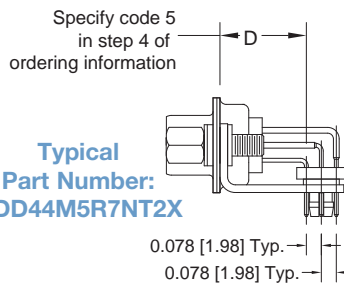


ODD**5*** 0.450 [11.43] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
ODD15*5***	1.204 [30.58]	0.984 [24.99]	0.528 [13.41]	0.450 [11.43]
ODD26*5***	1.532 [38.91]	1.312 [33.32]	0.528 [13.41]	0.450 [11.43]
ODD44*5***	2.072 [52.63]	1.852 [47.04]	0.528 [13.41]	0.450 [11.43]
ODD62*5***	2.720 [69.09]	2.500 [63.50]	0.528 [13.41]	0.450 [11.43]
ODD78*5***	2.626 [66.70]	2.406 [61.11]	0.573 [14.55]	0.450 [11.43]

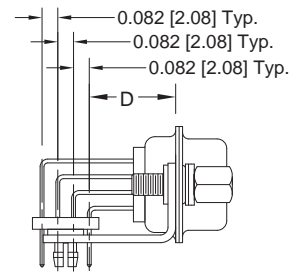
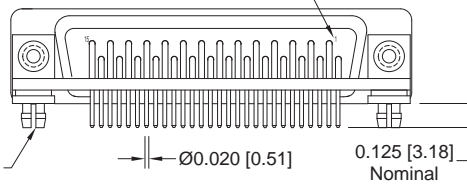
See next page for size 104 Right Angle (90°) Connectors.

NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



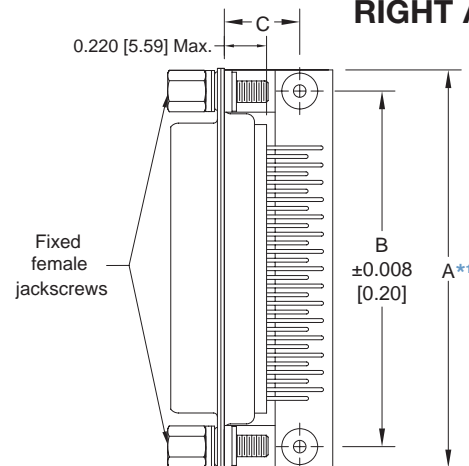
Numbering shown is rear view of male and face view of female.



Typical Part Number:
ODD78M5R7NT20

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

CODE 4, 0.314 [7.98] CONTACT EXTENSION

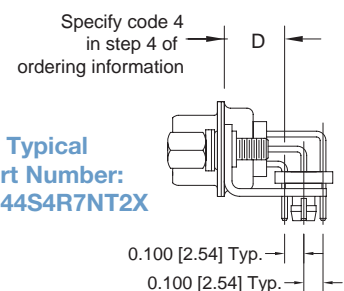


ODD**4*** 0.314 [7.98] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
ODD15*4***	1.204 [30.58]	0.984 [24.99]	0.414 [10.52]	0.314 [7.98]
ODD26*4***	1.532 [38.91]	1.312 [33.32]	0.414 [10.52]	0.314 [7.98]
ODD44*4***	2.072 [52.63]	1.852 [47.04]	0.414 [10.52]	0.314 [7.98]
ODD62*4***	2.720 [69.09]	2.500 [63.50]	0.414 [10.52]	0.314 [7.98]
ODD78*4***	2.626 [66.70]	2.406 [61.11]	0.414 [10.52]	0.314 [7.98]

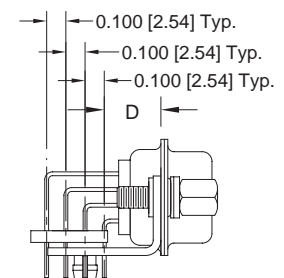
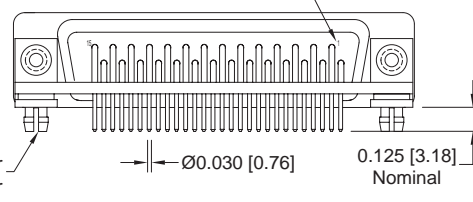
See next page for size 104 Right Angle (90°) Connectors.

NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



Numbering shown is rear view of male and face view of female.

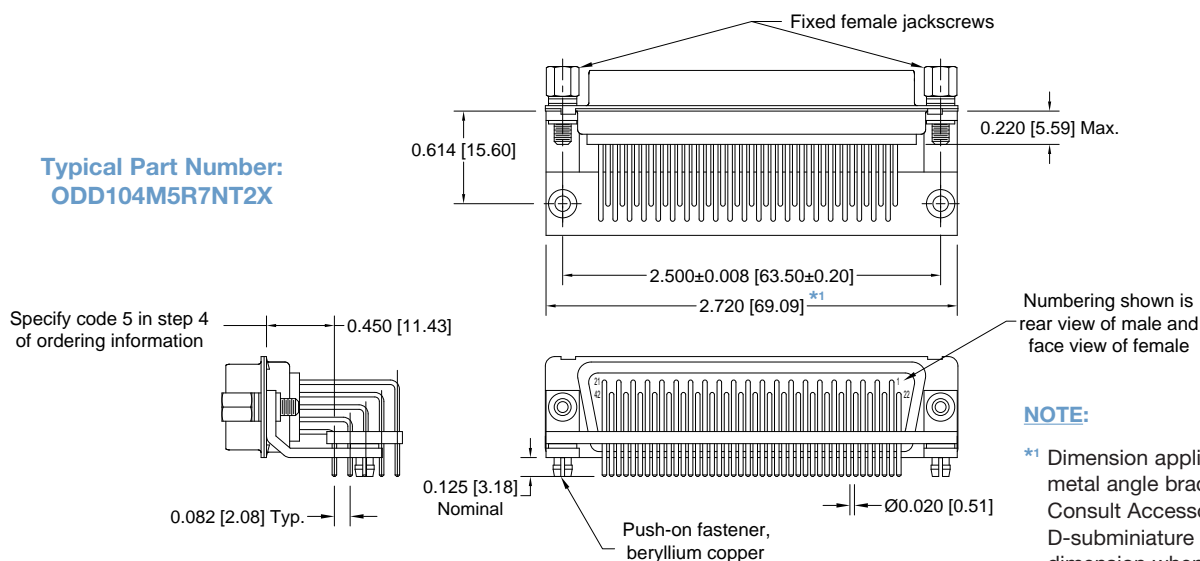


Typical Part Number:
ODD78M4R7NT20

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

CODE 5, 0.450 [11.43] CONTACT EXTENSION
CONTACT VARIANT 104

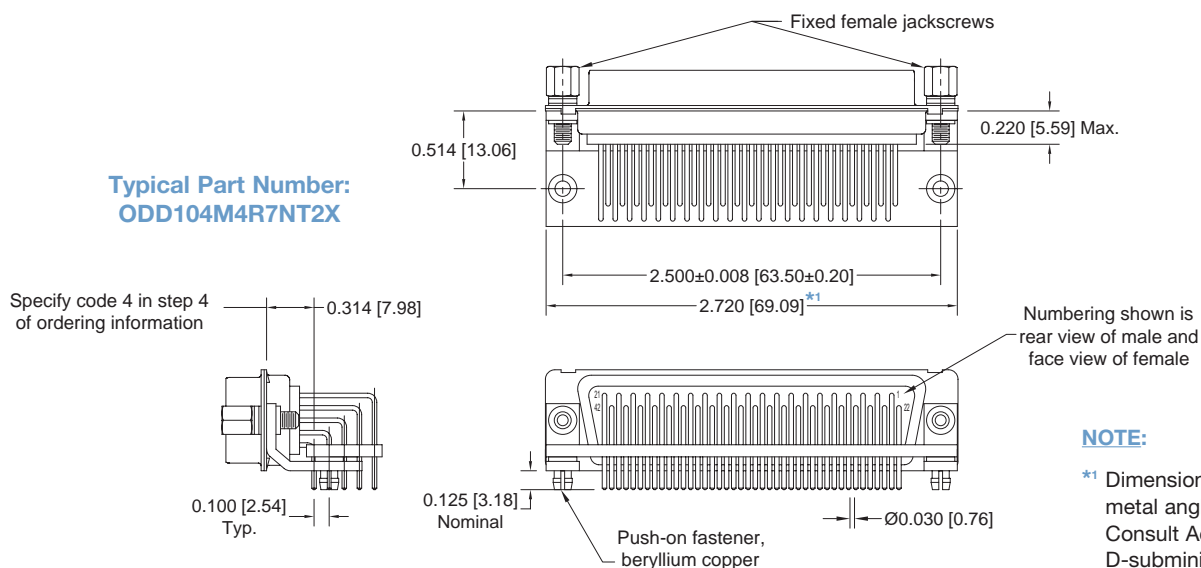
Typical Part Number:
ODD104M5R7NT2X



RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

CODE 4, 0.314 [7.98] CONTACT EXTENSION
CONTACT VARIANT 104

Typical Part Number:
ODD104M4R7NT2X





Positronic
connectpositronic.com

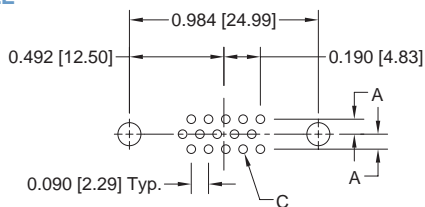
PROFESSIONAL / INDUSTRIAL QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

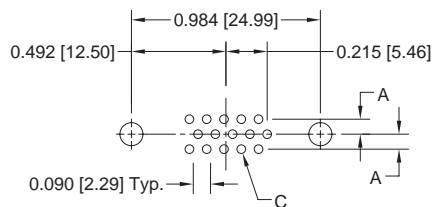
RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

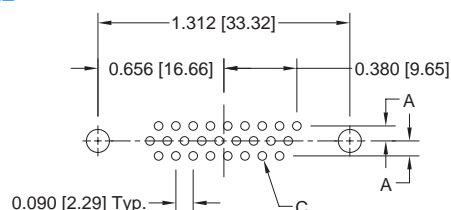
ODD15 MALE



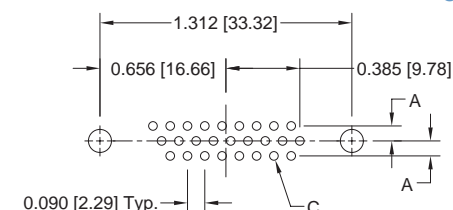
ODD15 FEMALE



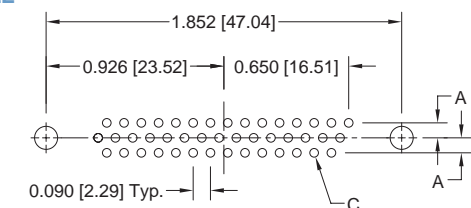
ODD26 MALE



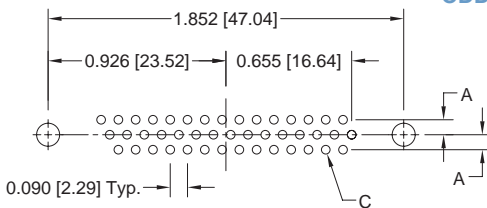
ODD26 FEMALE



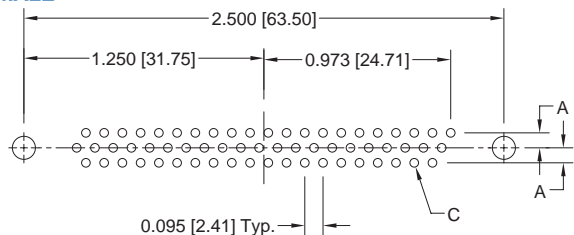
ODD44 MALE



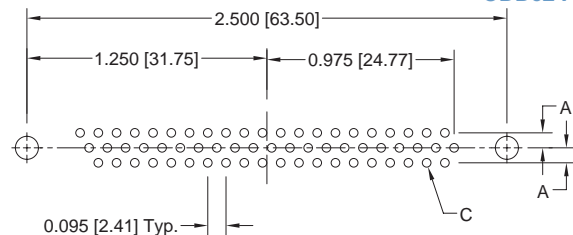
ODD44 FEMALE



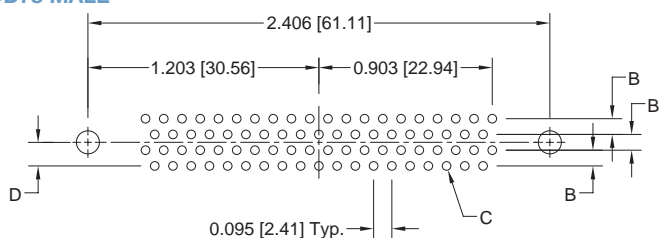
ODD62 MALE



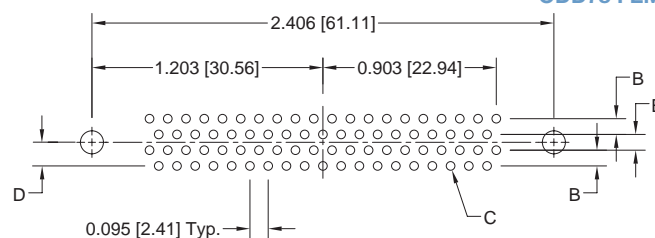
ODD62 FEMALE



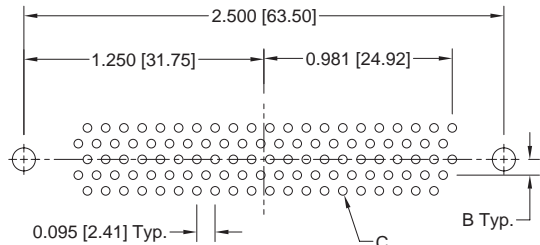
ODD78 MALE



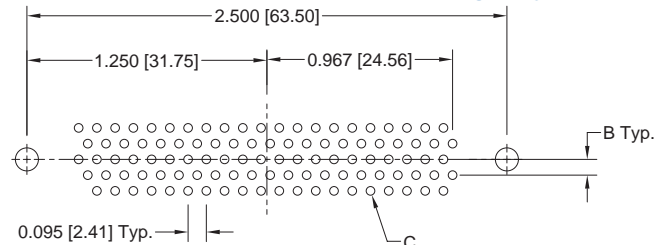
ODD78 FEMALE



ODD104 MALE



ODD104 FEMALE



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.

CODE NUMBER	A	B	ØC	D
4	0.100 [2.54]	0.100 [2.54]	0.045 [1.14]	0.100 [2.54]
3, 32, 5	0.078 [1.98]	0.082 [2.08]	0.035 [0.89]	0.123 [3.12]



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	ODD	62	F	5	R7	N	T6	S	/AA	-14
STEP 1 - BASIC SERIES ODD series										
STEP 2 - CONNECTOR VARIANTS 15, 26, 44, 62, 78, 104										
STEP 3 - CONNECTOR GENDER M - Male F - Female - Professional Level open entry contacts S - Female - Industrial Level PosiBand closed entry contacts										
STEP 4 - CONTACT TERMINATION TYPE 0 - Contacts ordered separately, see pages 45-47. 1 - Crimp, 22 AWG-30 AWG [0.3mm ² -0.05mm ²]. 2 - Removable, solder cup, 22 AWG-30 AWG [0.3mm ² -0.05mm ²]. 21 - Fixed, solder cup, 22 AWG-30 AWG [0.3mm ² -0.05mm ²]. 3 - Solder, Straight Printed Board Mount with 0.150 [3.81] Tail Length. 32 - Solder, Straight Printed Board Mount with 0.300 [7.62] Tail Length. 4 - Solder, Right Angle (90°) Printed Board Mount with 0.314 [7.98] Contact Extension. 5 - Solder, Right Angle (90°) Printed Board Mount with 0.450 [11.43] Contact Extension.										
*1 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø. 02 - Mounting Hole, 0.154 [3.91] Ø. B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar. B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar. F - Float Mounts, Universal. P - Threaded Post, Brass, 0.225 [5.71] Length. P2 - Threaded Post, Nylon, 0.225 [5.71] Length. R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. S - Swaged Spacer, 4-40 Threads, 0.225 [5.71] Length. S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length. S5 - Swaged Locknut, 4-40 Threads. S6 - Swaged Spacer with Push-on Fasteners, 4-40 Threads, 0.225 [5.71] Length. S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.375 [9.53] Length.										
*1 STEP 6 - HOODS 0 - None. J - Hood, Top Opening, Plastic. L - Hood, Side Opening, Plastic. Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 78 and 104 only. Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 78 and 104 only. Z - Hood, Top or Side Opening, Robust Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 15, 26, 44, 62 and 78 only. H - Hood, Top Opening, Metal. Available in size 26, 44, 62, and 78 only. G - Hood, EMI/RFI, Die Cast Zinc. AN - Lightweight Aluminum Hood, nickel finish. AC - Lightweight Aluminum Hood, no finish. W - Hood, Top or Side Opening, Plastic. Available in size 15, 26, and 44 only. N - Push-on Fastener, for Right Angle (90°) Mounting. *2 F - Ferrite Inductor. *2 Q - Ferrite Inductor with Push-on Fastener, for Right Angle (90°) Mounting Brackets.										
*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. *3 V3 - Lock Tab, connector front panel mounted. *3 V5 - Lock Tab, connector rear panel mounted. *3 VL - Lock Lever, used with Hoods Only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with internal hex for 3/32 hex drives E6 - Rotating Male and Female Polarized Jackscrews.										
STEP 8 - Shell Options 0 - Zinc plated with chromate seal. *4 S - Stainless steel, passivated. X - Tin plated. Z - Tin plated and dimpled (male connectors only).										
STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: ODD62F5R7NT6S										
STEP 10 - SPECIAL OPTIONS -14 - 0.000030 [0.76µ] gold over nickel. -15 - 0.000050 [1.27µ] gold over nickel. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS										

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 Ferrite inductor is available on contact types 32 and 5 only. For more information on ferrite inductors, see page 7.

*3 VL, V3 and V5 locking systems are not available for connector variants 62, 78 and 104. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*4 For stainless steel dimpled male versions contact Technical Sales.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Positronic
connectpositronic.com

MILITARY QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

**Size 22 Signal and
Thermocouple Contacts,
Removable Crimp and
Printed Board Mount**

PosiBand® Closed Entry

MIL-DTL-24308 and SAE AS39029

**UL Recognized
File #E49351**

**CSA Recognized
File #LR54219**

**Telecommunication
UL File #E140980**



Densi-D series connectors are military quality, high density connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. Applicable connectors are qualified to MIL-DTL-24308 and SAE AS39029 (see page 82 for more information).

Densi-D series connectors utilize precision machined contacts with closed barrel crimp terminations, solder cup termi-

nations, straight and right angle (90°) printed board mount. All female contacts utilize Positronic's unique PosiBand closed entry design, see page 1 for details.

Six standard contact variants are offered in arrangements of 15, 26, 44, 62, 78 and 104 contacts. Densi-D series connectors are mateable and compatible with other high density D-subminiature connectors conforming to MIL-DTL-24308.

A wide variety of unique accessories are available.

DENSI-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulators:	Glass filled polyester per ASTM D5927, UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Military performance - 0.000050 inch [1.27 µ] gold over nickel plate. Industrial performance - gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Push-On Fastener:	Phosphor bronze or beryllium copper with tin plate.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator and release from rear face of insulator. Size 22 contacts, male - 0.030 inch [0.76mm] mating diameter. Female contacts - PosiBand closed entry design, see page 1 for details.
Contact Retention In Insulator:	9 lbs. [40 N].
Contact Terminations:	Closed barrel crimp, wire sizes 22 AWG

Shells:	[0.3mm ²] through 30 AWG [0.05mm ²] per IEC 352-2. Right Angle (90°) Printed Board Mount contact terminations.
Polarization:	Male shells may be dimpled for EMI/ESD ground paths. Trapezoidally shaped shells and polarized jackscrews.
Mounting To Angle Brackets:	Jackscrews and riveted fasteners with 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and polyester lock inserts.
Mounting To Printed Board:	Rapid installation push-on fasteners and mounting posts.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	1000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

12 amperes, 2 contacts energized.
10 amperes, 6 contacts energized.
7.5 amperes, 26 contacts energized.
6.5 amperes, 62 contacts energized.
5.0 amperes, 104 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.005 ohms maximum.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.042 inch [1.06mm].
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days.

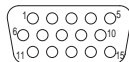
THERMOCOUPLE CONTACTS:

Size 22 crimp contacts are available, see page 56 for details.

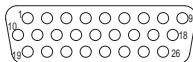
Printed circuit board mount contacts are available, please Consult Accessories D-subminiature catalog for details.

CONTACT VARIANTS

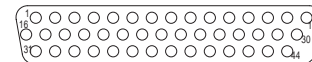
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



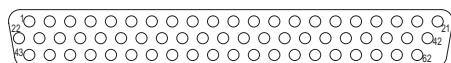
DD 15



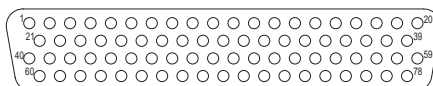
DD 26



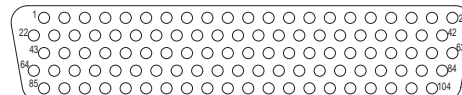
DD 44



DD 62

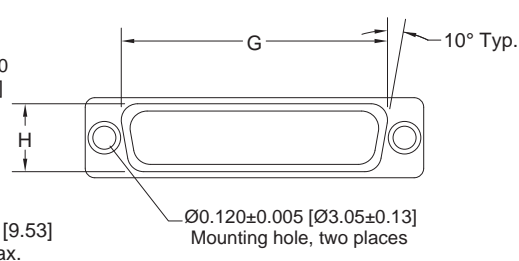
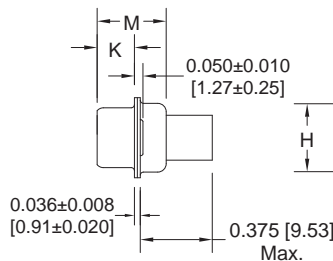
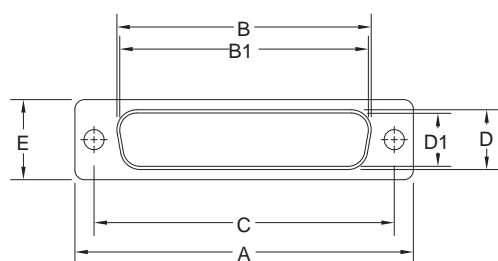


DD 78

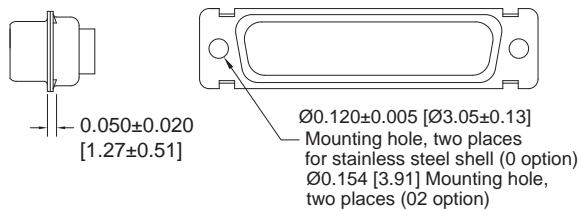


DD 104

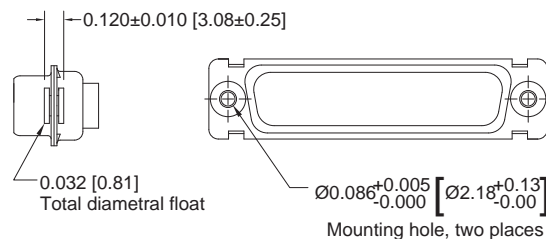
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
DD 15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
DD 15 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
DD 26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
DD 26 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
DD 44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
DD 44 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
DD 62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
DD 62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
DD 78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
DD 78 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
DD 104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
DD 104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]



Positronic
connectpositronic.com

MILITARY QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

REMOVABLE CRIMP CONTACT

CODE 1

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

QUALIFIED TO SAE AS39029

*MILITARY SPECIFICATION CONTACTS

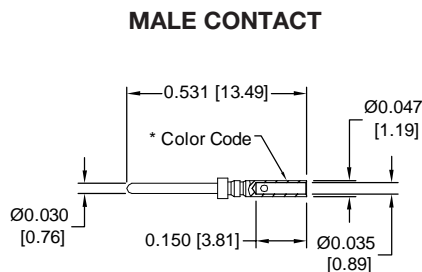
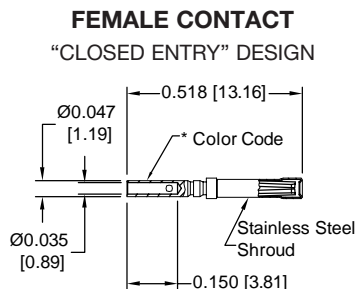
STANDARD FINISH:
per SAE AS39029 specifications

COLOR CODE:

MALE CONTACT:
ORANGE/BLUE/BLACK

FEMALE CONTACT:
ORANGE/GREEN/YELLOW

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
*M39029/57-354	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]
Positronic is qualified to supply the legacy design, as well as, the PosiBand design. If the requirement is for the PosiBand design exclusively, notify sales at time of quotation for order placement when requesting M39029 contacts.	

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
*M39029/58-360	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]

REMOVABLE CRIMP CONTACT

CODE 1

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

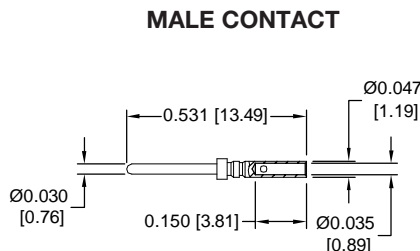
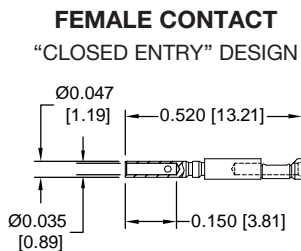


Authentic POSITRONIC

PosiBand®

These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC8022D2	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MC8022D	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8022D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC8022D-15

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Authentic POSITRONIC[®]
PosiBand[®]

These contacts utilize authentic Positronic PosiBand[®] technology.
Protected by U.S. Patent 7,115,002

REMOVABLE CRIMP CONTACT 20 AWG CONTACTS

20 AWG [0.5 mm²]

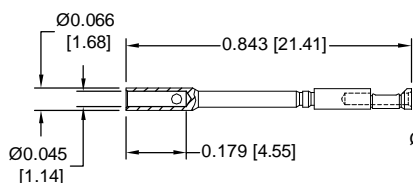
The crimp area of this contact is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Wire cannot be removed from molding after insertion. Not suitable for fully loaded connector.

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

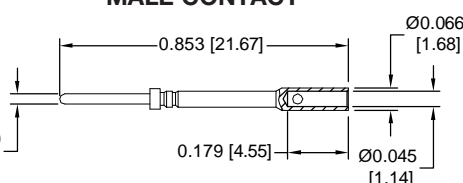
**Note: FC8020D2
and MC8020D
contacts can
be used in the
ODD series.**

*Note: Connectors can be kitted with all
applicable crimp/solder contacts,
contact Technical Sales for
connector part number.*

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



Crimp area extends above connector molding.

FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC8020D2	20 [0.5] max

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MC8020D	20 [0.5] max

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8020D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC8020D-15

REMOVABLE THERMOCOUPLE CRIMP CONTACT

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

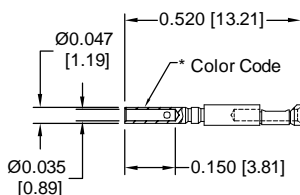
*Note: Connectors can be kitted with all
applicable crimp/solder contacts,
contact Technical Sales for
connector part number.*



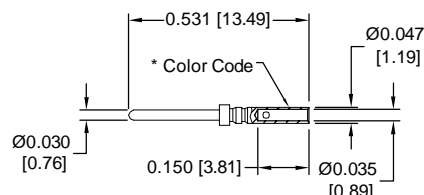
Authentic POSITRONIC[®]
PosiBand[®]

These contacts utilize authentic Positronic PosiBand[®] technology.
Protected by U.S. Patent 7,115,002

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE*	WIRE SIZE AWG [mm ²]
K	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	ALUMEL (-)	FC8022D2AL	MC8022DAL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
T	COPPER (+)	FC8022D2CU	MC8022DCU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chromel[®] and Alumel[®] are registered trademarks of Hoskins Manufacturing Company

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Positronic
connectpositronic.com

MILITARY QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

REMOVABLE SOLDER CUP CONTACTS CODE 2

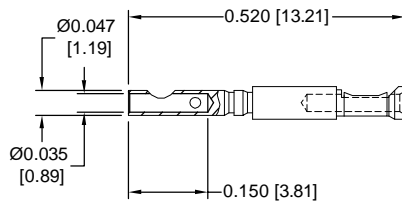
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

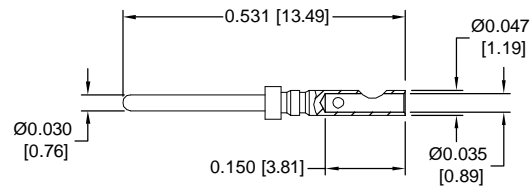
FEMALE CONTACT

"CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FS8022D2	22 [0.3] max

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MS8022D	22 [0.3]max

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FS8022D2-14
0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MS8022D-15

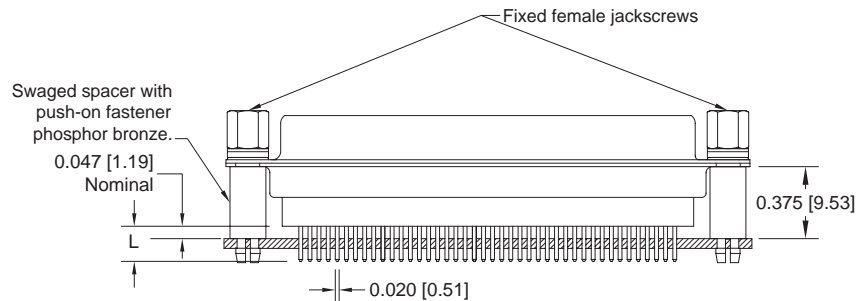
For information regarding **INSERTION & REMOVAL TOOLS**, see page 78.

STRAIGHT PRINTED BOARD MOUNT TERMINATION

CODE 3, 32 AND 33

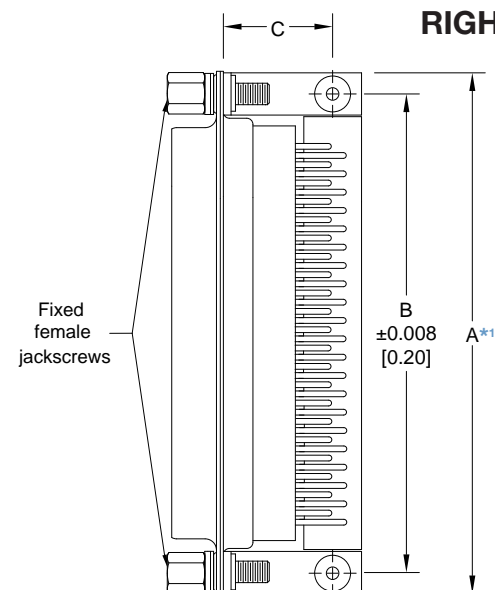
CODE NUMBER	L
3	0.150 [3.81]
32	0.300 [7.62]
33	0.500 [12.70]

For straight printed
board mount contacts
specify code no. in
step 4 of
ordering information.



Typical Part Number: DD62S3S60T2X

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 4, 0.450 [11.43] CONTACT EXTENSION



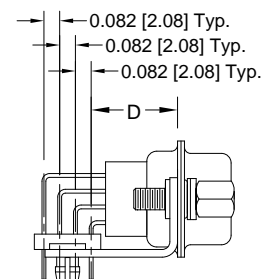
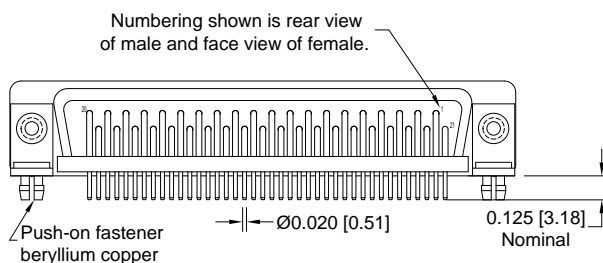
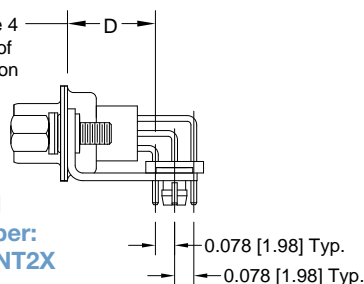
DD**4**** 0.450 [11.43] CONTACT EXTENSION				
PART NUMBER	A*1	B	C	D
DD15*4****	1.204 [30.58]	0.984 [24.99]	0.528 [13.41]	0.450 [11.43]
DD26*4****	1.532 [38.91]	1.312 [33.32]	0.528 [13.41]	0.450 [11.43]
DD44*4****	2.072 [52.63]	1.852 [47.04]	0.528 [13.41]	0.450 [11.43]
DD62*4****	2.720 [69.09]	2.500 [63.50]	0.528 [13.41]	0.450 [11.43]
DD78*4****	2.626 [66.70]	2.406 [61.11]	0.573 [14.55]	0.450 [11.43]

NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.

Specify code 4
in step 4 of
ordering information

**Typical
Part Number:
DD44M4R7NT2X**



**Typical Part Number:
DD78M4R7NT2X**

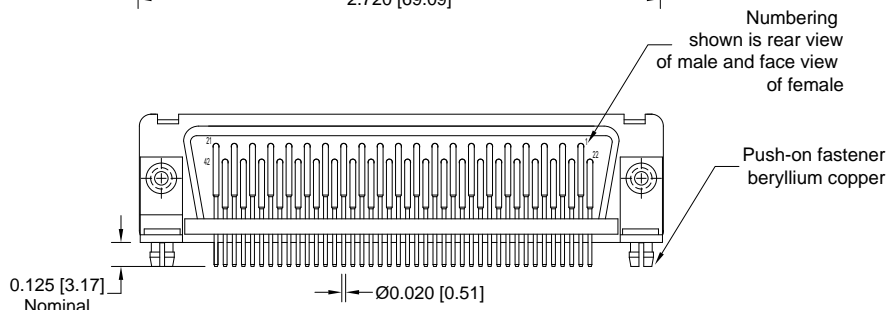
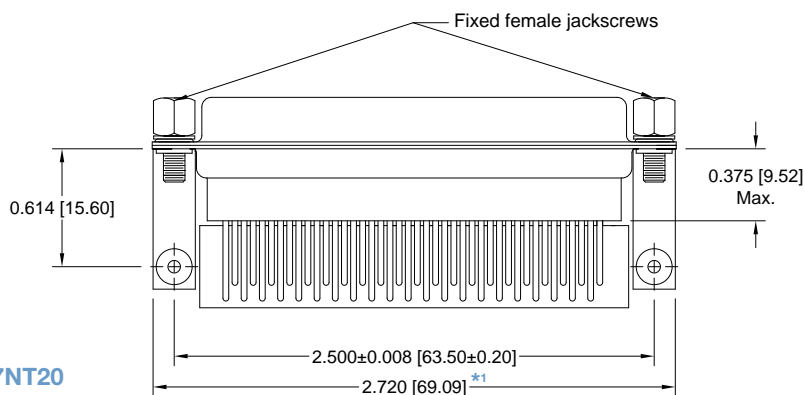
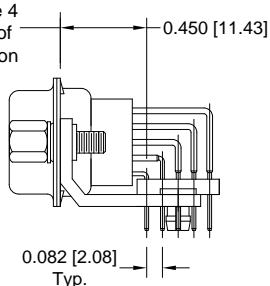
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION, SIZE 104 CODE 4, 0.450 [11.43] CONTACT EXTENSION

NOTE:

*1 Dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for dimension when plastic brackets are used.

Typical Part Number: DD104M4R7NT20

Specify code 4
in step 4 of
ordering information



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. **58**



Positronic
connectpositronic.com

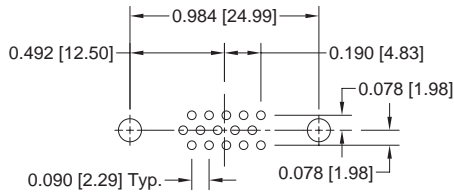
MILITARY QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE

D-Sub

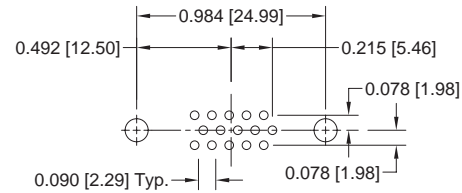
RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

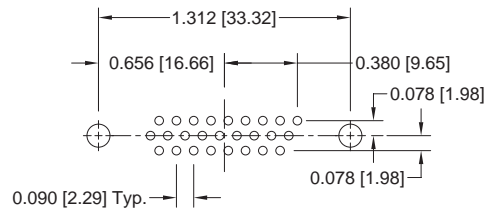
DD15 MALE



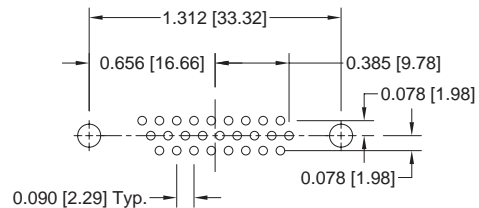
DD15 FEMALE



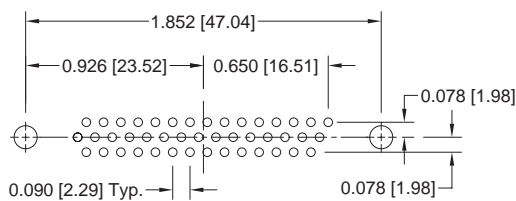
DD 26 MALE



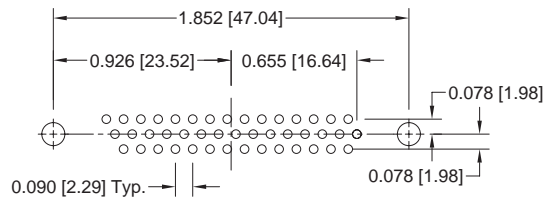
DD 26 FEMALE



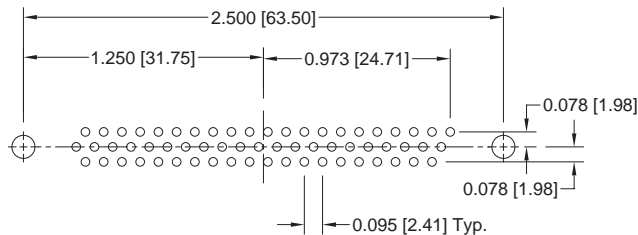
DD44 MALE



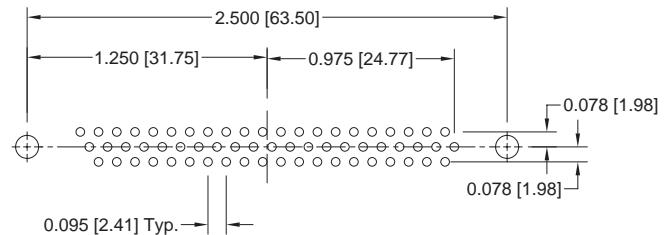
DD44 FEMALE



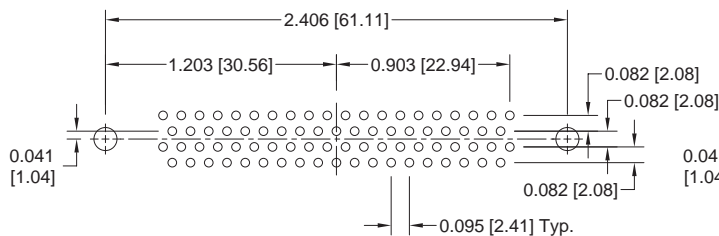
DD62 MALE



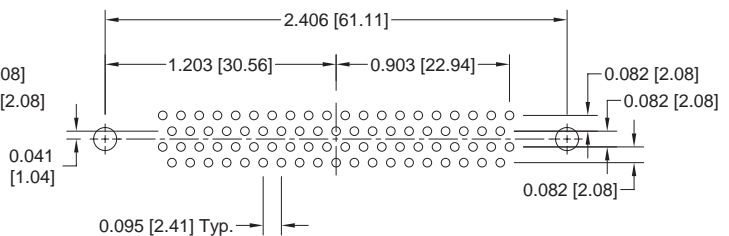
DD62 FEMALE



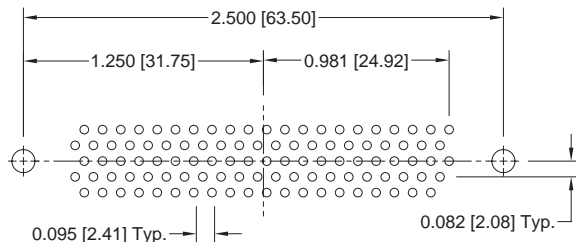
DD78 MALE



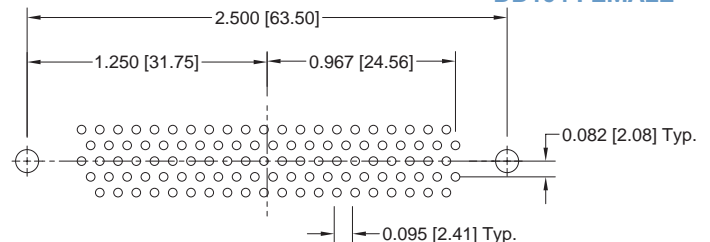
DD78 FEMALE



DD104 MALE



DD104 FEMALE



SUGGESTED PRINTED BOARD HOLE SIZES:

59 DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

Suggest 0.035 [0.89] Ø hole for contact termination positions.
Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	DD	62	S	4	R7	N	T6	S	/AA	-50
STEP 1 - BASIC SERIES DD series										
STEP 2 - CONNECTOR VARIANTS 15, 26, 44, 62, 78, 104										
STEP 3 - CONNECTOR GENDER M - Male S - Female - PosiBand closed entry contacts										
STEP 4 - CONTACT TERMINATION TYPE 0 - Contacts ordered separately, see pages 55-57. 1 - Crimp, 22 AWG-30 AWG [0.3mm ² -0.05mm ²]. 2 - Removable, Solder cup, 22 AWG-30 AWG [0.3mm ² -0.05mm ²]. 3 - Solder, Straight Printed Board Mount with 0.150 [3.81] Tail Length. 32 - Solder, Straight Printed Board Mount with 0.300 [7.62] Tail Length. 33 - Solder, Straight Printed Board Mount with 0.500 [12.70] Tail Length. 4 - Solder, Right Angle (90°) Printed Board Mount with 0.450 [11.43] Contact Extension.										
*1 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø. 02 - Mounting Hole, 0.154 [3.91] Ø. B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar. B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar. F - Float Mounts, Universal. P - Threaded Post, Brass, 0.375 [9.53] Length. P2 - Threaded Post, Nylon, 0.375 [9.53] Length. R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. S - Swaged Spacer, 4-40 Threads, 0.375 [9.53] Length. S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length. S5 - Swaged Locknut, 4-40 Threads. S6 - Swaged Spacer with Push-on Fasteners, 4-40 Threads, 0.375 [9.53] Length. S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.515 [13.08] Length.										
*1 STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None. J - Hood, Top Opening, Plastic. L - Hood, Side Opening, Plastic. Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 78 and 104 only. Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 78 and 104 only. Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 15, 26, 44, 62, and 78 only. H - Hood, Top Opening, Metal. Available in size 26, 44, 62, and 78 only. G - Hood, EMI/RFI, Die Cast Zinc. AN - Lightweight Aluminum Hood, nickel finish. AC - Lightweight Aluminum Hood, no finish. W - Hood, Top or Side Opening, Plastic. Available in size 15, 26, and 44 only. N - Push-on Fastener, for Right Angle (90°) Mounting Brackets. *2 F - Ferrite Inductor										
*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. *3 V3 - Lock Tab, connector front panel mounted. *3 V5 - Lock Tab, connector rear panel mounted. *3 VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with internal hex for 3/32 hex drives E6 - Rotating Male and Female Polarized Jackscrews.										
STEP 8 - SHELL OPTIONS 0 - Zinc plated with chromate seal. *S - Stainless steel, passivated. X - Tin plated. Z - Tin plated and dimpled (male connectors only). C - Cadmium with chromate seal.										
STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: DD62S4R7NT6S										
STEP 10 - SPECIAL OPTIONS -14 - 0.000030 [0.76µ] gold over nickel. -15 - 0.000050 [1.27µ] gold over nickel. -50 - 0.000050 [1.27µ] gold over copper. CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING: Other Special Requirements. Straight and Right Angle (90°) Thermocouple printed circuit board mount contacts										

*1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.

*2 Ferrite inductor is available on contact types 32 and 33 only. For more information on ferrite inductors, see page 7.

*3 VL, V3 and V5 locking systems are not available for connector variants 62, 78 and 104. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*4 For stainless steel dimpled male versions contact Technical Sales.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 78.



Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL / MILITARY QUALITY COMPLIANT PRESS-FIT STANDARD DENSITY D-SUBMINIATURE

D-Sub

**Size 20 Contacts, Fixed
Machined Compliant Press-Fit**

**Three Performance Levels For
Best Cost / Performance Ratio**

Professional Quality
IEC 60807-2 & IEC 60352-5

UL Recognized
File #E49351

Telecommunication
UL File #E140980



PCD series connectors are quality connectors with compliant terminations. The low press-in force required to install the contacts into the board eliminates printed board pressure-warp and twisting stresses which can result in expensive repair or replacement of printed boards and back panels.

Five standard connector variants are offered in arrangement of 9, 15, 25, 37, and 50 contacts. PCD connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3, and dimensional requirements of MIL-DTL-24308.

PCD COMPLIANT PRESS-D CONNECTOR TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D5927, UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional performance - Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.
Jackscrew System:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Lock tabs, nickel plated steel.
Low magnetic versions are available, contact Technical Sales.	

MECHANICAL CHARACTERISTICS:

Contacts Solid Metal Construction:	Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contact - rugged open entry design or PosiBand closed entry design, see page 1 for details.
Contact Retention In Insulator:	5 lbs. [21 N] minimum.
Connector Polarization:	Trapezoidal shaped shells and polarized jackscrews.
Locking System:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations per IEC 60512-5 for open entry 1000 operations per IEC 60512-5 for closed entry

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	
Open Entry Contacts:	7.5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	
	18 amperes, 2 contacts energized.
	14 amperes, 6 contacts energized.
	11 amperes, 15 contacts energized.
	10 amperes, 25 contacts energized.
	9 amperes, 50 contacts energized.
<i>See temperature rise curves on page 2 for details.</i>	
Initial Contact Resistance:	0.008 ohms maximum per IEC 60512-2, Test 2a for open entry. 0.004 ohms maximum for closed entry.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm].
Working Voltage:	300 V.

ELECTRICAL CHARACTERISTICS OF COMPLIANT CONNECTION TO PLATED-THROUGH-HOLE OF PRINTED BOARD:

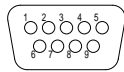
Initial Contact Resistance of Connection:	Less than 0.001 ohms per IEC 60512-2, Test 2a.
Change in Contact Resistance of Connection after Mechanical, Electrical or Climatic Conditioning:	Less than 0.001 ohms increase per IEC 60512-2, Test 2a.
Gas-tight Connections Test:	Less than 0.001 ohms increase in contact resistance after 1 hour per EIA 364, TP36, Method One.

CLIMATIC CHARACTERISTICS:

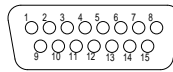
Temperature Range:	-55°C to +125°C.
---------------------------	------------------

CONTACT VARIANTS

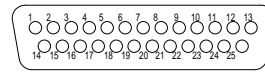
FACE VIEW OF MALE CONNECTOR OR REAR VIEW OF FEMALE CONNECTOR



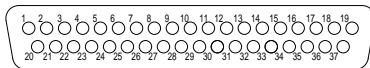
PCD 9



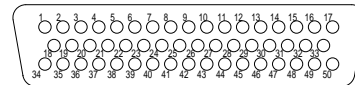
PCD 15



PCD 25

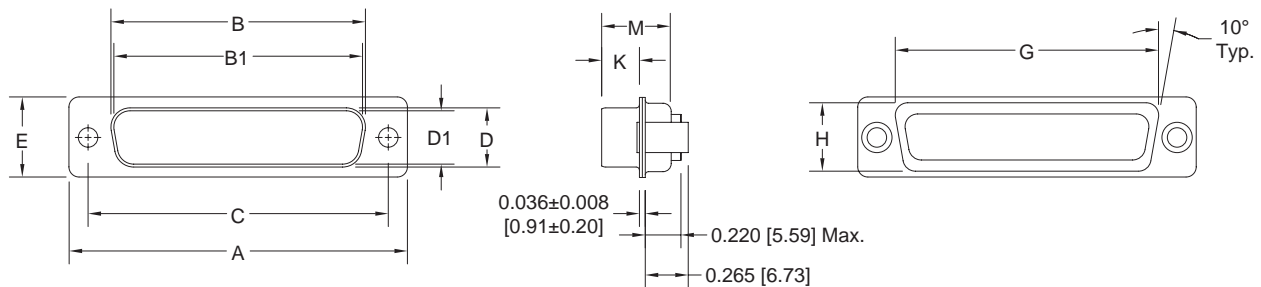


PCD 37



PCD 50

STANDARD SHELL ASSEMBLY



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
PCD 9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
PCD 9 F PCD 9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCD 15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
PCD 15 F PCD 15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCD 25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
PCD 25 F PCD 25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCD 37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
PCD 37 F PCD 37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCD 50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
PCD 50 F PCD 50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]



Positronic
connectpositronic.com

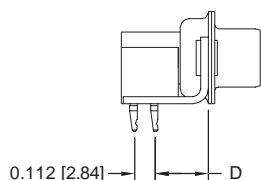
PROFESSIONAL / INDUSTRIAL / MILITARY QUALITY COMPLIANT PRESS-FIT STANDARD DENSITY D-SUBMINIATURE

D-Sub

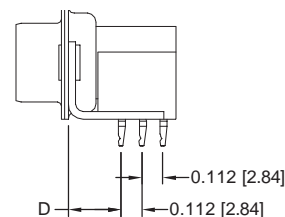
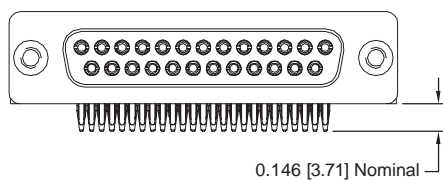
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT TERMINATION

CODE 62*1

Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board.



Typical Part Number:
PCD25S62R7000



Typical Part Number:
PCD50S62R7000

PCD*S62**** 0.283 [7.19] CONTACT EXTENSION				
PART NUMBER*1	A*2	B	C	D
PCD25S62****	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
PCD50S62****	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]

NOTE:

*1 Currently available in 25 and 50 female variants only, contact Technical Sales for availability of other variants.

*2 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature Catalog for "A" dimension when plastic brackets are used.

For right angle (90°) compliant press-fit contacts, specify code 62 in step 4 of ordering information.

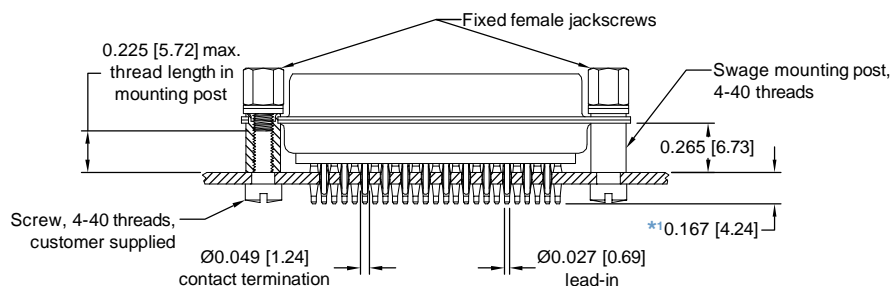
SUGGESTED PRINTED BOARD HOLE SIZES:

For right angle (90°) printed board contact hole pattern, see page 64.

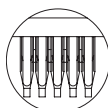
STRAIGHT COMPLIANT PRESS-FIT TERMINATION

CODE 98

Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board.



Typical Part Number: PCD25F98S0T20



Detail of
Omega contacts

For straight compliant press-fit contacts, specify code 98 in step 4 of ordering information.

NOTE:

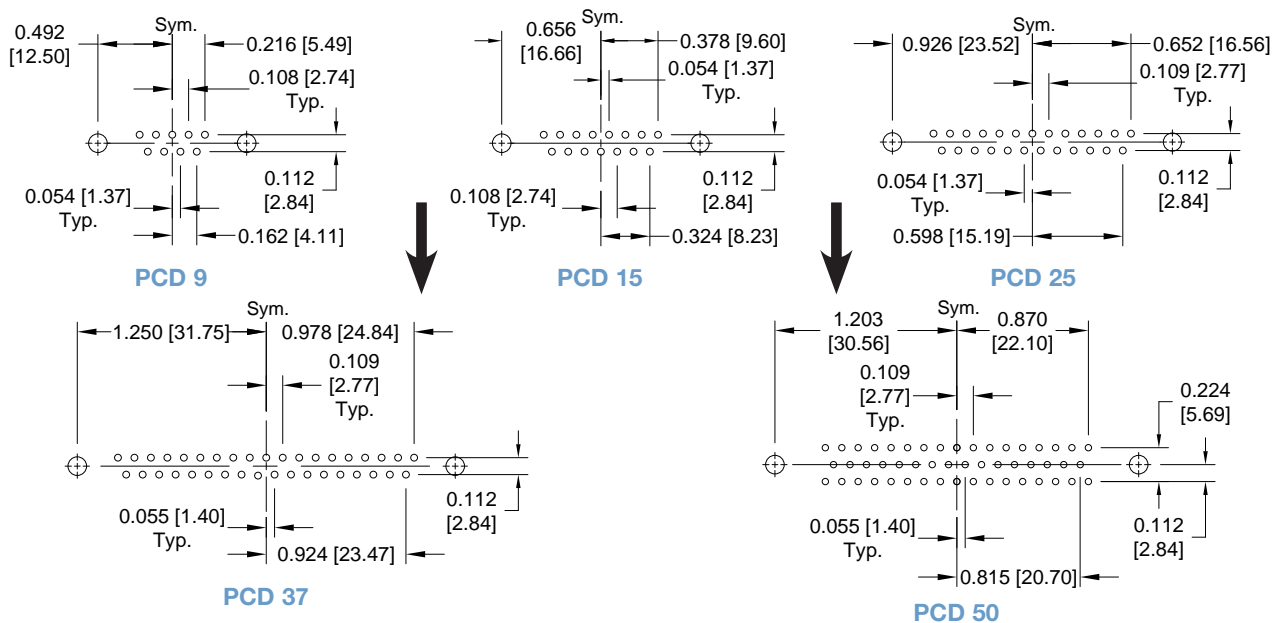
*1 The effective length of the compliant section may also be varied (longer or shorter) and can be selectively positioned and centered at several points along the contact termination length, permitting high or low profile mounting of the connector on printed boards.

SUGGESTED PRINTED BOARD HOLE SIZES:

For right angle (90°) printed board contact hole pattern, see page 64.

RIGHT ANGLE (90°) AND STRAIGHT COMPLIANT PRESS-FIT PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.120 [3.05] Ø hole for connector mounting holes

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 81.
For compliant press-fit connector installation tools, see page 80.



Positronic
connectpositronic.com

PROFESSIONAL / INDUSTRIAL / MILITARY QUALITY COMPLIANT PRESS-FIT STANDARD DENSITY D-SUBMINIATURE

D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	PCD	25	F	98	S	0	0	X	/AA	-14

STEP 1 - BASIC SERIES

PCD series

STEP 2 - CONNECTOR VARIANTS

9, 15, 25, 37, 50

STEP 3 - CONNECTOR GENDER

M - Male
F - Female - Professional Level
open entry contacts
S - Female - Industrial Level
PosiBand closed entry contacts

Military plating options available.

STEP 4 - CONTACT TERMINATION TYPE

*162 - Right angle (90°) printed circuit board mount,
compliant press-fit
98 - Straight printed circuit board mount, compliant
press-fit

STEP 5 - MOUNTING STYLE

B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar.
R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar.
R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar.
R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar.
R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar.
S - Swaged Mounting Post 4-40 Threads 0.265 [6.73] Length.

STEP 10 - SPECIAL OPTIONS

-14 - 0.000030 [0.76μ] gold over nickel.
-15 - 0.000050 [1.27μ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: PCD25F98S00X

STEP 8 - Shell Options

0 - Zinc plated, with chromate seal.
*3 S - Stainless steel, passivated.
X - Tin plated.
Z - Tin plated and dimpled (male connectors only).

STEP 7 - LOCKING AND POLARIZING SYSTEMS

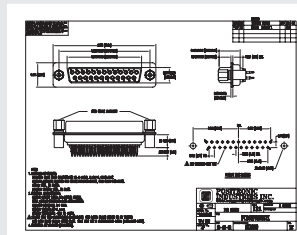
0 - None.
*2 V3 - Lock Tab.
T6 - Fixed Male and Female Polarized Jackscrews.
T2 - Fixed Female Jackscrews, 4-40 Thread.

Note: These options must be ordered with connector and cannot be ordered separately.

STEP 6 - HOODS

0 - None.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

*1 Available in 25 and 50 female variants only, contact Technical Sales for availability of other variants.

*2 V3 locking systems are not available for connector variants 37 and 50. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*3 For stainless steel dimpled male versions contact Technical Sales.

For information regarding **COMPLIANT PRESS-FIT INSTALLATION TOOLS**, see pages 80.

Size 22 Contacts
Machined Compliant Press-Fit

Three Performance
Levels For Best Cost /
Performance Ratio

UL & CUL Recognized Telecommunication
File #E49351 UL File #E140980



PCDD series connectors are quality connectors with compliant terminations. The low press-in force required to install the contacts into the board eliminates printed board pressure-warp and twisting stresses which can result in expensive repair or replacement of printed boards and back panels.

Six standard connector variants are offered in arrangements of 15, 26, 44, 62, 72, and 104 contacts. PCDD connectors are mateable and compatible with all D-subminiature connectors conforming to dimensional requirements of MIL-DTL-24308.

PCDD COMPLIANT PRESS-D CONNECTOR TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D5927, UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Professional performance - Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.
Jackscrew System:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Vibration Lock Systems:	Lock tabs, nickel plated steel.
Low magnetic versions are available, contact Technical Sales.	

MECHANICAL CHARACTERISTICS:

Contacts Solid Metal Construction:	Size 22 contact, male - 0.030 inch [0.76 mm] mating diameter. Female contact - rugged open entry design or PosiBand closed entry design, see page 1 for details.
Contact Retention In Insulator:	5 lbs. [21 N] minimum.
Connector Polarization:	Trapezoidal shaped shells and polarized jackscrews.
Locking System:	Jackscrews and vibration locking systems.
Mechanical Operations:	500 operations per IEC 60512-5 for open entry contacts. 1,000 operations per IEC 60512-5 for PosiBand closed entry contacts.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
---------------------------	------------------

ELECTRICAL CHARACTERISTICS OF CONNECTOR:

Contact Current Rating:

Open Entry Contacts:	5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	12 amperes, 2 contacts energized. 10 amperes, 6 contacts energized. 7.5 amperes, 26 contacts energized. 6.5 amperes, 62 contacts energized. 5.0 amperes, 104 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.010 ohms maximum per IEC 60512-2, Test 2a for open entry. 0.005 ohms maximum for closed entry.
Proof Voltage:	1000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.042 inch [1.02 mm].
Working Voltage:	300 V.

ELECTRICAL CHARACTERISTICS OF COMPLIANT CONNECTION TO PLATED-THROUGH-HOLE OF PRINTED BOARD:

Initial Contact Resistance of Connection:	Less than 0.001 ohms per IEC 60512-2, Test 2a.
Change in Contact Resistance of Connection after Mechanical, Electrical or Climatic Conditioning:	Less than 0.001 ohms increase per IEC 60512-2, Test 2a.
Gas-tight Connections Test:	Less than 0.001 ohms increase in contact resistance after 1 hour per EIA 364, TP36, Method One.

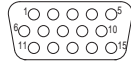


Positronic
connectpositronic.com

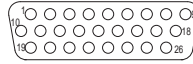
PROFESSIONAL / INDUSTRIAL / MILITARY QUALITY COMPLIANT PRESS-FIT HIGH DENSITY D-SUBMINIATURE

D-Sub

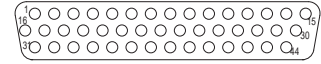
CONTACT VARIANTS FACE VIEW OF MALE AND REAR VIEW OF FEMALE



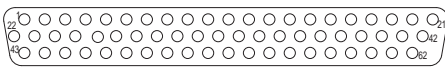
PCDD 15



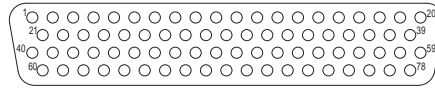
PCDD 26



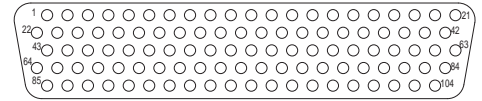
PCDD 44



PCDD 62

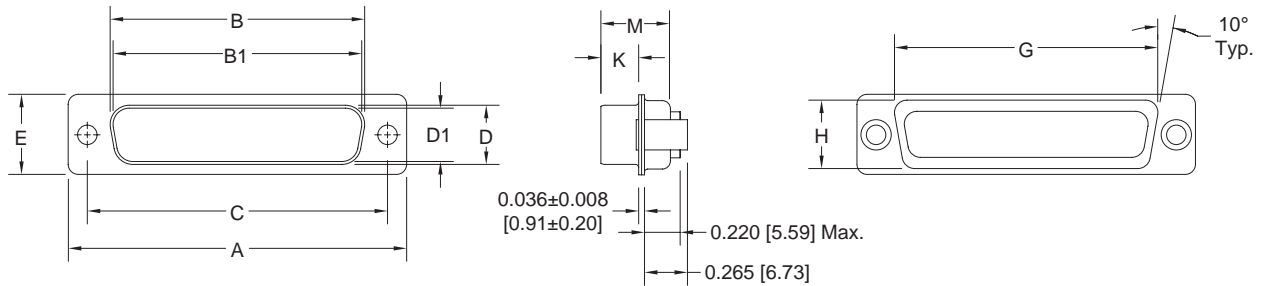


PCDD 78



PCDD 104

STANDARD SHELL ASSEMBLY

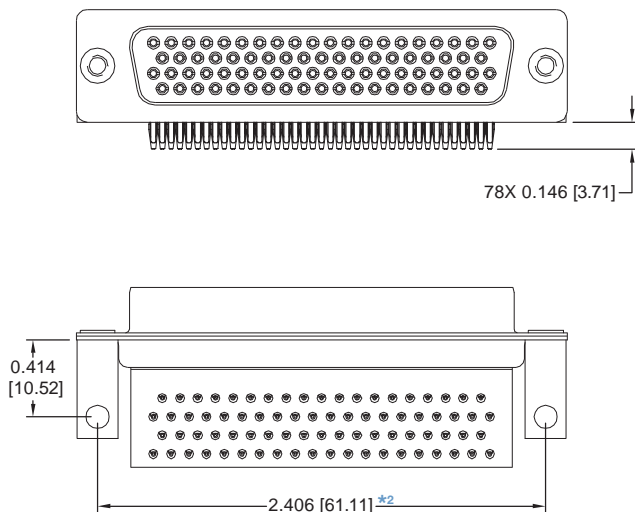


CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
PCDD 15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
PCDD 15 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCDD 15 S											
PCDD 26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
PCDD 26 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCDD 26 S											
PCDD 44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
PCDD 44 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCDD 44 S											
PCDD 62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
PCDD 62 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
PCDD 62 S											
PCDD 78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
PCDD 78 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
PCDD 78 S											
PCDD 104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
PCDD 104 F	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]
PCDD 104 S											

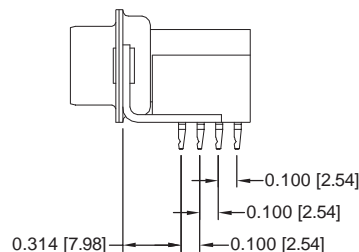
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT TERMINATION

CODE 62*1

Positronic *recommends* the practice of *using mounting hardware* to secure connector to printed circuit board.



Typical Part Number:
PCDD78S62R7000



For right angle (90°)
compliant press-fit
contacts, specify code
62 in step 4 of ordering
information.

NOTE:

*1 Currently available in 78 female variants only, contact Technical Sales for availability of other variants.

*2 Dimension applies for metal angle brackets only. Consult Accessories D-subminiature Catalog for dimension when plastic brackets are used.

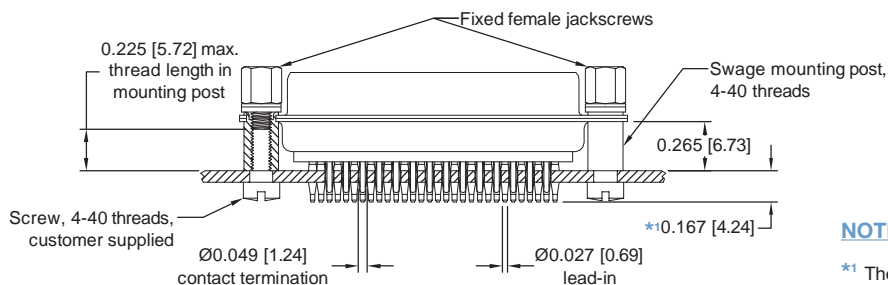
SUGGESTED PRINTED BOARD HOLE SIZES:

For right angle (90°) printed board contact hole pattern, see page 69.

STRAIGHT COMPLIANT PRESS-FIT TERMINATION

CODE 98

Positronic *recommends* the practice of *using mounting hardware* to secure connector to printed circuit board.

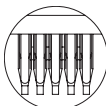


Typical Part Number:
PCDD44F98S0T20

For straight compliant
press-fit contacts, specify
code 98 in step 4 of
ordering information.

NOTE:

*1 The effective length of the compliant section may also be varied (longer or shorter) and can be selectively positioned and centered at several points along the contact termination length, permitting high or low profile mounting of the connector on printed boards.



Detail of
Omega contacts

SUGGESTED PRINTED BOARD HOLE SIZES:

For right angle (90°) printed board contact hole pattern, see page 69.



Positronic
connectpositronic.com

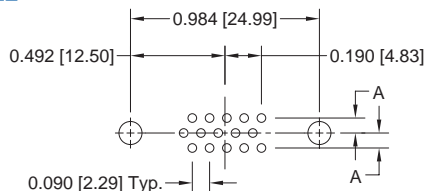
PROFESSIONAL / INDUSTRIAL / MILITARY QUALITY COMPLIANT PRESS-FIT HIGH DENSITY D-SUBMINIATURE

D-Sub

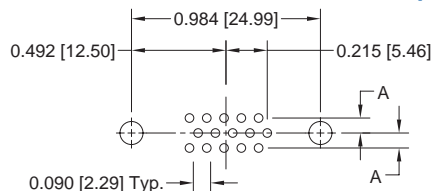
RIGHT ANGLE (90°) AND STRAIGHT COMPLIANT PRESS-FIT PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.

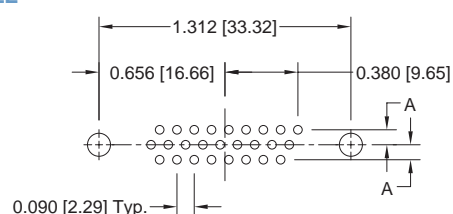
PCDD15 MALE



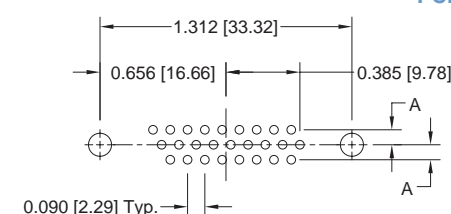
PCDD15 FEMALE



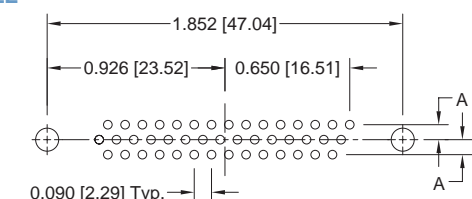
PCDD26 MALE



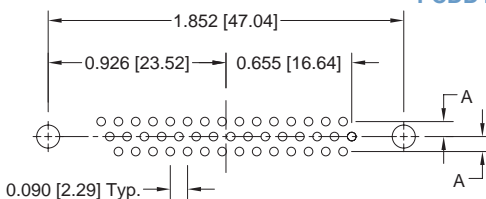
PCDD26 FEMALE



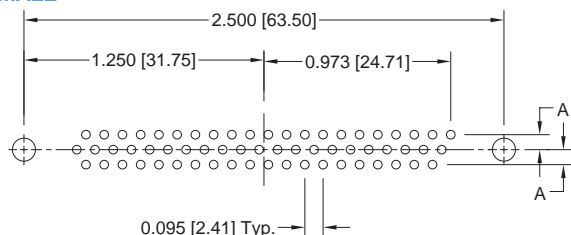
PCDD44 MALE



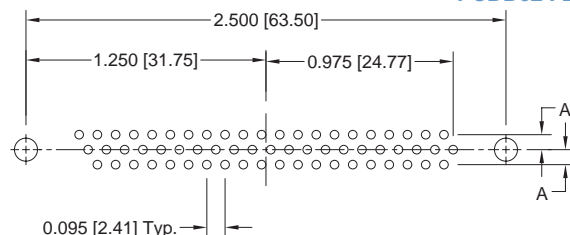
PCDD44 FEMALE



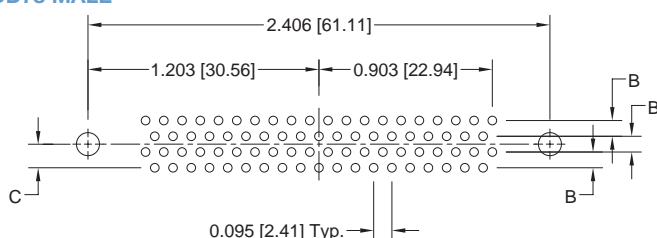
PCDD62 MALE



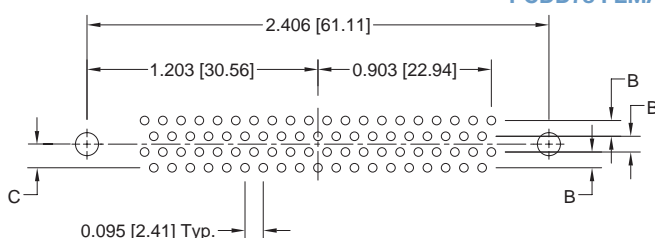
PCDD62 FEMALE



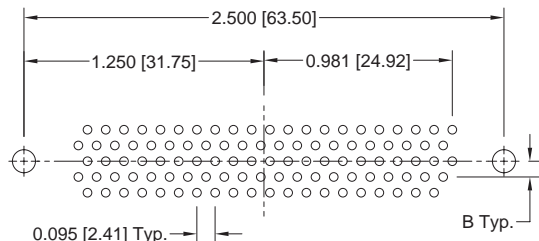
PCDD78 MALE



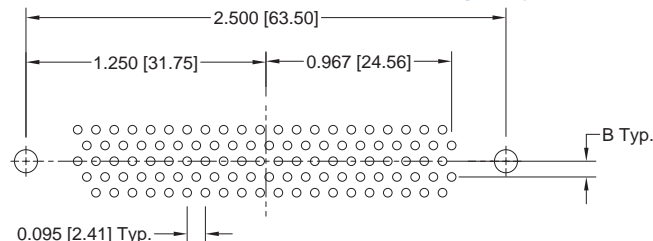
PCDD78 FEMALE



PCDD104 MALE



PCDD104 FEMALE



CODE NUMBER	A	B	C
62	0.100 [2.54]	0.100 [2.54]	0.100 [2.54]
98	0.078 [1.98]	0.082 [2.08]	0.123 [3.12]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.120 [3.05] Ø hole for connector mounting holes.

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 81.
For compliant press-fit connector installation tools, see page 80.

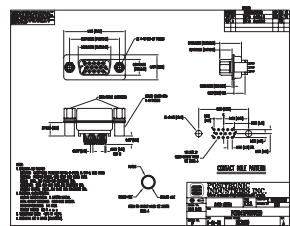


ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	PCDD	15	M	98	S	0	T2	0	/AA	-14
<div><div><div><div><div>STEP 1 - BASIC SERIES</div><div>PCDD series</div></div><div><div>STEP 2 - CONNECTOR VARIANTS</div><div>15, 26, 44, 62, 78, 104</div></div><div><div>STEP 3 - CONNECTOR GENDER</div><div>M - Male F - Female - Professional Level open entry contacts S - Female - Industrial Level PosiBand closed entry contacts. <i>Military plating options available.</i></div></div><div><div>STEP 4 - CONTACT TERMINATION TYPE</div><div><div>*1 62 - Right angle (90°) printed circuit board mount, compliant press-fit</div><div>98 - Straight printed circuit board mount, compliant press-fit</div></div></div><div><div>STEP 5 - MOUNTING STYLE</div><div>B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar. R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. S - Swaged Mounting Post 4-40 Threads 0.265 [6.73] Length.</div></div></div><div><div><div><div>STEP 10 - SPECIAL OPTIONS</div><div><div>-14 - 0.000030 [0.76µ] gold over nickel.</div><div>-15 - 0.000050 [1.27µ] gold over nickel.</div></div><div>CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS</div></div><div><div>STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS</div><div>/AA - RoHS Compliant</div><div>NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: PCDD15M98S0T20</div></div><div><div>STEP 8 - Shell Options</div><div><div>0 - Zinc plated, with chromate seal.</div><div><div>*3 S - Stainless steel, passivated.</div><div>X - Tin plated.</div><div>Z - Tin plated and dimpled (male connectors only).</div></div></div><div><div>STEP 7 - LOCKING AND POLARIZING SYSTEMS</div><div><div>0 - None.</div><div><div>*2 V3 - Lock Tab.</div><div>T6 - Fixed Male and Female Polarized Jackscrews.</div><div>T2 - Fixed Female Jackscrews, 4-40 Thread.</div></div><div>Note: These options must be ordered with connector and cannot be ordered separately.</div></div><div><div>STEP 6 - HOODS</div><div>0 - None.</div></div></div></div></div></div></div></div>										

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

*1 Available in 78 female variant only, contact Technical Sales for availability of other variants.

*2 V3 locking systems are not available for connector variants 62 and 78. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces.

*3 For stainless steel dimpled male versions contact Technical Sales.

For information regarding **COMPLIANT PRESS-FIT INSTALLATION TOOLS**, see pages 80.



AD Series Size 20 “Open Entry” Contact Design

HAD Series Size 20 PosiBand® “Closed Entry” Contact Design

Connector Saver



AD and HAD series connectors are suitable for use in any applications requiring high performance characteristic. The normal density AD and HAD series are available in five standard connector variants of 9, 15, 25, 37 and 50 contacts.

AD and HAD series connectors utilize precision machined contacts for strength and durability. AD series female contact features a rugged open entry design. HAD series female contact features the PosiBand closed entry design for even higher reliability, see page 1 for details.

AD and HAD series connectors can be mated to a connector which would normally experience high numbers of mating cycles. The AD/HAD connector can be easily replaced, “saving” a connector which is not easily replaced.

These connectors can also be used as a “gender changer”. Connectors are available in high density versions, see page 75.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:

AD series:	Nylon resin, UL 94V-0, black color.
HAD series:	Glass-filled DAP per ASTM-D-5948, UL 94V-0.

Contacts: Precision machined copper alloy.

Contact Plating: Gold flash over nickel plate. Other finishes available upon request.

Shells: Steel with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts: Size 20 contacts, male - 0.040 inch [1.02 mm] mating diameter. AD series female contact offers open entry design. HAD series female contact features PosiBand closed entry design, see page 1 for details.

Connector Saver: Male to female or male to male.

Contact Retention: 9 lbs. [40 N].

Shells: Male shells may be dimpled for EMI/ESD ground paths.

Polarization: Trapezoidally shaped shells.

Mechanical Operations:

AD series:	500 operations, minimum, per IEC 60512-5.
HAD series:	1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

Open Entry Contacts:	7.5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	
	18 amperes, 2 contacts energized.
	14 amperes, 6 contacts energized.
	11 amperes, 15 contacts energized.
	10 amperes, 25 contacts energized.
	9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance: 0.008 ohms, maximum for AD series.
0.004 ohms, maximum for HAD series.

Proof Voltage: 1,000 V r.m.s.

Insulation Resistance: 5 G ohms.

Clearance and Creepage Distance: 0.039 inch [1.0 mm], minimum.

Working Voltage: 300 V r.m.s.

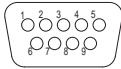
CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

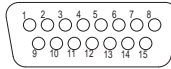
AD AND HAD SERIES SIZE 20 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

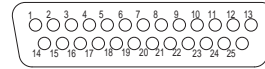
FACE VIEW OF MALE OR USE MIRROR IMAGE FOR FEMALE



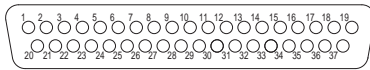
SIZE 9



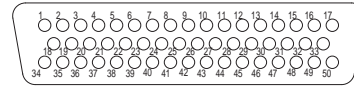
SIZE 15



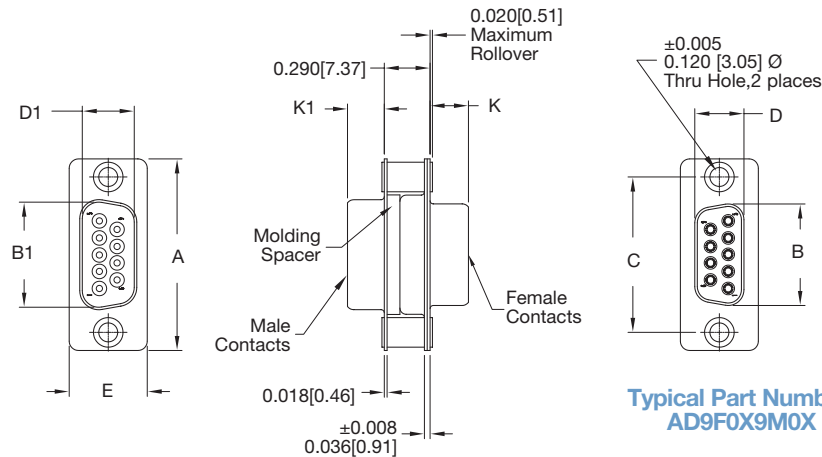
SIZE 25



SIZE 37



SIZE 50

STANDARD SHELL ASSEMBLY DIMENSIONS
SIZE 20 CONTACTS

CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
9 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
25 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
37 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		0.230 [5.84]
50 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	



Positronic
connectpositronic.com

STANDARD DENSITY CONNECTOR SAVERS / GENDER CHANGERS

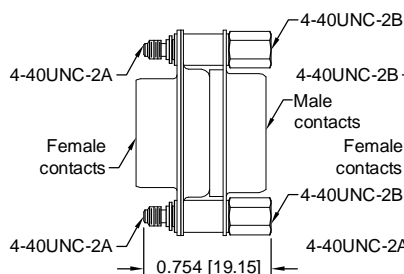
D-Sub

JACKSCREW SYSTEMS

CODE E, E6, T AND T6

ROTATING
MALE AND FEMALE
JACKSCREWS

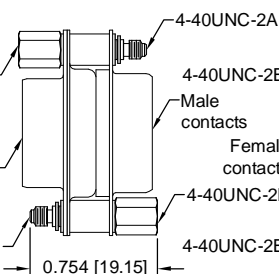
E



Example Part Number:
AD9FEX9M0X

ROTATING
MALE AND FEMALE
POLARIZED
JACKSCREWS

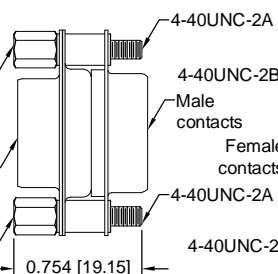
E6



Example Part Number:
AD9FE6X9M0X

FIXED
MALE AND FEMALE
JACKSCREWS

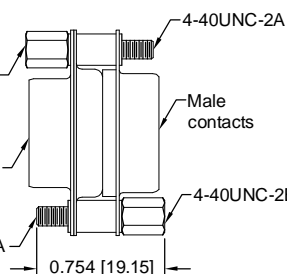
T



Example Part Number:
AD9FTX9M0X

FIXED
MALE AND FEMALE
POLARIZED
JACKSCREWS

T6



Example Part Number:
AD9FT6X9M0X

MATERIAL: Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.

Connectors Designed To Customer Specifications

*Positronic D-subminiature connectors
can be modified to customer specifications.*

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances;
longer printed circuit board terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	AD	9	F	S	X	9	M	S	X	/AA	-14

STEP 1 - BASIC SERIES

AD series - Open entry female contacts, nylon insulator

HAD series - PosiBand closed entry female contacts, DAP insulator.

Military plating options available.

STEP 2 - CONNECTOR VARIANT

9, 15, 25, 37, 50

STEP 3 - 1ST CONNECTOR GENDER

M - Male

F - Female

***1 STEP 4 - 1ST CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 8)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 8)

*3 T - Fixed male and female jackscrews (Select 0 in Step 8)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 8)

STEP 5 - 1ST CONNECTOR SHELL OPTION

0 - Zinc plated, with chromate seal.

*4 S - Stainless steel, passivated.

X - Tin plated.

Z - Tin plated and dimpled (male connectors only).

STEP 6 - 2ND CONNECTOR VARIANT

9, 15, 25, 37, 50

STEP 7 - 2ND CONNECTOR GENDER

M - Male

***2 STEP 8 - 2ND CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 4)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 4)

*3 T - Fixed male and female jackscrews (Select 0 in Step 4)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 4)

STEP 9 - 2ND CONNECTOR SHELL OPTION

0 - Zinc plated, with chromate seal.

*4 S - Stainless steel, passivated.

X - Tin plated.

Z - Tin plated and dimpled (male connectors only).

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: AD9FSX9MSX

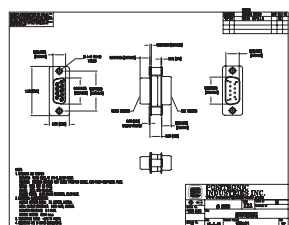
STEP 11 - SPECIAL OPTIONS

-14 - 0.000030 [0.76μ] gold over nickel.

-15 - 0.000050 [1.27μ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

- *1 Connector mating style for both connectors must be the same if 0 or S is used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must be 0.
- *2 Connector variant for both connectors must be the same.
- *3 For hardware information, see page 73.
- *4 For stainless steel dimpled male versions contact Technical Sales.



Positronic
connectpositronic.com

HIGH DENSITY CONNECTOR SAVERS / GENDER CHANGERS

D-Sub

DAD Series Size 22 “Open Entry” or PosiBand® “Closed Entry” Contact Design

Connector Saver



DAD series connectors are suitable for use in any applications requiring high performance characteristic. The high density DAD series is available in six standard connector variants of 15, 26, 44, 62, 78 and 104 contacts.

DAD series connectors utilize precision machined contacts for strength and durability. The female contact features a rugged open entry design. Female PosiBand closed entry contacts can be chosen for even higher reliability, see page 1 for details.

DAD series connectors can be mated to a connector which would normally experience high numbers of mating cycles. The DAD connector can be easily replaced, “saving” a connector which is not easily replaced.

Connectors are available in standard density versions, see page 71.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Polyester glass-filled per ASTM D5927, UL 94V-0.
Contacts:	Precision machined copper alloy.
Contact Plating:	Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel or brass with tin plate; zinc plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request.

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 22 contacts - male 0.030 inch [0.76 mm] mating diameter. Female contact: open entry or PosiBand closed entry design, see page 1 for details.
Connector Saver:	Male to female.
Contact Retention:	9 lbs. [40 N].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.

Mechanical Operations:	500 operations, minimum, per IEC 60512-5 for open entry. 1000 operations, minimum, per IEC 60512-5 for closed entry.
-------------------------------	---

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

Open Entry Contacts:	5 amperes nominal
Closed Entry Contacts, tested per UL 1977:	12 amperes, 2 contacts energized. 10 amperes, 6 contacts energized. 7.5 amperes, 26 contacts energized. 6.5 amperes, 62 contacts energized. 5.0 amperes, 104 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.010 ohms, maximum for open entry 0.005 ohms, maximum for closed entry
Proof Voltage:	1,000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.042 inch [1.06 mm], minimum.
Working Voltage:	300 V r.m.s.

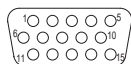
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
---------------------------	------------------

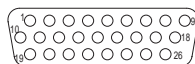
DAD SERIES SIZE 22 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

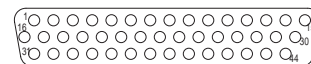
FACE VIEW OF MALE OR USE MIRROR IMAGE FOR FEMALE



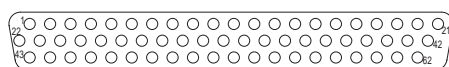
DAD 15



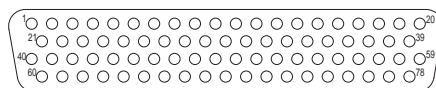
DAD 26



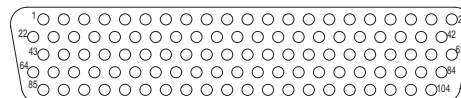
DAD 44



DAD 62



DAD 78

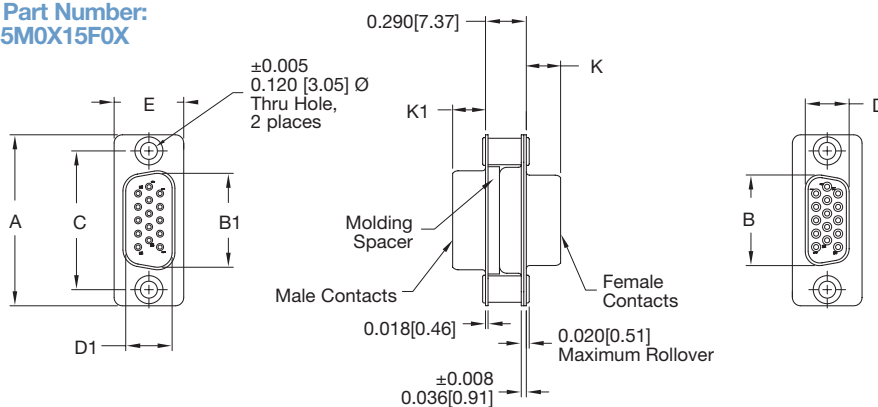


DAD 104

STANDARD SHELL ASSEMBLY DIMENSIONS

SIZE 22 CONTACTS

Typical Part Number:
DAD15M0X15F0X



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 F 15 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
26 F 26 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
44 F 44 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
62 F 62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		0.230 [5.84]
78 F 78 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	
104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]		0.230 [5.84]
104 F 104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	0.243 [6.17]	

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 76**



Positronic
connectpositronic.com

HIGH DENSITY CONNECTOR SAVERS / GENDER CHANGERS

D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	DAD	15	M	S	X	15	F	S	X	/AA	-14

STEP 1 - BASIC SERIES

DAD series

STEP 2 - CONNECTOR VARIANT

15, 26, 44, 62, 78, 104

STEP 3 - 1ST CONNECTOR GENDER

M - Male

*2 STEP 4 - 1ST CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *3 E - Rotating male and female jackscrews (Select 0 in Step 8)
- *3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 8)
- *3 T - Fixed male and female jackscrews (Select 0 in Step 8)
- *3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 8)

STEP 5 - 1ST CONNECTOR SHELL OPTION

- 0 - Zinc plated, with chromate seal.
- *5 S - Stainless steel, passivated.
- X - Tin plated.
- Z - Tin plated and dimpled (male connectors only).

*1 Male option available only on connector variant 78.

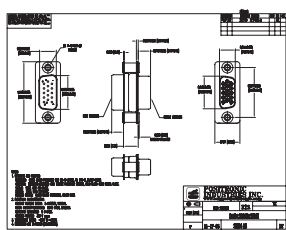
*2 Connector mating style for both connectors must be the same if 0 or S is used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must be 0.

*3 For hardware information, see page 73.

*4 Connector variant for both connectors must be the same as in Step 2.

*5 For stainless steel dimpled male versions contact Technical Sales.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

STEP 11 - SPECIAL OPTIONS

- 14 - 0.000030 [0.76μ] gold over nickel.
- 15 - 0.000050 [1.27μ] gold over nickel.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: DAD15MSX15FSX

STEP 9 - 2ND CONNECTOR SHELL OPTION

- 0 - Zinc plated, with chromate seal.
- *5 S - Stainless steel, passivated.
- X - Tin plated.
- Z - Tin plated and dimpled (male connectors only).

**STEP 8 - 2ND CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *3 E - Rotating male and female jackscrews (Select 0 in Step 4)
- *3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 4)
- *3 T - Fixed male and female jackscrews (Select 0 in Step 4)
- *3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 4)

STEP 7 - 2ND CONNECTOR GENDER

- *1 M - Male
- F - Female - Professional Level - open entry contacts
- S - Female - Industrial Level - PosiBand closed entry contacts

Military plating options available.

*4 STEP 6 - 2ND CONNECTOR VARIANT

15, 26, 44, 62, 78, 104



A P P L I C A T I O N T O O L S S E C T I O N

*SD / RD / ORD / ODD / DD connectors are offered with **removable crimp contacts**.*

*Positronic recognizes the **importance of**
supplying **application tooling** to support our
customers' use of our products.*

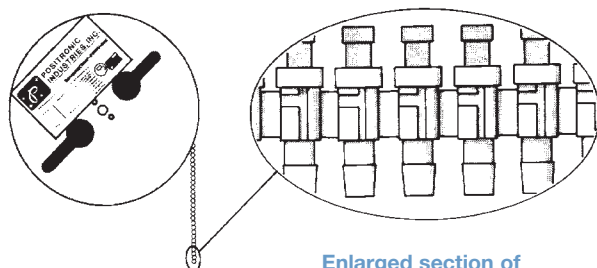
*Information on application tooling is
available on our web site at*

www.connectpositronic.com/design-tools/tooling

*There you will find **downloadable PDF** cross reference
charts for removable and compliant press-fit contacts. These charts
will **supply part numbers** for insertion, removal and crimping tools,
along with **information regarding use** of tools and techniques.*



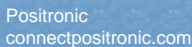
REELS FOR AUTOMATIC PNEUMATIC CRIMP TOOLS



**Enlarged section of
plastic contact carriers**

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9550-1. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC6020DR for a male contact and FC6020DR for female contact.



D-Sub

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

	Postitronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equip	Positioner	Mfg. Cross	Mil Equip	Insertion Tool	Mfg. Cross	Mil Equip	Removal Tool	Mfg. Cross	Mil Equip	Automatic Crimp Tool ** See Note
SD SERIES	MC752D0		9507-0-0-0	AFM8	M22520/2-01	9502-10-0-0	K694		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC7526D		9507-0-0-0	AFM8	M22520/2-01	9502-10-0-0	K694		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC7518D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC7520D		9507-0-0-0	AFM8	M22520/2-01	9502-10-0-0	K694		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC7526D		9507-0-0-0	AFM8	M22520/2-01	9502-10-0-0	K694		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC7518D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC6602D0		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC66026D		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC66018D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC39029/63-368		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
RD SERIES	FC66020D2		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC66018D2		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC66018D2		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC39029/64-369		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
ORD SERIES	MC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC6618D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC66018D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC66026D		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC66026D2		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC66120D		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	FC6618D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
ODD SERIES	FC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1		M81969/1-02	91067-2	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	9550-1-0-0
	MC66026D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	MC66026D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	MS6612D		9507-0-0-0	AFM8	M22520/2-01	9502-29-0-0	K1665		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	
	FC66026D2		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC6612D		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC6612D		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC6612D		9507-0-0-0	AFM8	M22520/2-01	9502-29-0-0	K1665		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC6612D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
DD SERIES	MC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC6602-D** thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	MC66026D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	MS6602D		9507-0-0-0	AFM8	M22520/2-01	9502-29-0-0	K1665		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	MC66026D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC66026D2		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC66026D2		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC66026D2		9507-0-0-0	AFM8	M22520/2-01	9502-29-0-0	K1665		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	MS66026D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0
	FC66026D2		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41		M81969/1-04	91067-1	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	9550-1-0-0

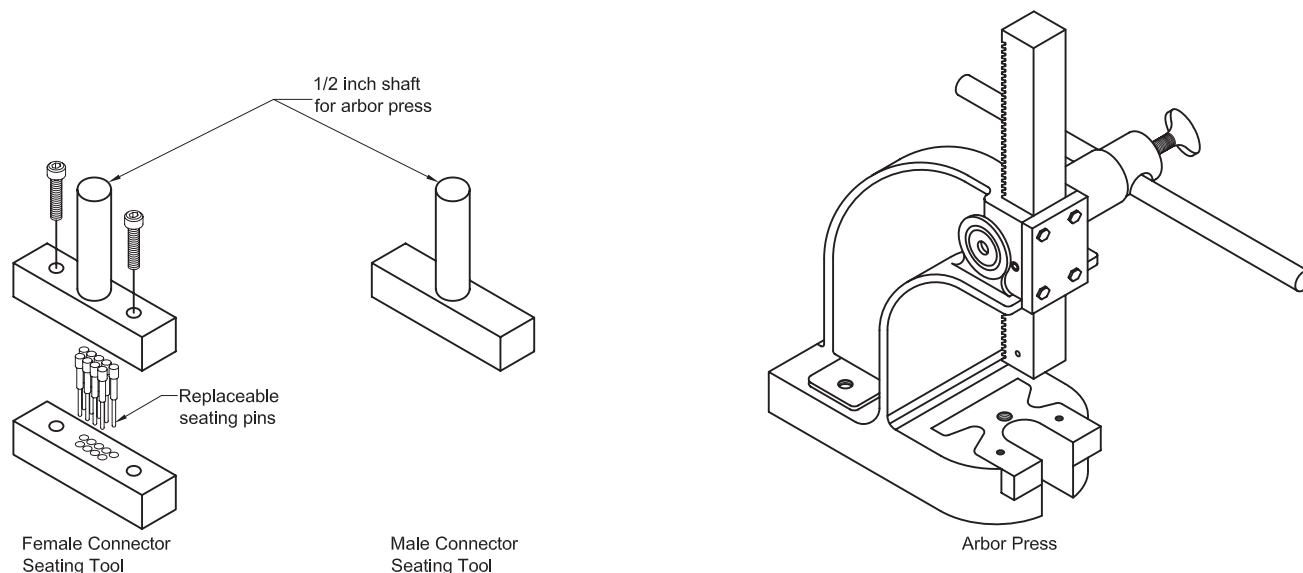
*1 All male and female crimp contacts can be ordered on reels in quantities of 2,000 by adding letter "P" after the contact part number, see page 78 for more information.

APPLICATION TOOLS

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

COMPLIANT PRESS-FIT CONNECTORS INSTALLATION TOOLS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS


**POSITRONIC RECOMMENDED TOOLS FOR
PCD SERIES AND PCDD SERIES CONNECTORS AND CONTACTS**

SERIES	CONNECTOR SEATING	
	MALE	FEMALE
PCD 9	9512-1-0-41	9512-6-0-41
PCD 15	9512-2-0-41	9512-7-0-41
PCD 25	9512-3-0-41	9512-8-0-41
PCD 37	9512-4-0-41	9512-9-0-41
PCD 50	9512-5-0-41	9512-10-0-41
PCDD 15	9512-1-0-41	9512-11-0-41
PCDD 26	9512-2-0-41	9512-12-0-41
PCDD 44	9512-3-0-41	9512-13-0-41
PCDD 62	9512-4-0-41	9512-14-0-41
PCDD 78	9512-5-0-41	9512-15-0-41
PCDD 104	9512-16-0-41	9512-17-0-41
Arbor press for connector seating tools-9530-1-0 1 ton capacity 4 inch throat		
PCD series - Replacement pins for connector seating tools.		Female - 855-658-0-41
PCDD series - Replacement pins for connector seating tools.		Female - 855-751-0-41

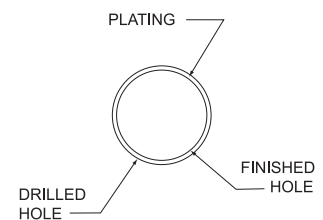


SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT TERMINATION

Traditionally, tin-lead has been a popular plating for printed circuit board (PCB) holes. However, many PCB hole platings must now be RoHS compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	22 OMEGA	$\phi 0.0453 \pm 0.0010$ [$\phi 1.150 \pm 0.025$]	0.0006 [15μ] minimum solder over 0.0010 [25μ] min. copper	$\phi 0.0394 + 0.0035 - 0.0024$ [$\phi 1.000 + 0.090 - 0.060$]
	20 OMEGA	$\phi 0.0453 \pm 0.0010$ [$\phi 1.150 \pm 0.025$]		$\phi 0.0394 + 0.0035 - 0.0024$ [$\phi 1.000 + 0.090 - 0.060$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
IMMERSION TIN PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000033±0.000006 [0.85±0.15μ] immersion tin over 0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
IMMERSION SILVER PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000013±0.000007 [0.34±0.17μ] immersion silver over 0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000002 [0.05μ] min. immersion gold over 0.000177±0.000059 [4.5±1.5μ] electroless nickel per IPC-4552 over 0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]

“Omega” Termination



COMPLIANT PRESS-FIT TERMINATION CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

COMPLIANT PRESS-FIT USER INFORMATION

When properly used, Positronic Omega signal compliant press-fit terminations provide reliable service even under severe conditions.

Connectors utilizing this leading technology compliant press-fit contact are easy to install:

1. Inexpensive installation tooling is available from Positronic, to choose the proper installation tool refer to page 83 for part number ordering information.
2. Insert the connector into the printed circuit board or backplane and seat connector fully.
3. Secure the connector to the printed circuit board or backplane using two self-tapping screws. The screws should be 4-40 threads supplied by customer.



Positronic® offers a variety of QPL connector products

D-SUBMINIATURE CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/1	HDC
MIL-DTL-24308/2	RD, DD
MIL-DTL-24308/3	HDC
MIL-DTL-24308/4	RD, DD
MIL-DTL-24308/5	HDC
MIL-DTL-24308/6	RD, DD
MIL-DTL-24308/7	HDC
MIL-DTL-24308/8	RD, DD
MIL-DTL-24308/23	HDC, DD

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/24	HDC, DD
MIL-DTL-24308/25	HDC, RD, DD
MIL-DTL-24308/26	HDC, RD, DD
GSFC S-311-P4	SND, SDD, SCBC, SCBM
GSFC S-311-P10	SND, SCBM
SAE AS39029/57	DD
SAE AS39029/58	DD
SAE AS39029/63	RD
SAE AS39029/64	RD

RECTANGULAR CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/3	GMCT
MIL-DTL-28748/4	GMCT
MIL-DTL-28748/5	GM
MIL-DTL-28748/6	GM
MIL-DTL-28748/7	SGM

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/8	SGM
MIL-C-28748/13	SGMC
MIL-C-28748/14	SGMC
SAE AS39029/34	SGMC, GMCT
SAE AS39029/35	SGMC, GMCT

For a complete QPL listing available to download in PDF format, visit the desired connector family home page and click on link "Qualified Product Listing (PDF)" on our website at:

www.connectpositronic.com

or enter the URL link below to download the QPL PDF file

www.connectpositronic.com/qpl/catalog

Other D-subminiature Products

Positronic offers full line of D-subminiature connectors in a wide variety of contact variants and package sizes with compliant press-fit, solder and cable terminations. All Positronic connector products provide quality, reliability, and flexibility.



HIGH PERFORMANCE D-SUBMINIATURE CONNECTORS

Standard and high density connectors manufactured to MIL-PRF-24308, Class M; Goddard Space Flight Center S-311-P-4 and Goddard Space Flight Center S-311-P-10.

ENVIRONMENTAL-D CONNECTORS

Standard and high density connectors with environmental protection features to IP67. Straight and right angle (90°), and cable terminations available.

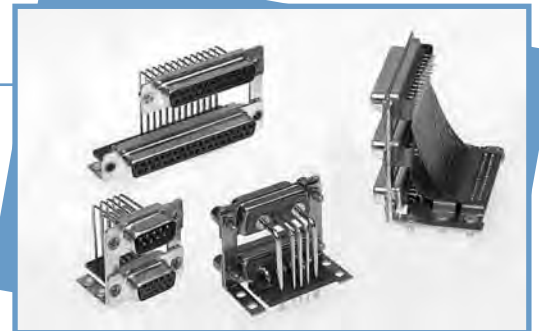


COMBO-D CONNECTORS

Connectors with signal, shielded, power, thermocouple or high voltage contacts in a single package. Power compliant press-fit terminations now available.

DUAL PORT CONNECTORS

Right angle (90°) p.c. board mount connectors assembled stacked to maximize real estate; contact variants 9 through 62; available in standard density, high density, and mixed density.



Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24

Current Ratings: To 200 amperes per contact

Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) compliant solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22

Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven connector housing sizes

Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22

Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22

Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare wire harness connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22

Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



Positronic®
global connector solutions

Regional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi RD 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/locations

For most current sales office information, please visit www.connectpositronic.com/locations

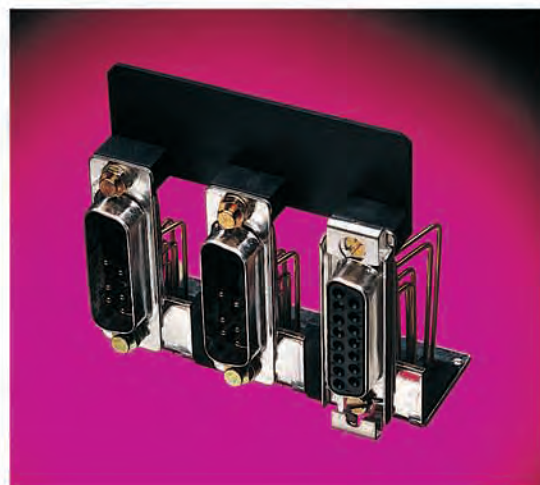
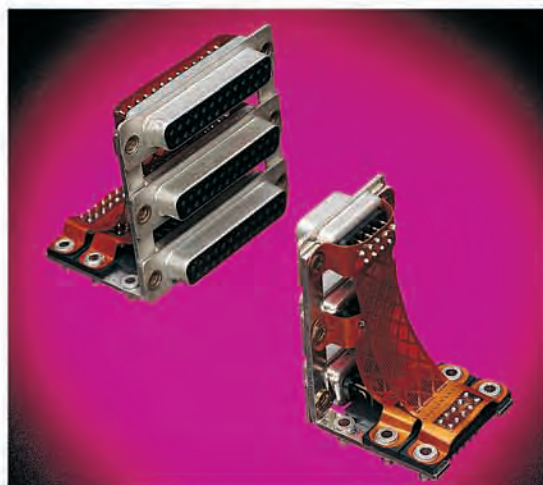
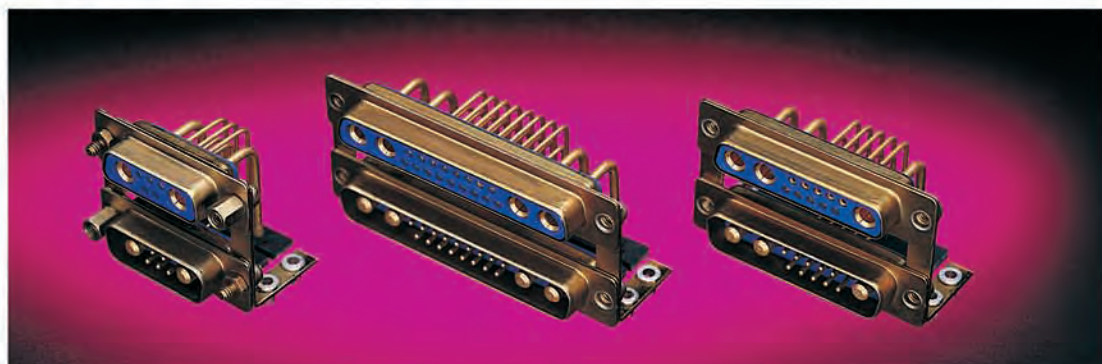
LOCATIONS

www.connectpositronic.com



POSITRONIC INDUSTRIES

Dual Port Connectors



Connector Excellence

POSITRONIC INDUSTRIES

ABOUT US

Founded in 1966, Positronic Industries is a vertically integrated manufacturer of high quality interconnect products. Positronic has earned the worldwide reputation as a service oriented, quick-reaction, top quality connector supplier. We are committed to maintaining this reputation by continuous implementation of our **Complete Capability** concept.

COMPLETE CAPABILITY

Design & Development

- Designs new connectors and modifies existing connectors to meet industry requirements
- Continuously conducts marketing studies to identify industry needs for new products
- Ongoing interest in unique connector designs

Tooling

- Tooling support for all manufacturing areas within company
- Provides 80% of new tooling, punch press dies, molds, jigs and fixtures used at Positronic factory locations worldwide

Machining

- Automatic screw machines produce finely crafted contacts and hardware for connector bodies
- Trained technicians operate machines from Tornos, Bechler and Brown & Sharpe

Molding

- Molds all plastic connector components such as insulators, hoods, angle brackets and more
- Overmold capability available

Plating

- Applies gold and other metal finishes to connector components to any required thickness
- Plating conforms to all military specifications

Quality Assurance Lab

- Quality assurance system certified to ISO 9001
- Maintains aggressive TQM program
- Able to test to IEC, EIA, UL, MIL-DTL-24308, MIL-DTL-28748, MIL-C-39029 and MIL-C-85049 requirements

Finished Stock Inventory

- Each main factory location maintains a large inventory of connector components and accessories
- Same day shipments available on many standard connector products
- Stocking agreements available for qualified customers

Worldwide Sales & Service

- Responsive attitude toward customer needs
- Fully trained sales staff located worldwide



Machining



Molding



Finished Stock Inventory

Products described within this catalog may be protected by one or more of the following US. patents:

#4,721,472 #4,900,261 #5,255,580
#5,329,697 #6,260,268 #6,835,079

Patented in Canada, 1992 Other Patents Pending

Unless otherwise specified, **dimensional tolerances** are:

- 1] ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2] ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3] ± 0.005 inches [0.13 mm] for all other diameters.
- 4] ± 0.015 inches [0.38 mm] for all other dimensions.

Positronic Industries believes the data contained herein to be reliable. Since the technical information is given free of charge, the User employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic Industries' FEDERAL SUPPLY CODE [Cage Code] FOR MANUFACTURERS is 28198



Positronic Industries, Inc.
www.connectpositronic.com

TABLE OF CONTENTS

D P / M D P S E R I E S

Dual Port Technical Characteristics	1
Contact Variants and Standard Shell Assembly	2
90° Printed Board Mount Connector, 4 Row Connector Unit and Contact Hole Pattern	3
90° Printed Board Mount Connector, 6 Row Connector Unit and Contact Hole Pattern	4
Metric System 90° Printed Board Mount Connector, 4 Row Connector Unit and Metric System Contact Hole Pattern	5
Metric System 90° Printed Board Mount Connector, 6 Row Connector Unit and Metric System Contact Hole Pattern	6
Mounting Brackets and Push-on Fasteners.....	7
Ordering Information.....	8

D D S E R I E S

High Density Dual Port Technical Characteristics	9
Contact Variants and Standard Shell Assembly	10
90° Printed Board Mount Connector, 6 Row Connector Unit	11
Printed Board Contact Hole Pattern	12
Ordering Information.....	13

X D S E R I E S

High Density Dual Port Technical Characteristics	14
Contact Variants and Standard Shell Assembly	15
90° Printed Board Mount Connector, 5 Row Connector Unit	16
Contact Hole Pattern	17
Ordering Information.....	18

C B D P S E R I E S

Combo-Dual Port Technical Characteristics	19
Contact Variants and 90° Printed Board Mount Connector	20
90° Printed Board Mount Contact Hole Pattern	21-22
Ordering Information	23

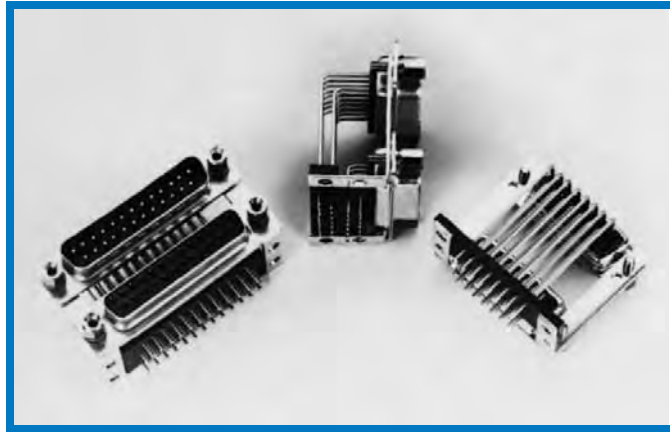
Dual Port Series

Size 20 Contacts,
Two Connectors Vertically
Stacked and Assembled
As a Single Connector Unit

Professional Quality
Connectors
IEC Publication 807-2
Performance Level Two

U.L. Recognized File #E49351
CSA Recognized File #LR54219
Telecommunication
U.L. File #14098

PROFESSIONAL QUALITY PRINTED BOARD MOUNT DUAL PORT
VERTICALLY STACKED CONNECTOR ASSEMBLY
FOR SHELTERED INDOOR/OUTDOOR ENVIRONMENTAL APPLICATIONS



The Dual Port Series is a utilization of two connectors, vertically stacked and assembled into a single connector unit, which permits saving of panel and printed board space. Final assembly costs are reduced by condensing two assembly movements into one movement.

Dual Port Series connectors are professional quality connectors recommended for use in sheltered, non-corrosive indoor or outdoor environments having normal ventilation, but without temperature or humidity controls.

Connector contact variants are 9, 15, 25, 29, 37 and 50. Connector genders may be mixed, i.e., one male and one female connector within one Dual Port assembly. The two connectors may be spaced apart to three standard dimensional spacings to accommodate various dimensions of discrete hoods or molded hood assemblies. The connector may also be partially populated with contacts which are installed in the connector body to customer selected contact positions, thereby reducing connector costs.

Dual Port Series connectors are offered with two printed board contact hole patterns. One pattern is dimensional in inches and the other pattern is dimensional in millimeters. These patterns are commonly known as Inch Footprints and Metric Footprints.

Mounting angle brackets can be ordered riveted to the connector by specifying R2, R6, R7 or R8 options. These options provide for labor saving ease of connector mounting to the printed board and also permit rapid jackscrew installation.

Locking systems are available utilizing 4-40 threaded jackscrew systems, polarized or non-polarized, or with a quick release Vibration Lock System for either front or rear panel mounted connectors.

Dual Port Series connectors comply with the dimensional and performance requirements of IEC 807-2 Performance Level Two and dimensional requirements of MIL-DTL-24308. Dual Port Series connectors also meet the interface connection requirements for EIA RS 232 and RS 449, and the CCITT X.24 recommendations.

DUAL PORT SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Nylon resin, UL 94V-0, black color.
Contacts:	Male contacts – precision machined brass alloy. Female contacts – precision machined high tensile phosphor bronze.
Contact Plating:	Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel or brass with tin plate; zinc plate with dichromate seal. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Steel or brass with tin plate; zinc plate with dichromate seal.
Cross Bar:	Nylon resin, UL 94V-0, black color.
Push-On Fasteners:	Beryllium copper with tin plate.
Jackscrew Systems:	Steel with zinc plate and dichromate seal, or clear zinc plate.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.

ELECTRICAL CHARACTERISTICS:

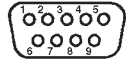
Contact Current Rating:	5 amperes.
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1,000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0 mm].
Working Voltage:	300 V r.m.s.

MECHANICAL CHARACTERISTICS:

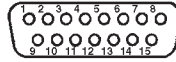
Fixed Contacts:	Size 20 contacts, male contact – 0.040 inch [1.02 mm] diameter. Female contact – rugged open entry design.
Contact Retention in Insulator:	6 lbs. [27 N].
Contact Terminations:	Printed board mount with 90° terminations supported in footprint pattern by a plastic cross bar. Termination diameter 0.028 inch [0.71 mm] and 0.024 [0.60 mm].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting Bracket Riveted to Connector:	Riveted fasteners with 0.120 inch [3.05 mm] diameter clearance hole, 4-40 threads, or 4-40 threads with nylon lock insert.
Mounting to Printed Board:	Rapid installation push-on fasteners.
Locking Systems:	Jackscrews and vibration locking systems for either front or rear panel mounted connectors.
Mechanical Operations:	500 operations minimum per IEC 512-5.
CLIMATIC CHARACTERISTICS:	
Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

CONTACT VARIANTS

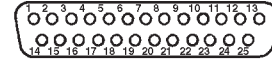
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



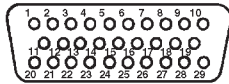
DP*9/MDP*9



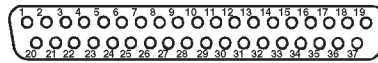
DP*15/MDP*15



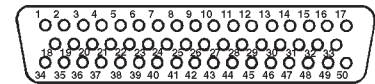
DP*25/MDP*25



DP*29/MDP*29

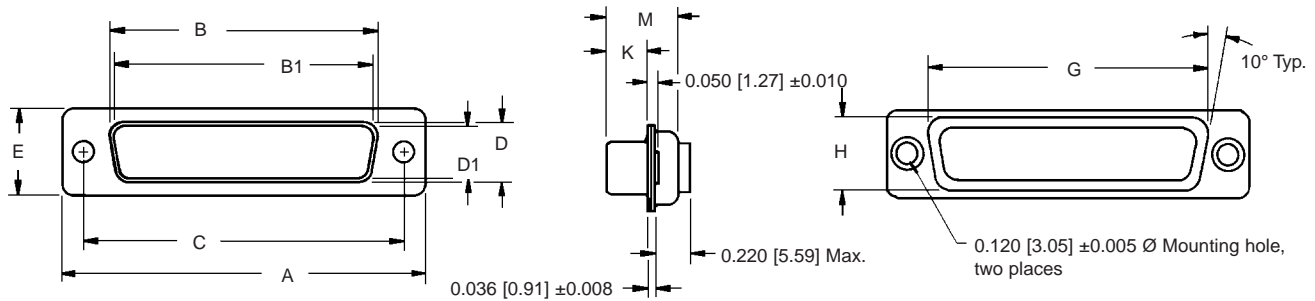


DP*37/MDP*37



DP*50/MDP*50

STANDARD SHELL ASSEMBLY

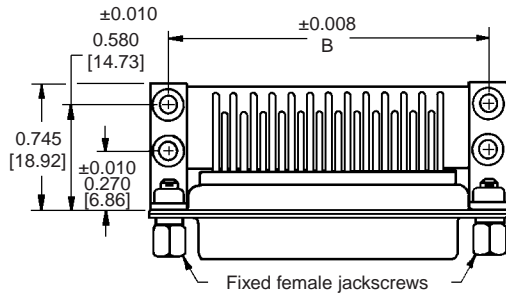


CONNECTOR VARIANT SIZES	A ±0.015	B ±0.005	B1 ±0.005	C ±0.005	D ±0.005	D1 ±0.005	E ±0.015	G ±0.010	H ±0.010	K ±0.005	M ±0.010
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
9 F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
15 F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
25 F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
29 M	1.770 [44.96]		1.274 [32.36]	1.534 [38.96]		0.450 [11.43]	0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.217 [5.51]	0.426 [10.82]
29 F	1.770 [44.96]	1.251 [31.78]		1.534 [38.96]	0.431 [10.95]		0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.237 [6.02]	0.429 [10.90]
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
37 F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
50 F	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

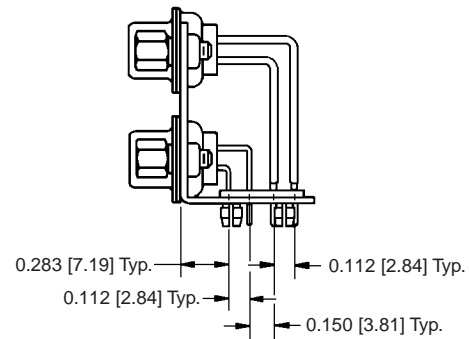
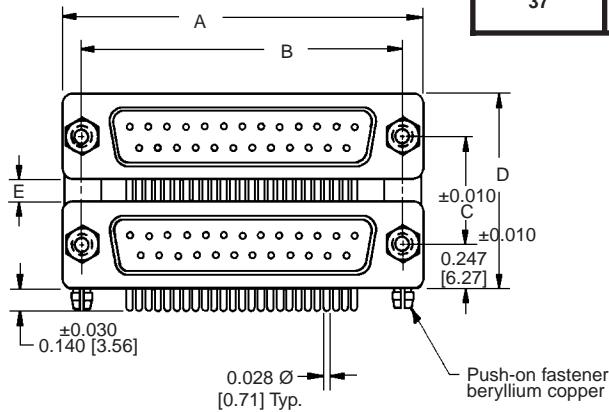
90° PRINTED BOARD MOUNT CONNECTOR

4 ROW CONNECTOR UNIT, 0.283 [7.19] CONTACT EXTENSION



CONNECTOR VARIANT	NO. OF CONTACTS	A	B
9	18	1.213 [30.81]	0.984 [24.99]
15	30	1.541 [39.14]	1.312 [33.32]
25	50	2.088 [53.04]	1.852 [47.04]
37	74	2.729 [69.32]	2.500 [63.50]

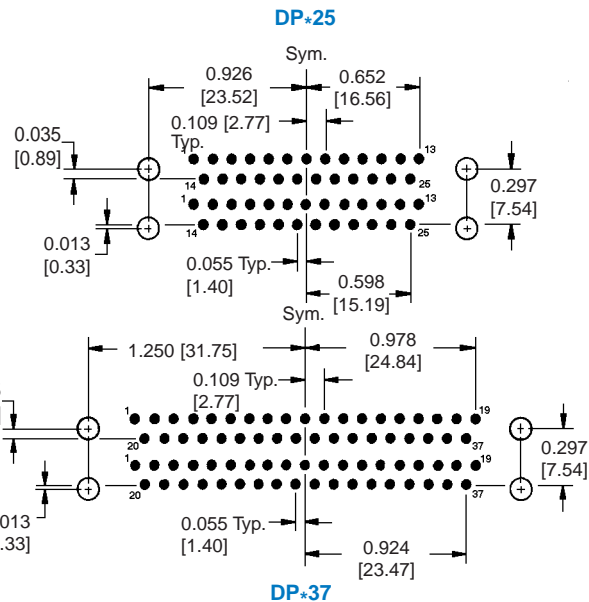
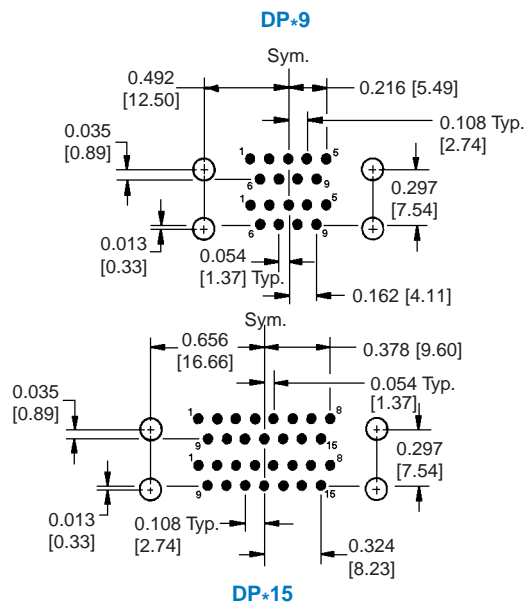
CONNECTOR DESIGNATION	C	D	E
DPA	0.625 [15.88]	1.119 [28.42]	0.131 [3.33]
DPB	0.750 [19.05]	1.244 [31.60]	0.256 [6.50]
DPC	0.900 [22.86]	1.394 [35.41]	0.406 [10.31]



Typical Part Number: DPA25MN8T2/25MN8T2X

CONTACT HOLE PATTERN

Hole identification shown is for male connector, use mirror image for female connector.
Mount connector with mating face positioned to follow direction of arrow.



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

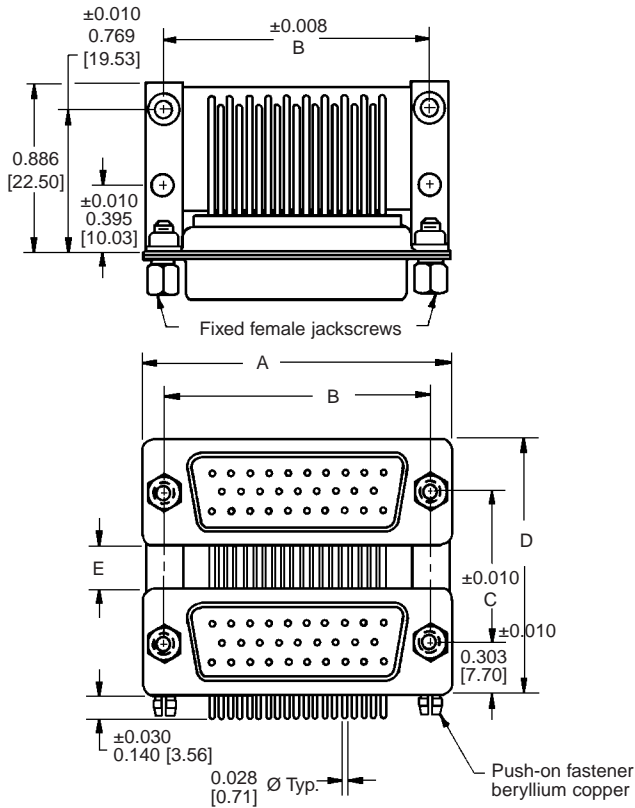
Mounting holes must move 0.020 ±0.010 [0.51] opposite direction of arrow for use of unriveted mounting bracket with connectors.

Suggest 0.045 ±0.002 [1.14] Ø hole for contact termination positions.

Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

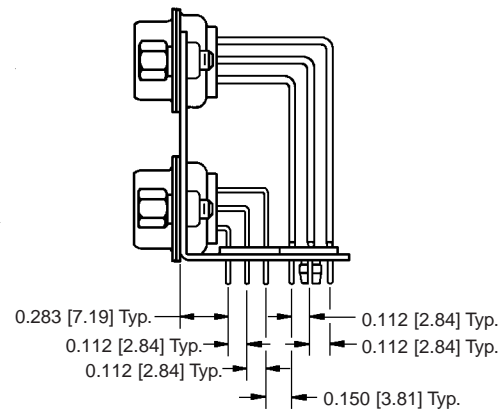
90° PRINTED BOARD MOUNT CONNECTOR

6 ROW CONNECTOR UNIT, 0.283 [7.19] CONTACT EXTENSION



CONNECTOR VARIANT	NO. OF CONTACTS	A	B
29	58	1.770 [44.96]	1.534 [38.96]
50	100	2.635 [66.93]	2.406 [61.11]

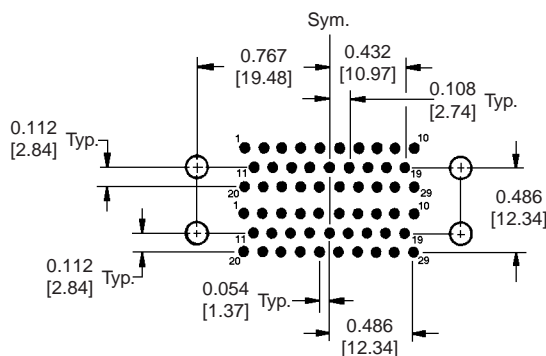
CONNECTOR DESIGNATION	C	D	E
DPB	0.750 [19.05]	1.355 [34.42]	0.145 [3.68]
DPC	0.900 [22.86]	1.505 [38.23]	0.295 [7.49]



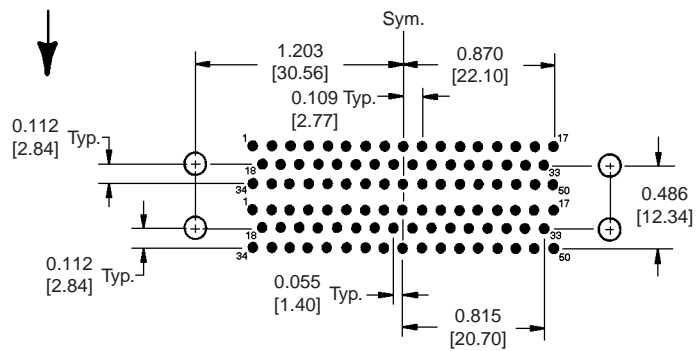
Typical Part Number: **DPB29MN8T2/29MR8T2X**

CONTACT HOLE PATTERN

Hole identification shown is for male connector, use mirror image for female connector.
Mount connector with mating face positioned to follow direction of arrow.



DP*29



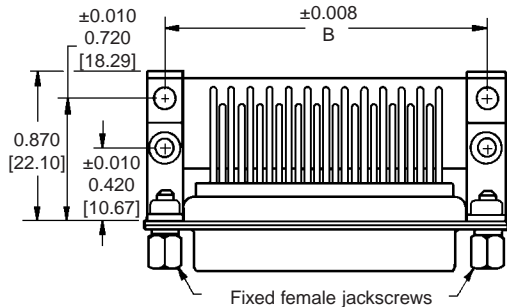
DP*50

Suggest 0.045 ± 0.002 [1.14] \varnothing hole for contact termination positions.
Suggest 0.123 ± 0.003 [3.12] \varnothing hole for mounting connector with push-on fasteners.
Mounting holes must move 0.020 ± 0.010 [0.51] opposite direction of arrow for use of unriveted mounting bracket with connectors.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

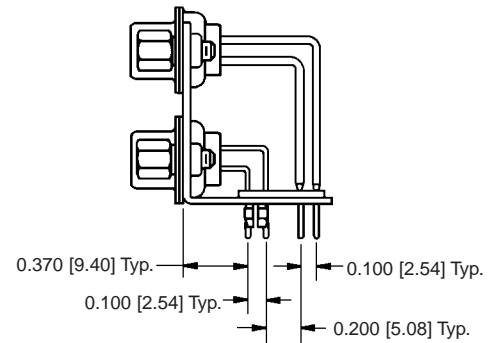
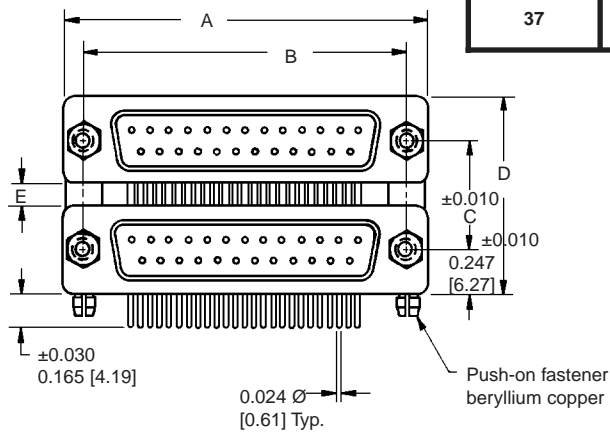
METRIC SYSTEM 90° PRINTED BOARD MOUNT CONNECTOR

4 ROW CONNECTOR UNIT, 0.370 [9.40] CONTACT EXTENSION



CONNECTOR VARIANT	NO. OF CONTACTS	A	B
9	18	1.213 [30.81]	0.984 [24.99]
15	30	1.541 [39.14]	1.312 [33.32]
25	50	2.088 [53.04]	1.852 [47.04]
37	74	2.729 [69.32]	2.500 [63.50]

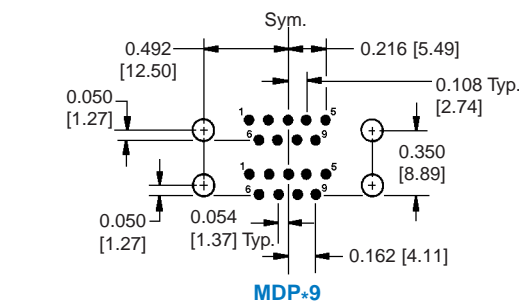
CONNECTOR DESIGNATION	C	D	E
MDPA	0.626 [15.90]	1.120 [28.45]	0.132 [3.35]
MDPB	0.752 [19.10]	1.246 [31.65]	0.258 [6.55]
MDPC	0.902 [22.90]	1.396 [35.46]	0.408 [10.36]



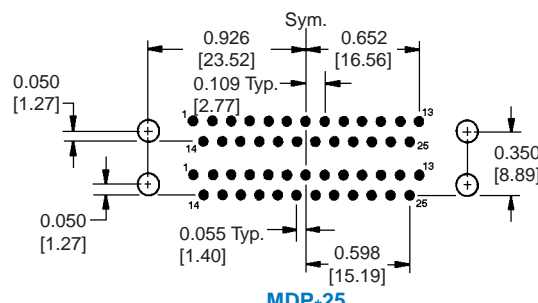
Typical Part Number: **MDPA25MR8T2/25MN8T2X**

METRIC SYSTEM CONTACT HOLE PATTERN

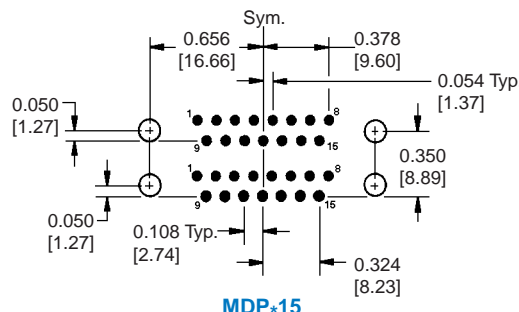
Hole identification shown is for male connector, use mirror image for female connector.
Mount connector with mating face positioned to follow direction of arrow.



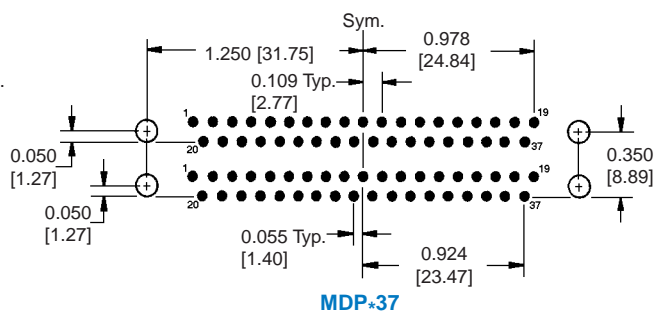
MDP*9



MDP*25



MDP*15



MDP*37

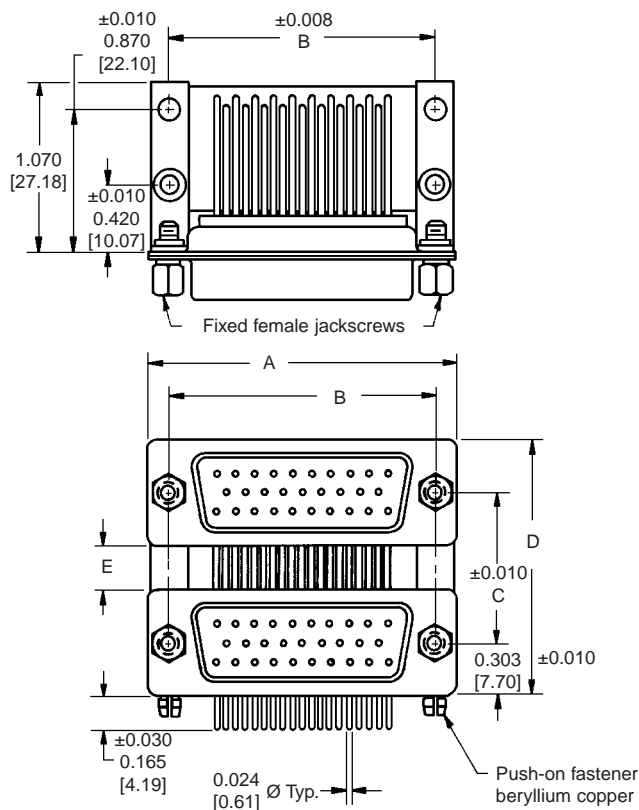
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

Suggest 0.039 ±0.002 [1.00] Ø hole for contact termination positions.

Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

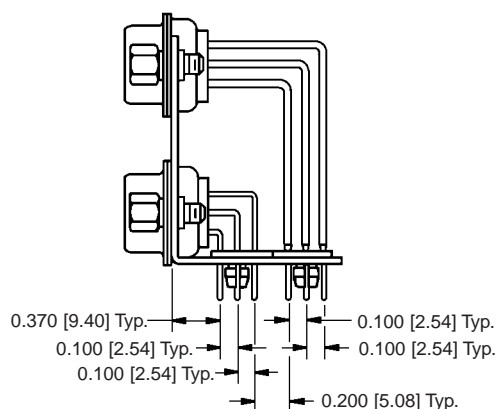
METRIC SYSTEM 90° PRINTED BOARD MOUNT CONNECTOR

6 ROW CONNECTOR UNIT, 0.370 [9.40] CONTACT EXTENSION



CONNECTOR VARIANT	NO. OF CONTACTS	A	B
29	58	1.770 [44.96]	1.534 [38.96]
50	100	2.635 [66.93]	2.406 [61.11]

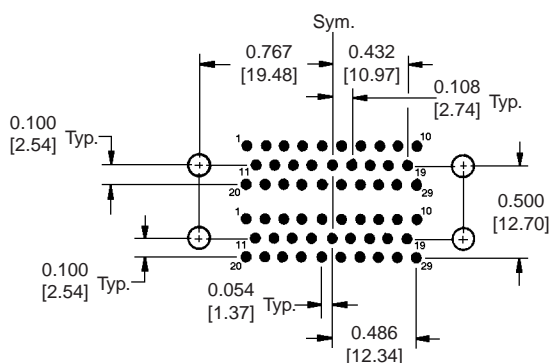
CONNECTOR DESIGNATION	C	D	E
MDPB	0.752 [19.10]	1.357 [34.47]	0.147 [3.73]
MDPC	0.902 [22.90]	1.507 [38.28]	0.297 [7.54]



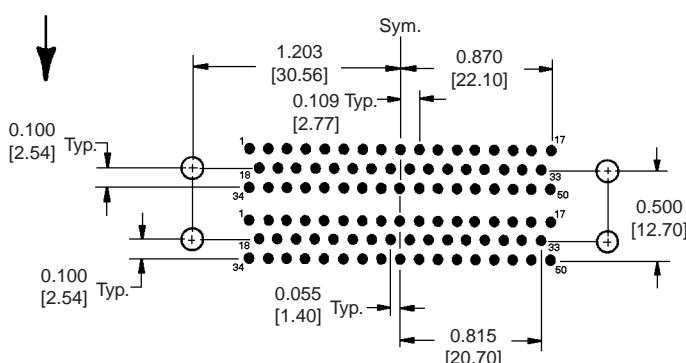
Typical Part Number: **MDPB29MN7T2/29MN7T2X**

METRIC SYSTEM CONTACT HOLE PATTERN

Hole identification shown is for male connector, use mirror image for female connector.
Mount connector with mating face positioned to follow direction of arrow.



MDP*29

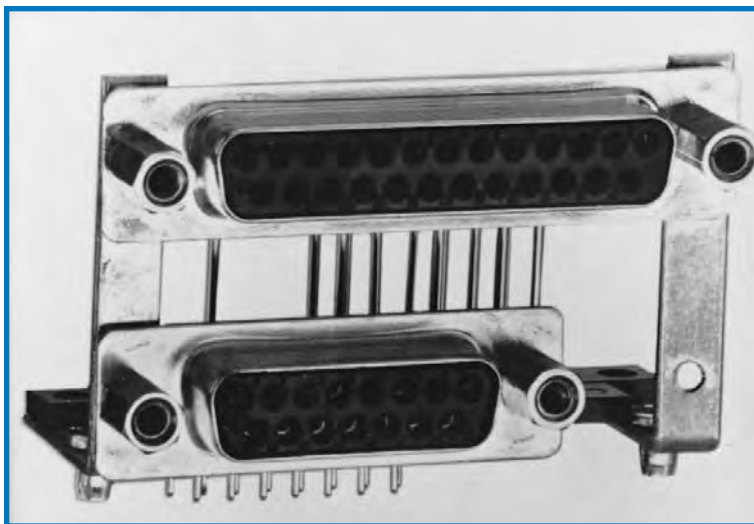
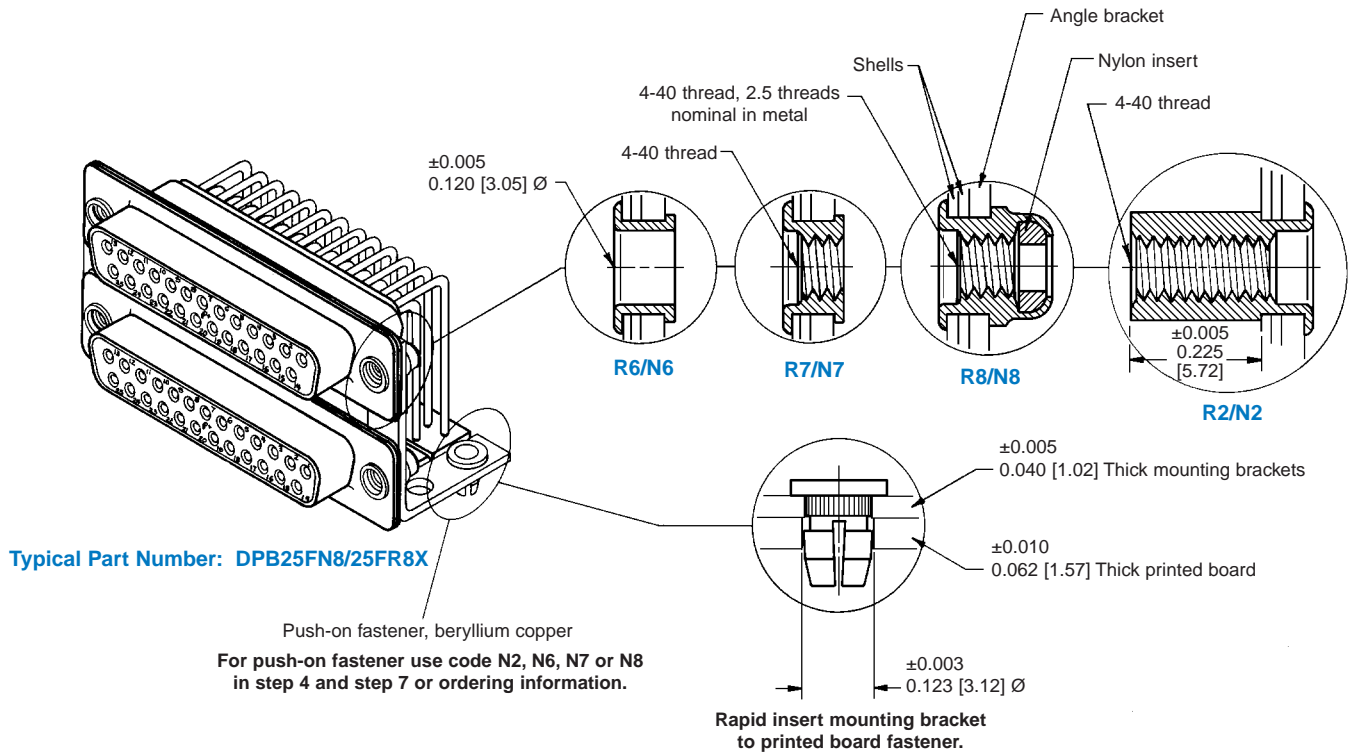


MDP*50

Suggest 0.039 ± 0.002 [1.00] \varnothing hole for contact termination positions.
Suggest 0.123 ± 0.003 [3.12] \varnothing hole for mounting connector with push-on fasteners.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

RIVETED ON MOUNTING BRACKETS AND PUSH-ON FASTENER



DPA25FR7T/15FN7T0



DPA25FR8/25FR8X

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

ORDERING INFORMATION – CODE NUMBERING SYSTEM

Specify Complete Connector By Following Steps 1 Through 9
Insert "0" When Step Is Not Used

STEP	1	2	3	4
Upper Connector	DPA	25	F	N6T
STEP 1 - Basic Series DPA Series DPB Series DPC Series				
STEP 2 - DP Series Connector Variants 9, 15, 25, 29, 37, 50				
STEP 3 - Connector Gender M - Male F - Female				
STEP 4 - Locking, Polarizing, Mounting and Push-On Fastener Systems 0 - None. R2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threaded Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. N2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threaded Fixed Female Jackscrews with Cross Bar and Push-on Fastener. N6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar with Push-on Fastener. N7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and with Push-on Fastener. N8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and with Push-on Fastener. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews.				

5	6	7	8	9
25	F	N6T	X	
Options are the same as for Upper Connector Steps 2, 3 and 4.			STEP 9 - Special Options Consult Sales Department.	
STEP 8 - Shell Options 0 - Zinc Plated, with Dichromate Seal. X - Tin Plated. Z - Tin Plated and Dimpled - male connector only				

STEP	1	2	3	4	5	6	7	8	9
Upper Connector	MPDA	25	F	N6T	25	F	N6T	X	
STEP 1 - Basic Series MPDA Series MDPB Series MDPC Series					Options are the same as for Upper Connector Steps 2, 3 and 4.				
STEP 2 - MDP Series Connector Variants 9, 15, 25, 29, 37, 50					STEP 9 - Special Options Consult Sales Department.				
STEP 3 - Connector Gender M - Male F - Female					STEP 8 - Shell Options 0 - Zinc Plated, with Dichromate Seal. X - Tin Plated. Z - Tin Plated and Dimpled - male connector only				
STEP 4 - Locking, Polarizing, Mounting and Push-On Fastener Systems 0 - None. R2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threaded Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. N2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threaded Fixed Female Jackscrews with Cross Bar and Push-on Fastener. N6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar with Push-on Fastener. N7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and with Push-on Fastener. N8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and with Push-on Fastener. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews.									

High Density Dual Port Series

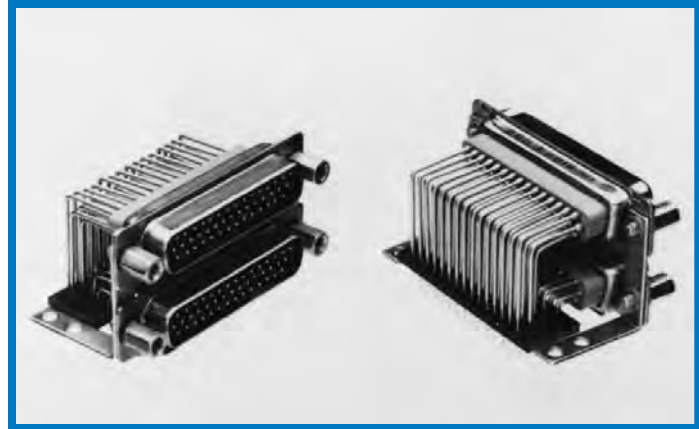
PROFESSIONAL QUALITY PRINTED BOARD MOUNT HIGH DENSITY DUAL PORT VERTICALLY STACKED CONNECTOR ASSEMBLY FOR SHELTERED INDOOR/OUTDOOR ENVIRONMENTAL APPLICATIONS

Size 22 Contacts,
Two Connectors Vertically
Stacked and Assembled
As a Single Connector Unit
Professional Quality
Connectors

U.L. Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
U.L. File #14098



High Density Dual Port Series connectors utilize two high density connectors vertically stacked and assembled into a single connector unit, which permits saving of panel and printed board space, and decreases final assembly costs.

High Density Dual Port Series connectors are professional quality connectors recommended for use in sheltered, non-corrosive indoor and outdoor environments having normal ventilation.

Connector contact variants are 15, 26, 44 and 62. Connector genders can be mixed, i.e., one male and one female connector within one High Density Dual Port assembly. The two connectors may be spaced

apart to three standard dimensional spacings. The connector may also be partially populated with contacts which are installed in the connector body to customer selected contact positions.

Mounting angle brackets can be ordered riveted to the connector by specifying R2, R6, R7 or R8 options. Locking systems are available utilizing 4-40 threaded jackscrew systems, polarized or non-polarized, or with a quick release Vibration Lock System for either front or rear panel mounted connectors.

High Density Dual Port Series connectors comply with the dimensional requirements of MIL-DTL-24308.

HIGH DENSITY DUAL PORT SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester per MIL-M-24519, UL 94V-0. Black color.
Contacts:	Male and female contacts – precision machined high tensile phosphor bronze.
Contact Plating:	Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate, or zinc plate with dichromate seal. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Steel or brass with tin plate, or zinc with dichromate seal.
Cross Bar:	Nylon resin, UL 94V-0, black color.
Push-On Fasteners:	Beryllium copper with tin plate.
Jackscrew Systems:	Steel with zinc plate and dichromate seal, or clear zinc plate.
Vibration Lock Systems:	Lock tabs, steel with nickel plate.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	3 amperes.
Initial Contact Resistance:	0.010 ohms maximum.
Proof Voltage:	1,000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0 mm].
Working Voltage:	300 V r.m.s.

MECHANICAL CHARACTERISTICS:

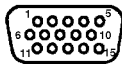
Fixed Contacts:	Size 22 contact, male contact – 0.030 inch [0.76 mm] diameter. Female contact – rugged open entry design.
Contact Retention in Insulator:	7 lbs. [31 N].
Contact Terminations:	Printed board mount with 90° terminations supported in footprint pattern by a plastic cross bar. Termination diameter 0.020 inch [0.51 mm].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting Bracket Riveted to Connector:	Riveted fasteners with 0.120 inch [3.05 mm] diameter clearance hole, 4-40 threads, or 4-40 threads with nylon lock insert.
Mounting to Printed Board:	Rapid installation push-on fasteners.
Locking Systems:	Jackscrews and vibration locking systems for either front or rear panel mounted connectors.
Mechanical Operations:	500 operations minimum per IEC 512-5.

CLIMATIC CHARACTERISTICS:

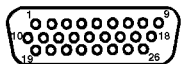
Temperature Range:	-55°C to +125°C.
---------------------------	------------------

CONTACT VARIANTS

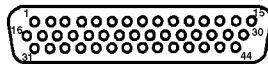
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



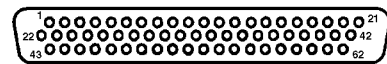
DD*15/15



DD*26/26

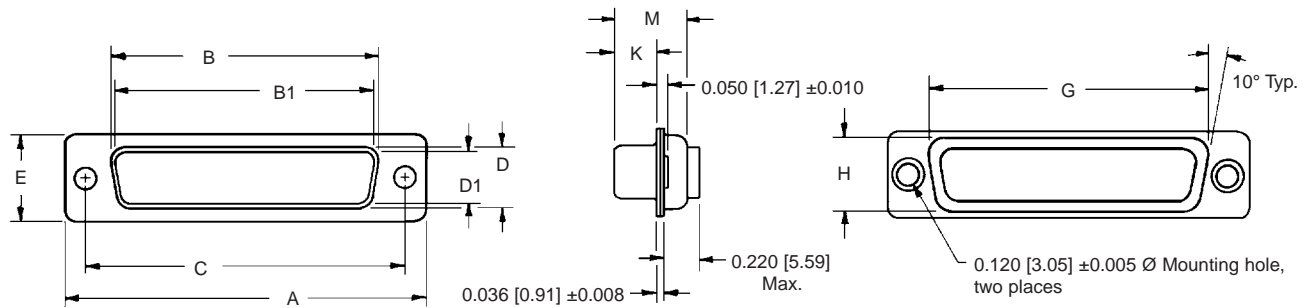


DD*44/44



DD*62/62

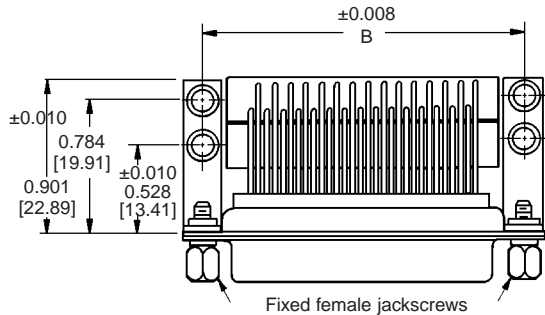
STANDARD SHELL ASSEMBLY



CONNECTOR VARIANT SIZES	A ±0.015	B ±0.005	B1 ±0.005	C ±0.005	D ±0.005	D1 ±0.005	E ±0.015	G ±0.010	H ±0.010	K ±0.005	M ±0.010
15M/15M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
15F/15F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
26M/26M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
26F/26F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
44M/44M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
44F/44F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
62M/62M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
62F/62F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]

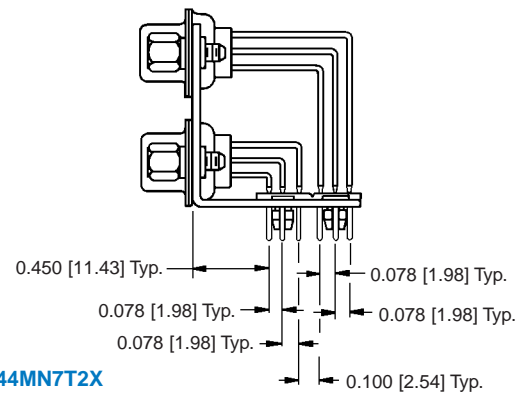
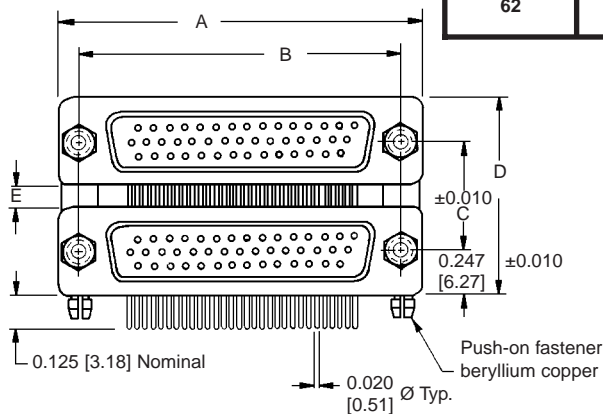
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

90° PRINTED BOARD MOUNT CONNECTOR
6 ROW CONNECTOR UNIT, 0.450 [11.43] CONTACT EXTENSION



CONNECTOR VARIANT	NO. OF CONTACTS	A	B
15	30	1.213 [30.81]	0.984 [24.99]
26	52	1.541 [39.14]	1.312 [33.32]
44	88	2.088 [53.04]	1.852 [47.04]
62	124	2.729 [69.32]	2.500 [63.50]

CONNECTOR DESIGNATION	C	D	E
DDA	0.625 [15.88]	1.119 [28.42]	0.131 [3.33]
DDB	0.750 [19.05]	1.244 [31.60]	0.256 [6.50]
DDC	0.900 [22.86]	1.394 [35.41]	0.406 [10.31]



Typical Part Number: DDA44MN7T2/44MN7T2X



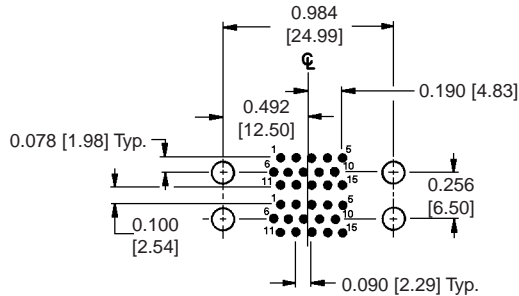
DDA44MR7T/44MR7T0

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

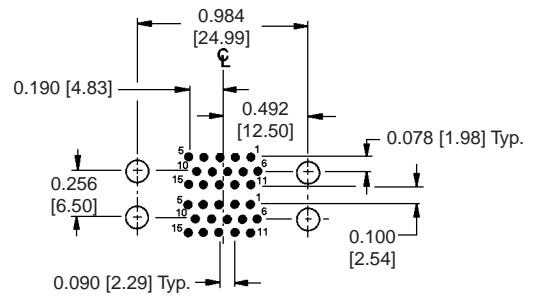
PRINTED BOARD CONTACT HOLE PATTERN

Mount connector with mating face positioned to follow direction of arrows.

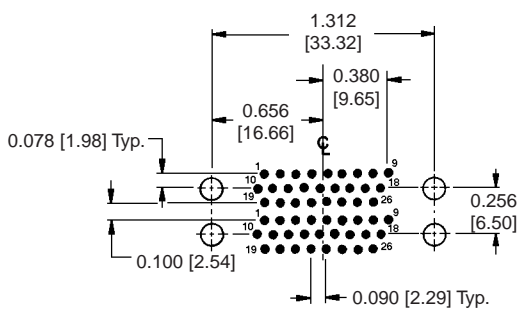
DD*15 MALE OVER MALE CONNECTOR



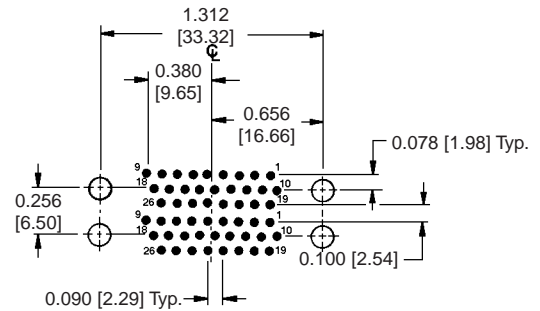
DD*15 FEMALE OVER FEMALE CONNECTOR



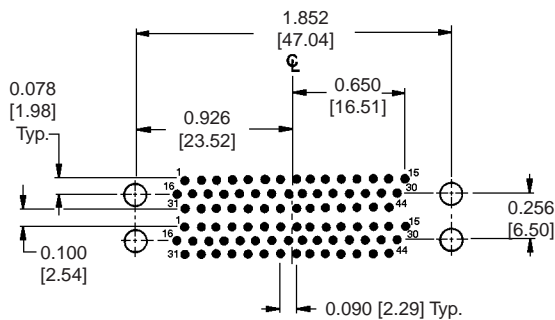
DD*26 MALE OVER MALE CONNECTOR



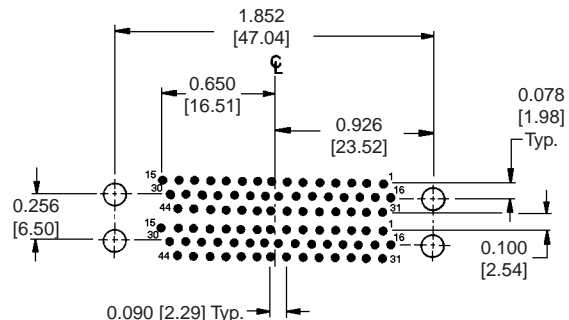
DD*26 FEMALE OVER FEMALE CONNECTOR



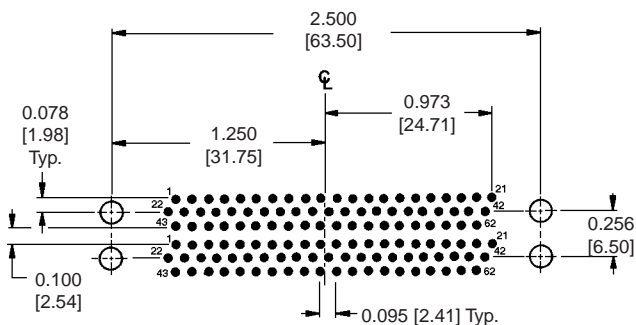
DD*44 MALE OVER MALE CONNECTOR



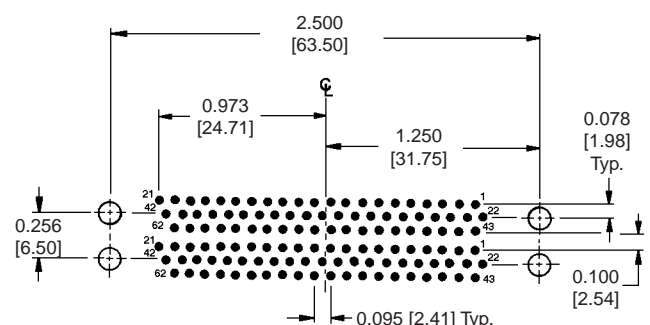
DD*44 FEMALE OVER FEMALE CONNECTOR



DD*62 MALE OVER MALE CONNECTOR



DD*62 FEMALE OVER FEMALE CONNECTOR



Mounting hole must move 0.020 [0.51] opposite direction of the arrow for use of unriveted mounting brackets with connectors.

Suggest 0.035 ±0.002 [0.89] Ø hole for contact termination positions.

Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

The * signifies either a DDA, DDB or DDC connector type.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

ORDERING INFORMATION – CODE NUMBERING SYSTEM

Specify Complete Connector By Following Steps 1 Through 9

Insert "0" When Step Is Not Used

STEP	1	2	3	4		5	6	7	8	9
Upper Connector	DDA	44	F	N6T	/	44	F	N6T	X	
STEP 1 - Basic Series DDA Series DDB Series DDC Series					Options are the same as for Upper Connector Steps 2, 3 and 4.			STEP 9 - Special Options Consult Sales Department.		
STEP 2 - DD Series Connector Variants 15, 26, 44, 62								STEP 8 - Shell Options 0 - Zinc Plated with Dichromate Seal. X - Tin Plated. Z - Tin Plated and Dimpled - male connector only		
STEP 3 - Connector Gender M - Male F - Female										
STEP 4 - Locking, Polarizing, Mounting and Push-On Fastener Systems 0 - None. R2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. N2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar and Push-on Fastener. N6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar with Push-on Fastener. N7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and with Push-on Fastener. N8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and with Push-on Fastener. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized.										
								Lower Connector		

Mixed Density Dual Port Series

Size 20 and 22 Contacts
Two Connectors Vertically
Stacked and Assembled
As a Single Connector Unit

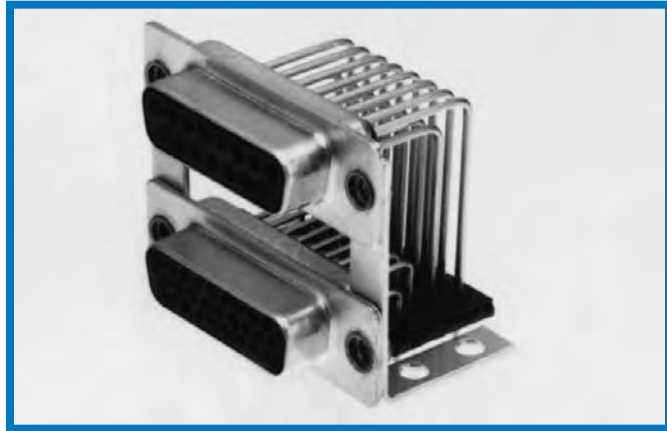
Professional Quality Connectors

U.L. Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
U.L. File #14098

PROFESSIONAL QUALITY PRINTED BOARD MOUNT MIXED DENSITY DUAL PORT VERTICALLY STACKED CONNECTOR ASSEMBLY FOR SHELTERED INDOOR/OUTDOOR ENVIRONMENTAL APPLICATIONS



Mixed Density Dual Port Series connectors utilize one standard density connector and one high density connector, vertically stacked and assembled into a single connector unit. This single connector unit permits saving of panel and printed board space and decreases final assembly costs.

Mixed Density Dual Port Series connectors are professional quality connectors recommended for use in sheltered, non-corrosive indoor and outdoor environments having normal ventilation.

Connector contact variants are the normal density over a high density connector: 9 over 15, 15 over 26, 25 over 44 and 37 over 62. Connector genders can be mixed, i.e., one male and one female con-

necter within one Mixed Density Dual Port assembly. The two connectors may be spaced apart to three standard dimensional spacings. The connector may also be partially populated with contacts which are installed in the connector body to customer selected contact positions.

Mounting angle brackets can be ordered riveted to the connector by specifying R2, R6, R7 or R8 options. Locking systems are available utilizing 4-40 threaded jackscrew systems, polarized or non-polarized, or with a quick release Vibration Lock System for either front or rear panel mounted connectors.

Mixed Density Dual Port Series connectors comply with the dimensional requirements of MIL-DTL-24308.

MIXED DENSITY DUAL PORT SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester per MIL-M-24519, UL 94V-0 for high density connectors and nylon resin, UL 94V-0 for standard density connectors. Black color.
Contacts:	Male contacts – precision machined copper alloy. Female contacts – precision machined high tensile phosphor bronze.
Contact Plating:	Gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate, or zinc plate with dichromate seal. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Steel or brass with tin plate, or zinc with dichromate seal.
Cross Bar:	Nylon resin, UL 94V-0, black color.
Push-On Fasteners:	Beryllium copper with tin plate.
Jackscrew Systems:	Steel with zinc plate and dichromate seal, or clear zinc plate.
Vibration Lock Systems:	Lock tabs, steel with nickel plate.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	5 amperes for standard density connectors. 3 amperes for high density connectors.
Initial Contact Resistance:	0.010 ohms maximum.
Proof Voltage:	1,000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0 mm].
Working Voltage:	300 V r.m.s.

MECHANICAL CHARACTERISTICS:

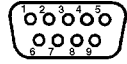
Fixed Contacts:	Size 20 contacts on the top connector, 0.040 inch [1.02 mm] diameter. Size 22 contacts on the bottom connector, 0.030 inch [0.76 mm] diameter. Female contacts – rugged open entry design.
Contact Retention in Insulator:	7 lbs. [31 N].
Contact Terminations:	Printed board mount with 90° terminations supported in footprint pattern by a plastic cross bar. Termination diameter 0.030 inch [0.76 mm] and 0.028 inch [0.71 mm].
Shells:	Male shells may be dimpled for EM/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting Bracket Riveted to Connector:	Riveted fasteners with 0.120 inch [3.05 mm] diameter clearance hole, 4-40 threads, or 4-40 threads with nylon lock insert.
Mounting to Printed Board:	Rapid installation push-on fasteners.
Locking Systems:	Jackscrews and vibration locking systems for either front or rear panel mounted connectors.
Mechanical Operations:	500 operations minimum per IEC 512-5.

CLIMATIC CHARACTERISTICS:

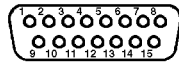
Temperature Range:	-55°C to +125°C.
---------------------------	------------------

CONTACT VARIANTS

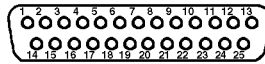
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



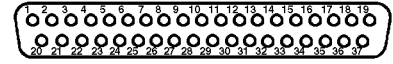
XD*9/15



XD*15/26

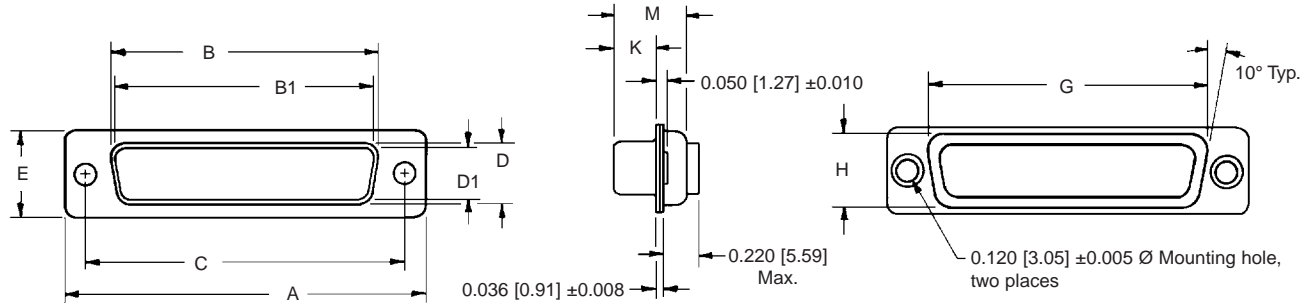


XD*25/44



XD*37/62

STANDARD SHELL ASSEMBLY

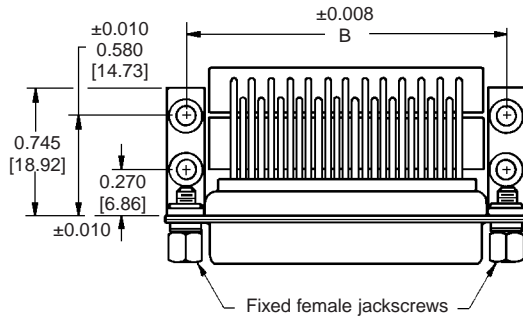


CONNECTOR VARIANT SIZES	A ±0.015	B ±0.005	B1 ±0.005	C ±0.005	D ±0.005	D1 ±0.005	E ±0.015	G ±0.010	H ±0.010	K ±0.005	M ±0.010
9M/15M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
9F/15F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
15M/26M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
15F/26F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
25M/44M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
25F/44F	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
37M/62M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
37F/62F	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

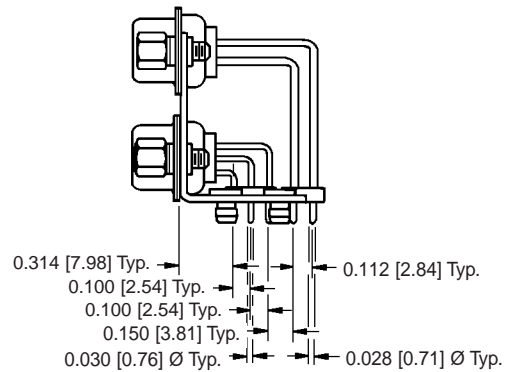
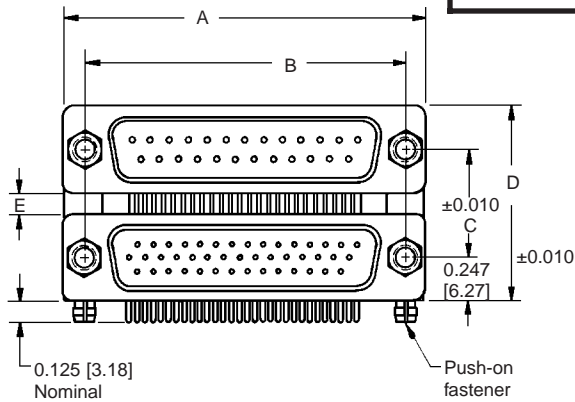
90° PRINTED BOARD MOUNT CONNECTOR

5 ROW CONNECTOR UNIT, 0.314 [7.98] CONTACT EXTENSION



CONNECTOR VARIANT	NO. OF CONTACTS	A	B
9/15	24	1.213 [30.81]	0.984 [24.99]
15/26	41	1.541 [39.14]	1.312 [33.32]
25/44	69	2.088 [53.04]	1.852 [47.04]
37/62	99	2.729 [69.32]	2.500 [63.50]

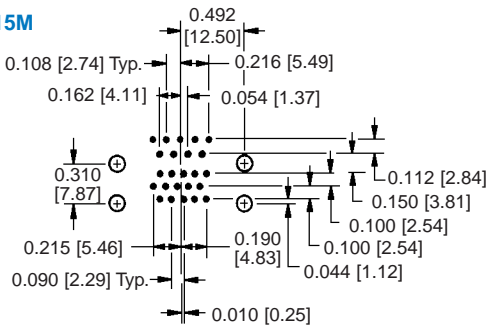
CONNECTOR DESIGNATION	C	D	E
XDA	0.625 [15.88]	1.119 [28.42]	0.131 [3.33]
XDB	0.750 [19.05]	1.244 [31.60]	0.256 [6.50]
XDC	0.900 [22.86]	1.394 [35.41]	0.406 [10.31]



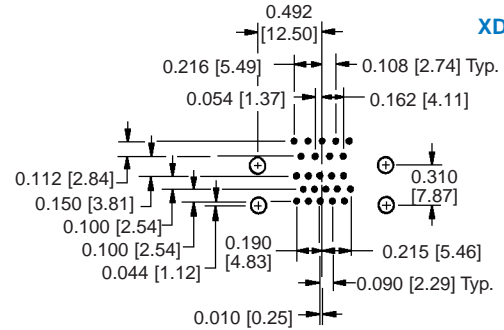
CONTACT HOLE PATTERN

Mount connector with mating face positioned to follow direction of arrows.

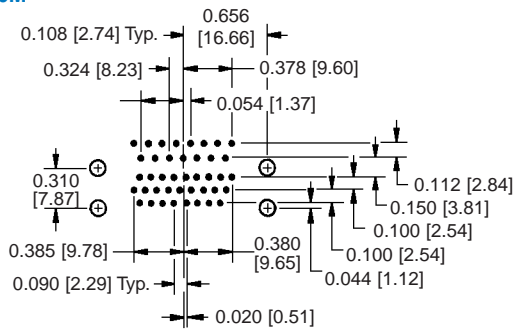
XD*9M/15M



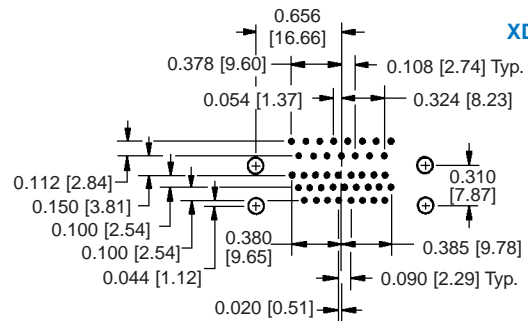
XD*9F/15F



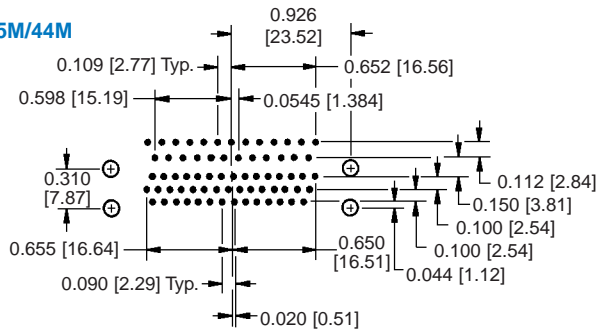
XD*15M/26M



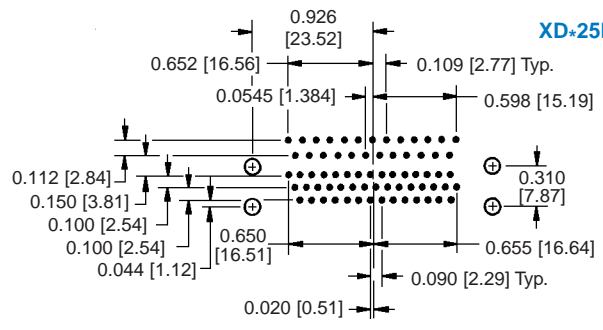
XD*15F/26F



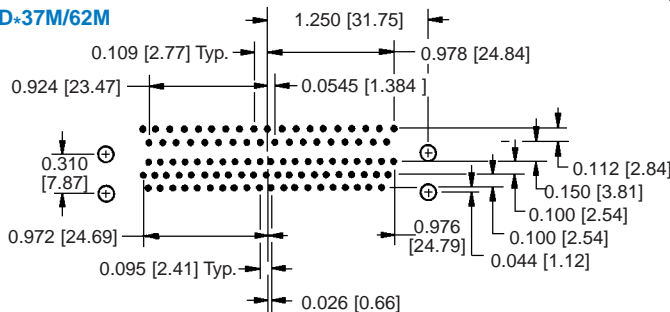
XD*25M/44M



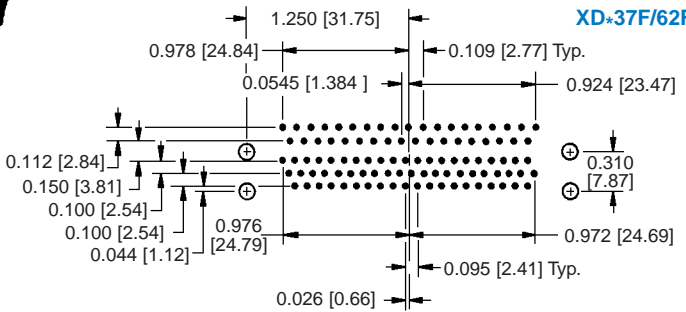
XD*25F/44F



XD*37M/62M



XD*37F/62F



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

Suggest 0.045 ±0.002 [1.14] Ø hole for contact termination positions.

Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

Mounting holes must move 0.020 [0.51] opposite direction of arrows for use of unriveted mounting brackets with connectors.

Mount connector with mating face positioned to follow direction of arrows.

ORDERING INFORMATION – CODE NUMBERING SYSTEM

Specify Complete Connector By Following Steps 1 Through 9

Insert "0" When Step Is Not Used

STEP	1	2	3	4	/	5	6	7	8	9
Upper Connector	XDA	25	F	R7T		44	F	R7T	0	
STEP 1 - Basic Series XDA Series XDB Series XDC Series					STEP 9 - Special Options Consult Sales Department.					
STEP 2 - Normal Density Connector Variants 9, 15, 25, 29, 37					STEP 8 - Shell Options 0 - Zinc Plated with Dichromate Seal. X - Tin Plated. Z - Tin Plated and Dimpled - male connector only					
STEP 3 - Connector Gender M - Male F - Female					STEP 7 - Locking, Polarizing, Mounting and Push-On Fastener Systems 0 - None. R2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. N2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar and Push-on Fastener. N6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar with Push-on Fastener. N7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and with Push-on Fastener. N8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and with Push-on Fastener. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews.					
STEP 4 - Locking, Polarizing, Mounting and Push-On Fastener Systems 0 - None. R2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. N2 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar and Push-on Fastener. N6 - Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar with Push-on Fastener. N7 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and with Push-on Fastener. N8 - Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and with Push-on Fastener. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews.					STEP 6 - Connector Gender M - Male F - Female					
STEP 5 - High Density Connector Variants 15, 26, 44, 62										

Combo Dual Port Series

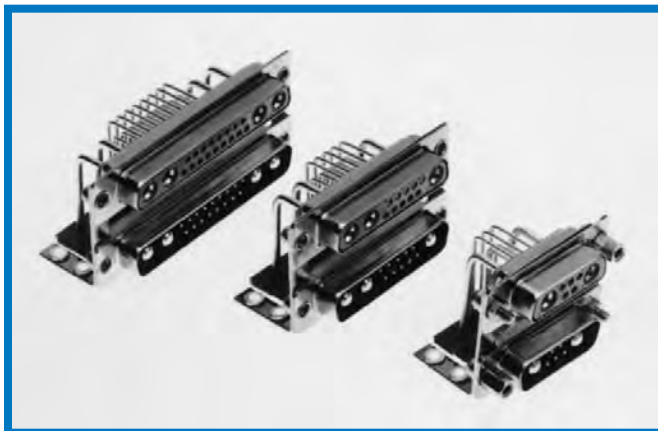
PROFESSIONAL QUALITY PRINTED BOARD MOUNT COMBINATION POWER AND SIGNAL CONTACT DUAL PORT VERTICALLY STACKED CONNECTOR ASSEMBLY FOR SHELTERED INDOOR/OUTDOOR ENVIRONMENTAL APPLICATIONS

Power and Signal Contacts

U.L. Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
U.L. File #14095



The Combo-Dual Port connector series offers several combinations of power and signal contacts within the same connector assembly. Fifteen different combinations of power and signal contact stacked assemblies are available within four standard shell sizes. The connector assembly can be partially populated with either signal or power contacts installed in the connector bodies to customer selected contact positions. The stacked connectors may be spaced apart to two dimensional spacings.

On special order, the 90° printed board mount 15 ampere contacts may be replaced with size 8 power, shielded or high voltage contacts

having crimp or solder cup terminations. Signal contacts remain in dual port configuration.

Mounting angle brackets can be ordered riveted to the connector by specifying R2, R6, R7 and R8 options. Locking systems are available utilizing 4-40 threaded jackscrew systems, polarized or non-polarized, or with a quick-release vibration lock system for either front or rear panel mounted connectors.

Combo-Dual Port Series connectors comply with the dimensional requirements of IEC 807-2 and DESC 85039.

COMBO-DUAL PORT TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Polyester, glass filled per MIL-M-24519, UL 94V-0, blue color.
Signal Contacts:	Male contacts—precision machined copper alloy. Female contacts—precision machined high tensile phosphor bronze.
Signal Contact Plating:	Gold flash over nickel plate. Other finishes available upon request.
Power Contacts:	Male contacts—precision machined copper alloy. Female contacts—precision machined high tensile copper alloy.
Power Contact Plating:	Gold flash over nickel. Other finishes available upon request.
Shells:	Steel or brass with tin plate or zinc plate with dichromate seal. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Steel or brass with tin plate or zinc with dichromate seal.
Cross Bar:	Nylon, UL 94V-0, black color.
Push-On Fasteners:	Beryllium copper, tin plated.
Jackscrew Systems:	Steel with clear zinc plate or zinc plate with dichromate seal.
Vibration Lock Systems:	Lock tabs, steel with nickel plate.

ELECTRICAL CHARACTERISTICS:

Signal Contacts:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Power Contacts:	15 ampere nominal for 90° board mount. 10, 20 and 40 ampere nominal are removable contacts with solder or crimp terminations.
Initial Contact Resistance:	0.0005 ohms max. per 512-2, test 2b
Proof Voltage:	1000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance [minimum]:	0.039 inch [1.0mm]
Working Voltage:	300 V r.m.s.

MECHANICAL CHARACTERISTICS:

Signal Contacts:	Size 20 male contacts—0.040 inch [1.0mm] diameter. Female contact—rugged open entry design.
Contact Retention In Insulator:	9 lbs. [40N]
Contact Terminations:	Printed board mount with 90° terminations supported by alignment bar. Termination diameter 0.028 inch [0.71mm].
Power Contacts:	Size 8 male contact—0.142 inch [3.61mm] diameter. Female contact—open entry and closed entry options.
Contact Retention In Insulator:	22 lbs. [92N]
Contact Terminations:	Printed board mount with 90° terminations of 0.078 inch [1.98mm] diameter. Size 8 removable solder cup contacts with wire hole diameters of 0.188 inch [4.78mm], 0.112 inch [2.84mm] and 0.069 inch [1.75mm].
Shells:	Male connector shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting Bracket Riveted to Connector:	Riveted fasteners with 0.120 inch [3.05mm] diameter clearance hole, with 4-40 threads or 4-40 threads with nylon lock insert.
Mounting To Printed Board:	Rapid installation push-on fasteners.
Locking Systems:	Jackscrews and vibration locking system for either front or rear panel mounted connectors.
Mechanical Operations:	500 operations minimum per IEC 512-5.
CLIMATIC CHARACTERISTICS:	
Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

Combo Dual Port Series

PROFESSIONAL QUALITY PRINTED BOARD MOUNT COMBINATION POWER AND
SIGNAL CONTACT DUAL PORT VERTICALLY STACKED CONNECTOR ASSEMBLY
FOR SHELTERED INDOOR/OUTDOOR ENVIRONMENTAL APPLICATIONS

CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

SHELL SIZE 1



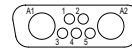
5W1



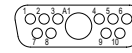
3W3



3WK3*



7W2

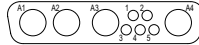


11W1

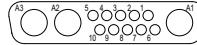
SHELL SIZE 3



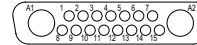
5W5



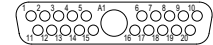
9W4



13W3

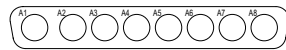


17W2

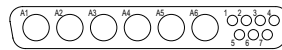


21W1

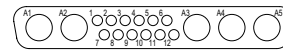
SHELL SIZE 4



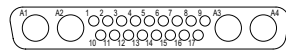
8W8



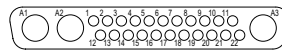
13W6



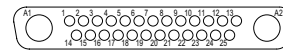
17W5



21WA4



25W3

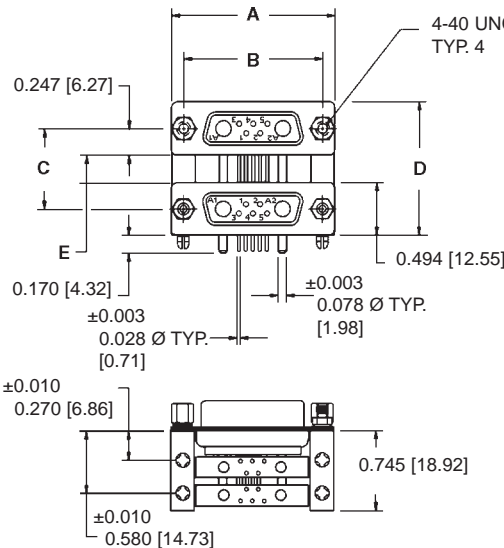


27W2

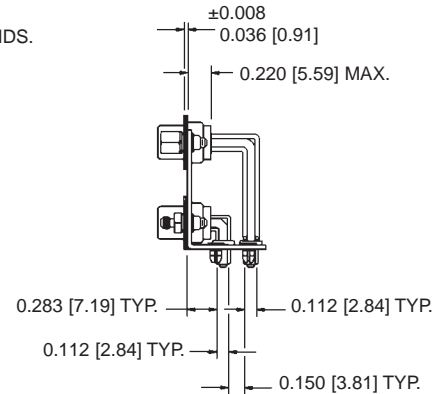
*3WK3: M variant contains 2 male contacts and 1 female contact
F variant contains 2 female contacts and 1 male contact

90° PRINTED BOARD MOUNT CONNECTOR 4 ROW CONNECTOR UNIT, 0.283 [7.19] CONTACT EXTENSION 15 AMPERE MAXIMUM RATED POWER CONTACTS

Note: 30 ampere
0.125 [3.18] Ø power
contacts may be
ordered at special
request for a limited
number of CBDP
variants. Contact
factory for details.



CONNECTOR DESIGNATION	C	D	E
CBDPB	0.750 [19.05]	1.244 [31.60]	0.256 [6.50]
CBDPC	0.900 [22.86]	1.394 [35.41]	0.406 [10.31]



TYPICAL PART NUMBER:
CBDPB7W2MN8T2/7W2MN8T6X

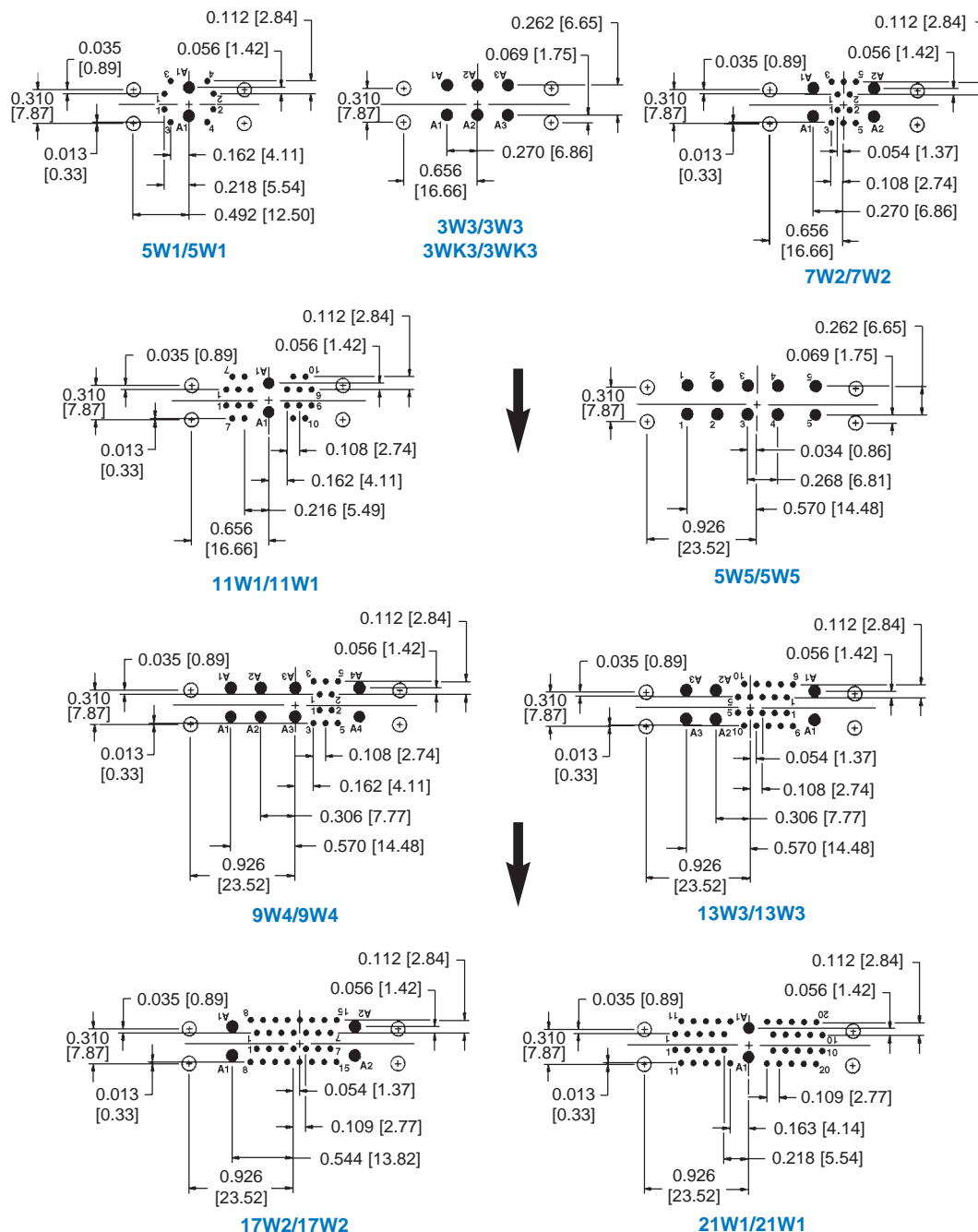
CONNECTOR VARIANT	A	B
SHELL SIZE 1	1.213 [30.81]	0.984 [24.99]
SHELL SIZE 2	1.541 [39.14]	1.312 [33.32]
SHELL SIZE 3	2.088 [53.04]	1.852 [47.04]
SHELL SIZE 4	2.729 [69.32]	2.500 [63.50]

Note: Printed board power contacts [size 8] may be replaced
with a size 8 removable power, shielded or high voltage
contact having solder or crimp terminations.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

90° PRINTED BOARD CONTACT HOLE PATTERN

Hole identification shown is for female connector over male connector.
Mount connector with mating face positioned to follow direction of arrow.



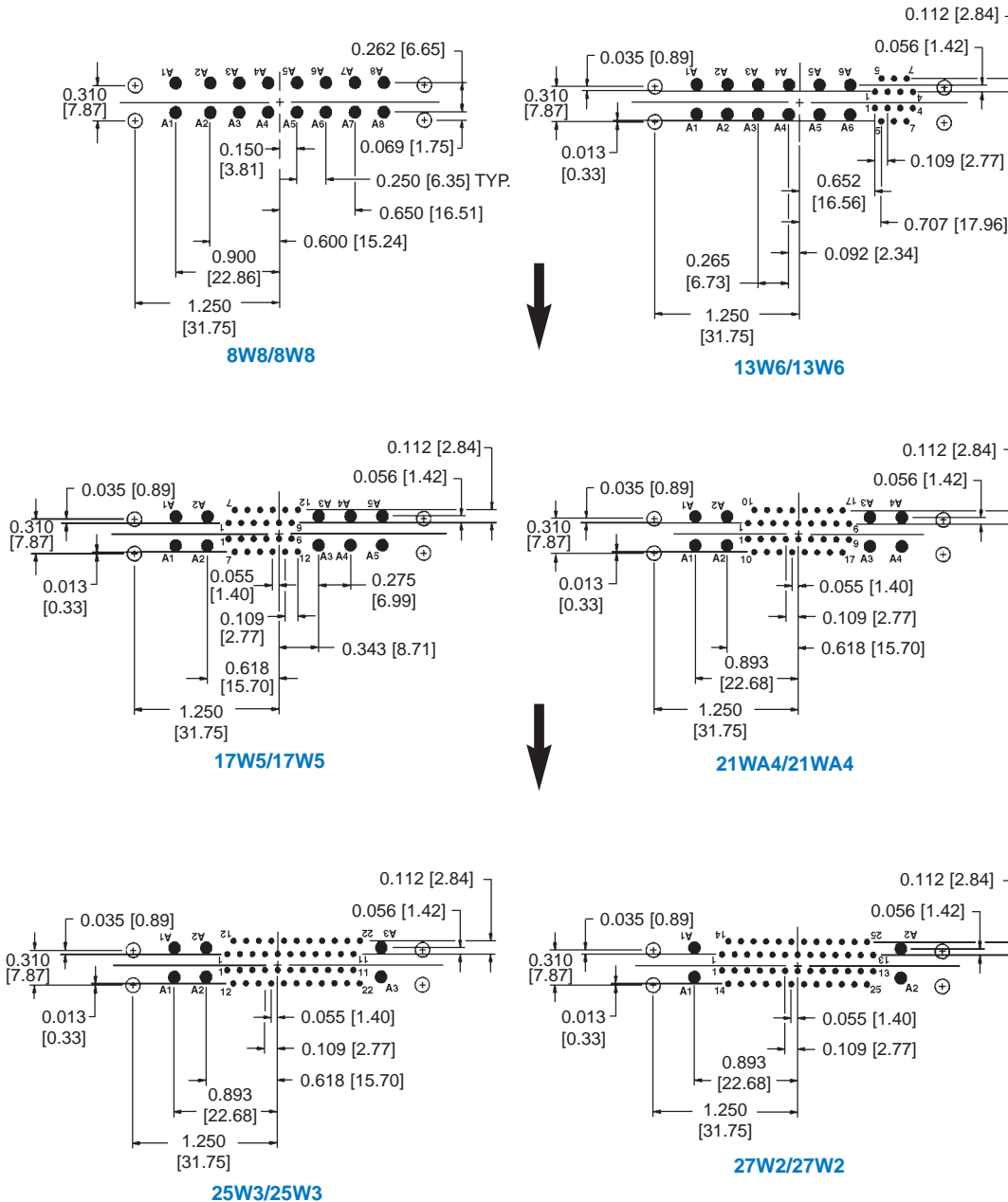
Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

Mounting holes must move 0.020 [0.51] ±0.010 opposite direction of arrow for use of unriveted mounting bracket with connectors.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

90° PRINTED BOARD CONTACT HOLE PATTERN

Hole identification shown is for female connector over male connector.
Mount connector with mating face positioned to follow direction of arrow.



Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

Mounting holes must move 0.020 [0.51] ±0.010 opposite direction of arrow for use of unrvited mounting bracket with connectors.

ORDERING INFORMATION – CODE NUMBERING SYSTEM

Specify Complete Connector By Following Steps 1 Through 9
Insert “0” When Step Is Not Used

Upper Connector

STEP 1 - Basic Series

CBDPB Series
CBDPC Series

STEP 2 - CBDP Series Connector Variants

Shell Size 1
5W1

Shell Size 2
3W3, 3WK3, 7W2, 11W1

Shell Size 3
5W5, 9W4, 13W3, 17W2, 21W1

Shell Size 4
8W8, 13W6, 17W5, 21WA4, 25W3, 27W2

STEP 3 - Connector Gender

M – Male
F – Female

STEP 4 - Locking, Polarizing, Mounting and Push-on Fastener Systems

0 – None
R2 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread, Fixed Female Jackscrews and Cross Bar
R6 – Bracket, Mounting, 90° Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar
R7 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar
R8 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar
N2 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Thread, Fixed Female Jackscrews with Cross Bar and Push-On Fastener
N6 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and Push-on Fastener
N7 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Threads with Cross Bar and Push-on Fastener
N8 – Bracket, Mounting, 90° Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and Push-on Fastener
T – Fixed Female Jackscrews
T2 – Fixed Female Jackscrews
T6 – Fixed Male and Female Polarized Jackscrews

5	6	7
7W2	M	R7T

Options are the same as for Upper Connector Steps 2, 3, and 4

8	9
0	

Lower Connector

STEP 9 - Special Options

Consult Sales Department

STEP 8 - Shell Options

0 – Zinc Plated with Dichromate Seal
X – Tin Plated
Z – Tin Plated and Dimpled - male connector only

Note: Size 8 removable power contacts with solder or crimp terminations with power ratings of 10, 20 and 40 amperes may be ordered in lieu of the 90° board mounted power contact. Removable size 8 shielded and high voltage contacts may also be ordered separately in lieu of the power contact. See catalog of Combo-D Subminiature-D Connectors for contact part numbers.

POSITRONIC PRODUCTS

Power

Contact Sizes: 0, 8, 12, 16, 20 and 22
Current Ratings: To 150 amperes
Terminations: Crimp, wire solder, straight solder, right angle solder, straight press-fit and right angle press-fit
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41



FEATURES: Hot swap capability • AC/DC operation in a single connector • Signal contacts for hardware management • Blind mating • Sequential mating • Large Surface Area Contact Mating System • Wide variety of accessories • Customer specified contact arrangements

D-Subminiature

Contact Sizes: 8, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle solder and straight press-fit
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-24308, Goddard Space Flight 311P, MIL-C-39029, IP65, IP67



FEATURES: Three performance levels available: professional quality, military quality and space-flight quality provide multiple performance to cost choices • Options include thermocouple contacts, filtered, environmentally sealed and dual port package including mixed density • Broad selection of accessories

Rectangular

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes
Terminations: Crimp, wire solder, straight solder and right angle solder
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-28748, MIL-C-39029, CCITT V.35



FEATURES: Two performance levels available: industrial quality and military quality provide two performance to cost choices • Large Surface Area Contact Mating System • A wide variety of accessories • Broad selection of contact variants and package sizes

Circular

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder and right angle solder
Configurations: Multiple variants in two package sizes
Qualifications: Environmental protection to IP67



FEATURES: Non-corrodible / lightweight composite construction • EMI/RFI shielded versions • Thermocouple contacts • Environmentally sealed versions • Rear insertion/ front release of removable contacts • Two level sequential mating • Overmolding available on full assemblies

Cable

All Positronic connector products can be supplied as part of cable assemblies whose technical characteristics would reflect those of the connectors being used within the assembly.



FEATURES: Shorten the supply chain and reduce additional costs and delays by "cablizing" • Overmolding available • Shielded and environmentally sealed versions available • Power cables and access boxes which meet the SAE J2496 specification

Hermetic

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feed through is standard; flying leads and board mount available upon request
Configurations: See D-Subminiature and Circular Configurations above
Qualifications: Space-D32



FEATURES: Intended for use as an electrical feedthrough in high vacuum applications • Leakage rate: 1×10^{-9} mbar.l/s • Signal, power, coax and high voltage versions available • Connectors can be mounted on flange assembly per customer specification

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office as given on the back of this catalog.

NORTH AMERICAN HEADQUARTERS

UNITED STATES, Springfield, Missouri

Factory Sales and Engineering Offices (800) 641-4054

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices (800) 641-4054

MEXICO

Factory Sales and Engineering Offices (800) 872-7674

CANADA

Factory Sales and Engineering Offices (800) 327-8272

PACIFIC BASIN HEADQUARTERS

SINGAPORE

Factory Sales and Engineering Offices 65-6842-1419

ASIA, Direct Sales Offices

Taiwan Sales Office 8862-2937-8775

Japan Sales Office 813-5661-3047

India Sales Office 91-98220-11175

ASIA-PACIFIC, Technical Agents

Technical Agents in China: Shenzhen, Shanghai, Chengdu, Beijing; Korea, Malaysia: Penang; Australia, New Zealand, Philippines, Hong Kong, Thailand, Sri Lanka, Pakistan, Cambodia

EUROPEAN HEADQUARTERS

FRANCE, Auch Factory

Factory Sales and Engineering Offices 33 (0)5 62 63 44 91

EUROPE, Direct Sales Offices

Northern France Sales Office 33 (0)1 45 88 13 88

Southern France Sales Office 33 (0)4 67 72 80 28

Italy Sales Office 39 (0)2 54 116 106

Germany Sales Office 49 (0)2351 63 47 39

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Denmark, Finland, Greece, Ireland, Scotland, Slovenia, Spain, Sweden, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC INDUSTRIES, INC.

423 N Campbell Ave • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 (0)5 62 63 44 91 • Fax 33 (0)5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com

www.connectpositronic.com

COMBO

D-subminiature Connectors



Positronic®
global connector solutions

μTCA®



LOOK
FOR OUR
NEW PRODUCTS!

**SIGNAL, POWER, AIR,
SHIELDED, THERMOCOUPLE OR
HIGH VOLTAGE CONTACTS
IN A SINGLE PACKAGE**

Catalog C-004 Rev. F

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261† #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

†Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

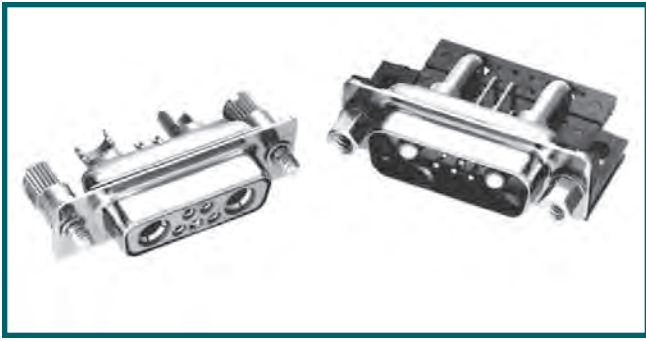
Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.



CONNECTOR DESCRIPTIONS

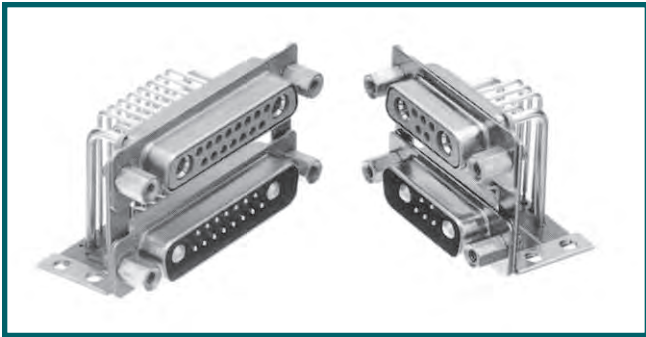
COMBINATION D-SUBMINIATURE STANDARD AND HIGH DENSITY

CB series connectors are available in standard density versions, which have fixed size 20 signal contacts and size 8 power, shielded, high voltage and air contacts. High density CB series connectors offer fixed size 22 signal contacts, size 8 contacts or size 16 power contacts. These connectors are available in various performance levels for best cost/performance ratio. Thermocouple contact options are also available.



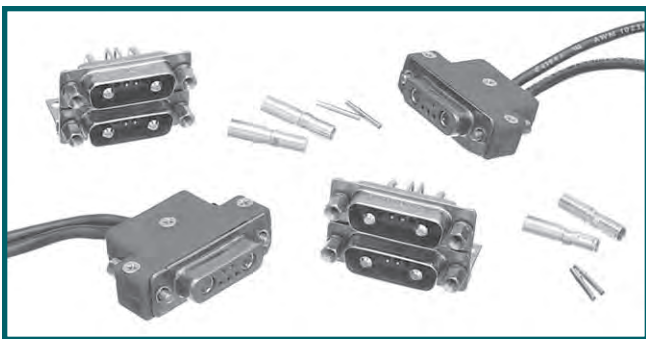
COMBINATION D-SUBMINIATURE CRIMP CONTACTS STANDARD AND HIGH DENSITY

CBC series connectors offer crimp removable contacts for signal, power, shielded, high voltage and air contacts applications. These connectors are available in standard and high density versions. Thermocouple contact options are also available.



COMBINATION CONTACT DUAL PORT CONNECTORS

CBDP series. Offers seventeen different combinations of power and signal contact stacked assemblies. Size 20 signal contacts and size 8 power contacts.



INPUT POWER CONNECTORS (MicroTCA) - QB SERIES

QB series. Positronic was privileged to have participated in the development of the MicroTCA specification. Positronic is proud to announce the release of connectors for use in MicroTCA modules for power input. QB series offers board mount connectors for power modules, and cable connectors for bringing power to modules. QB series meet requirements of the MicroTCA Specification for 48V and 24V systems.

COMBO-D CONNECTOR SAVERS - ACBDP and ACBMP SERIES

ACBDP and ACBMP series. Combo-D connector savers with size 20 and size 8 contacts. Available for all standard Combo-D variants in shell sizes 1 through 6.





TABLE OF CONTENTS

Combo-D
D-Sub

GENERAL INFORMATION

Temperature Rise Curves	1-2
-------------------------------	-----

CBD / CBM SERIES

CBD/CBM Series Introduction	3
Technical Characteristics	4
Contact Variants	5
Standard Shell Assembly	6
Code 2 Solder Cup Connector and	
Code 3, 35, 36 and 37 Straight Printed Board Mount Connector	7
Code 5, 55 and 57 Right Angle (90°) Printed Board Mount Connector	8
Code 5, 55 and 57 Shell Size 6 - Right Angle (90°) Printed Board Mount Connector	9
Code 7, 75 and 77 Metric System Right Angle (90°) Printed Board Mount Connector	10
Right Angle (90°) and Straight Printed Contact Hole Pattern with	
0.078 [1.98] ϕ , 0.094 [2.39] ϕ and 0.125 [3.18] ϕ Power Contacts	11-12
Right Angle (90°) Printed Board Contact Hole Pattern with 0.125 [3.18] ϕ Power Contacts	13-14
Code 65 Straight Printed Board Mount Connector with FDS4201D or MDS4201D Shielded Contacts and	
Code 85 Right Angle (90°) Printed Board Mount Connector with FDS4201D or MDS4201D Shielded Contacts	15
Straight Printed Board Mount Contact Hole Pattern with	
FDS4201D and MDS4201D Shielded Contacts	16-17
Right Angle (90°) Printed Board Mount Contact Hole Pattern with	
FRT4201D and MRT4201D Shielded Contacts	18-19
Code 93 Compliant Press-fit Connector and Temperature Rise Curve	20
Ordering Information	21

CBC SERIES

CBC Series Introduction	22
Technical Characteristics	23
Contact Variants	24
Standard Shell Assembly	25
Ordering Information	26

CBDD / CBHD SERIES

CBDD/CBHD Series Introduction and Technical Characteristics	27-28
Contact Variants	28
Standard Shell Assembly	29
Code 21 Solder Cup Connector and	
Code 3, 35, 36 and 37 Straight Printed Board Mount Connector	30
Code 4, 45 and 47 Right Angle (90°) Printed Board Mount Connector	31-33
Code 65 Straight Printed Board Mount Connector with FDS4201D or MDS4201D Shielded Contacts and	
Code 84 Right Angle (90°) Printed Board Mount Connector with FRT4201D or MRT4201D Shielded Contacts	34
Code 85 Right Angle (90°) Printed Board Mount Connector with FRT4201D or MRT4201D Shielded Contacts and	
Code 93 Compliant Press-Fit Connector	35
Printed Board Mount Contact Hole Pattern	36
Ordering Information	37-38



C B C D S E R I E S

CBCD Series Introduction	39
Technical Characteristics	39-40
Contact Variants	40
Standard Shell Assembly	41
Ordering Information	42

C B D P B / C B D P C S E R I E S

Combo-Dual Port Series Introduction	43
Technical Characteristics	43-44
Contact Variants	44
Right Angle (90°) Printed Board Mount Connector	45
Right Angle (90°) Printed Board Mount Contact Hole Pattern	46-47
Ordering Information	48

Q B S E R I E S (M i c r o T C A)

QB Series Introduction and Temperature Rise Curve	49
Technical Characteristics and Air Cooled Ruggedized MicroTCA® Systems	50
Right Angle (90°) Printed Board Mount Connector - 48 Volt and Right Angle (90°) Printed Board Mount Contact Hole Pattern - 48 Volt.....	51
Right Angle (90°) Printed Board Mount Connector - 24 Volt and Right Angle (90°) Printed Board Mount Contact Hole Pattern - 24 Volt.....	52
Code Q Cable Connector; Electrical Bridge and Standard D-subminiature Mounting Bracket	53
Code 11 and 12 Removable Crimp Power Contacts and Code 0, 11 and 12 Removable Signal Contacts	54
Male Ordering Information - Dual Port and Male Ordering Information - Uni Port Connectors	55
Female Ordering Information - Cable Connectors.....	56

C O N N E C T O R S A V E R S

ACBDP/ACBMP Series Introduction	57
Technical Characteristics	58
ACBDP/ACBMP Series Size 20 and Size 8 Contact Variants	58
Male to Female Connector Saver and Jackscrew Systems	59
Ordering Information	60

continued on next page . . .

Visit our web site for the latest catalog updates and supplements at
www.connectpositronic.com/combo-d/catalogs



Positronic
connectpositronic.com

TABLE OF CONTENTS

Combo-D
D-Sub

U N I Q U E F E A T U R E S

Unique Features Introduction and Sequential Mating Contacts	61
Size 8 Contact Stabilization Feature	62
Combo-D Connectors with 100 AMP High Current Removable Crimp Power Contacts Technical Characteristics and 100 AMP High Current Removable Crimp Power Contacts (for use with 8 AWG wire)	63
Selectively Loaded Combo-D Connectors for use with 100 AMP High Current Removable Crimp Power Contacts and Temperature Rise Curve	64
Size 8 Straight Printed Board Mount High Voltage Contact	65
Size 8 Right Angle (90°) Printed Board Mount High Voltage Contact	65
Size 8 Bus Bar Power Contacts	66
Size 8 Integral Blind Mate Guide	66
Customer Specified Contact Termination Length	67

R E M O V A B L E C O N T A C T S

Removable Contact Technical Characteristics	68-69
What makes PosiBand® contact interface significant	69
Size 22 Crimp and Removable Signal Crimp Contacts.....	70-71
Size 22 Removable Thermocouple Signal Crimp Contact	71
Size 20 Crimp and Removable Crimp Signal Contact	72-73
Size 20 Removable Thermocouple Crimp Signal Contact	74
Size 16 Removable Crimp Power Contacts	74
Size 8 Removable Crimp Power Contacts	75
Size 8 Removable Solder Cup Power Contacts.....	75
Size 8 Removable High Voltage Power Contacts	76
Size 8 Straight Printed Board Mount Power Contact	76
Size 8 Right Angle (90°) Printed Board Power Contact	77
Size 8 Removable Shielded Contact	78
Size 8 Straight Printed Board Mount Shielded Contact	79
Size 8 Right Angle (90°) Printed Board Shielded Contact	79
Size 8 Removable Air Line Couplers	80

S P E C I A L O P T I O N S

Modification (MOS) Suffixes	81
-----------------------------------	----

A P P L I C A T I O N T O O L S

Introduction	82
Contact Reels for Automatic Pneumatic Crimp Tools.....	82
Contact Application Tools Cross Reference List	83-84
Suggested Printed Board Hole Sizes For Compliant Press-Fit Connectors.....	85
Compliant Press-Fit Connector Installation Tools.....	86

Q P L L I S T I N G

Positronic offers a wide variety of QPL connector products	87
--	----



Cable & Harness Assemblies

Many Industries Served including:

- Aerospace
- Datacom / Telecom
- Medical
- Industrial
- Military / Defense
- Transit / Rail

Support Capabilities:

- Design, development, engineering support, and documentation
- Build to customer print
- Assist in expansion of qualified suppliers on BOM
- Select facilities certified to ISO 9001 and AS9100
- Adherence to IPC-620 standards
- Product prototyping and first articles
- Electrical and mechanical testing

Products & Services

- Cable and harness assemblies
- Flex circuit assemblies
- Coaxial cable assemblies
- Kitting services
- EMI/RFI shielded assemblies
- Box builds
- Hermetic assemblies

SAVE TIME AND MONEY! Let Positronic support you by cablizing your **CBD / CBM / CBC / CBCD / QB connector selection.**

For more details contact *Technical Sales* or visit our *web site* at: <http://www.connectpositronic.com/cable-assemblies>

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



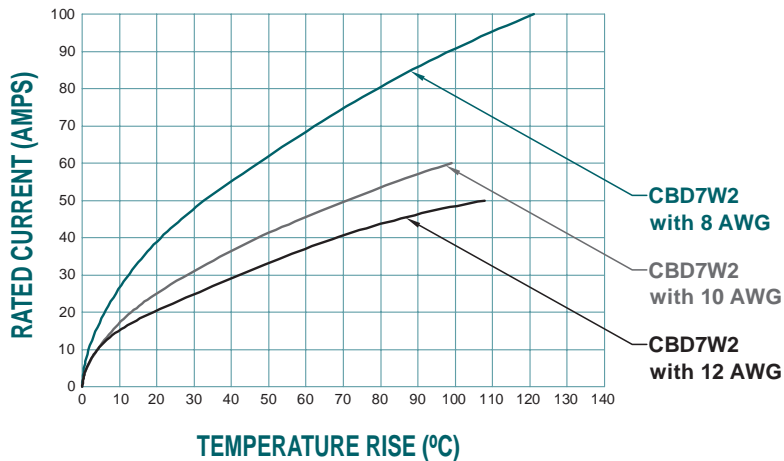
Positronic
connectpositronic.com

GENERAL INFORMATION

Combo-D
D-Sub

TEMPERATURE RISE CURVES FOR SIZE 8, 10 AND 12 AWG WIRE

7W2



Test conducted in accordance with UL1977.

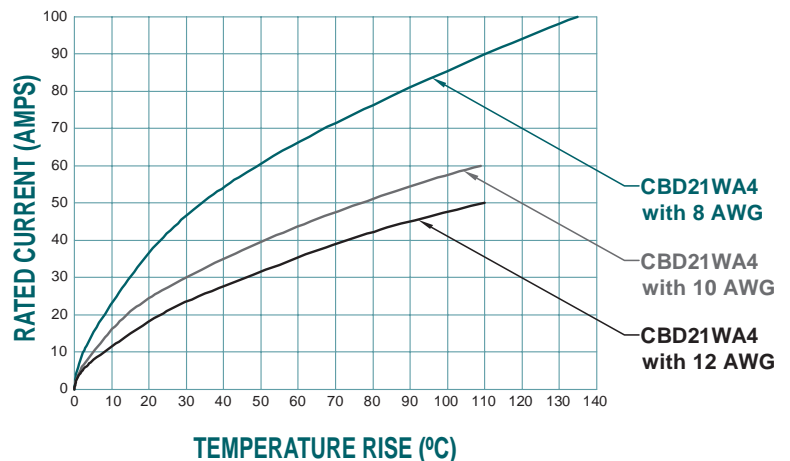
All power contacts under load.

MC4008D: Curve developed using a mated CBD7W2F57 and CBC7W2M loaded with MC4008D contacts terminated to 8 AWG wire.

MC4010D: Curve developed using a mated CBD7W2F36 and CBC7W2M loaded with MC4010D contacts terminated to 10 AWG wire.

MC4012D: Curve developed using a mated CBD7W2F55 and CBC7W2M loaded with MC4012D contacts terminated to 12 AWG wire.

21WA4



Test conducted in accordance with UL1977.

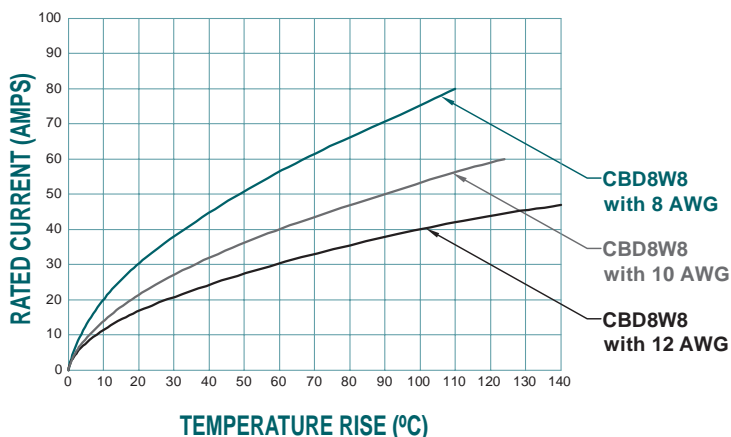
All power contacts under load.

MC4008D: Curve developed using a mated CBD21WA4F57 and CBC21WA4M loaded with MC4008D contacts terminated to 8 AWG wire.

MC4010D: Curve developed using a mated CBD21WA4F36 and CBC21WA4M loaded with MC4010D contacts terminated to 10 AWG wire.

MC4012D: Curve developed using a mated CBD21WA4F55 and CBC21WA4M loaded with MC4012D contacts terminated to 12 AWG wire.

8W8



Test conducted in accordance with UL1977.

All power contacts under load.

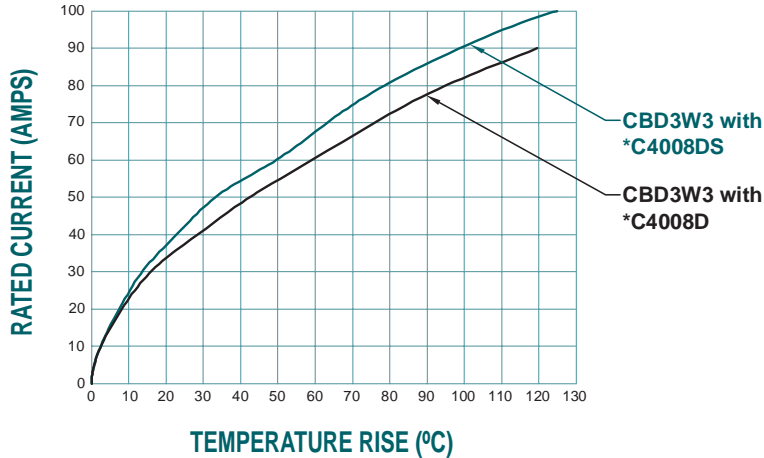
MC4008D: Curve developed using a mated CBD8W8F57 and CBC8W8M loaded with MC4008D contacts terminated to 8 AWG wire.

MC4010D: Curve developed using a mated CBD8W8F36 and CBC8W8M loaded with MC4010D contacts terminated to 10 AWG wire.

MC4012D: Curve developed using a mated CBD8W8F55 and CBC8W8M loaded with MC4012D contacts terminated to 12 AWG wire.

TEMPERATURE RISE CURVE FOR STANDARD AND HIGH CONDUCTIVITY CONTACT MATERIAL

3W3



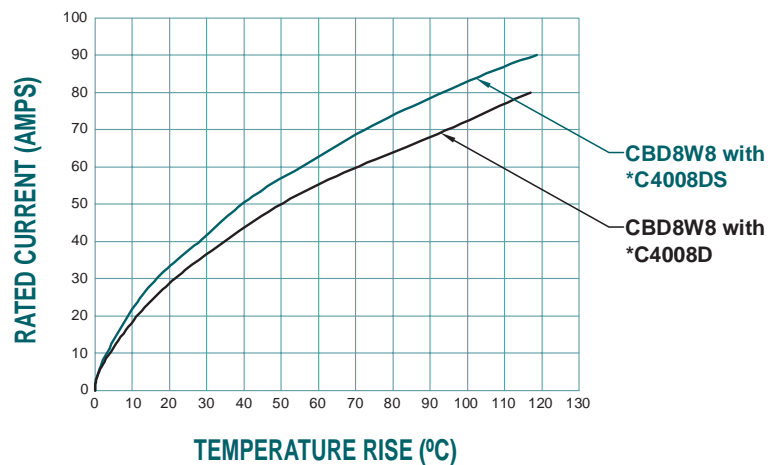
Test conducted in accordance with UL1977. All power contacts under load.

Standard Material: Curve developed using a mated CBD3W3F loaded with FC4008D contacts and CBD3W3M loaded with MC4008D contacts terminated to 8 AWG wire.

High Conductivity: Curve developed using a mated CBD3W3F loaded with FC4008DS contacts and CBD3W3M loaded with MC4008DS contacts terminated to 8 AWG wire.

* indicates contact gender

8W8



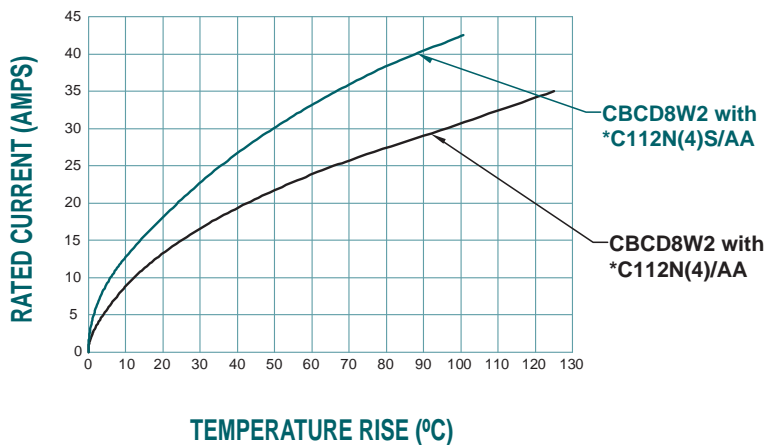
Test conducted in accordance with UL1977. All power contacts under load.

Standard Material: Curve developed using a mated CBD8W8F loaded with FC4008D contacts and CBD8W8M loaded with MC4008D contacts terminated to 8 AWG wire.

High Conductivity: Curve developed using a mated CBD8W8F loaded with FC4008DS contacts and CBD8W8M loaded with MC4008DS contacts terminated to 8 AWG wire.

* indicates contact gender

HIGH DENSITY 8W2



Test conducted in accordance with UL1977. All power contacts under load.

Standard Material: Curve developed using a mated CBCD8W2M loaded with MC112N/AA-133.0 contacts and CBCD8W2S loaded with FC112N4/AA contacts terminated to 12 AWG wire.

High Conductivity: Curve developed using a mated CBCD8W2M loaded with MC112NS-133.0 contacts and CBCD8W2S loaded with FC112N4S/AA contacts terminated to 12 AWG wire.



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

**Size 20 Fixed Signal and
Thermocouple Contacts**
**Size 8 Removable Power, Shielded,
Air and High Voltage Contacts**

UL Recognized
File #E49351

CSA Recognized
File #LR54219

DSCC 85039

Telecommunication UL File #E140980



Combo-D series connectors permit mixed contact combinations of power, shielded, air, high voltage and signal contacts within the same connector body. Twenty-two connector variants are offered in six standard shell sizes.

Three performance levels of Combo-D series connectors are offered: professional, industrial and military. CBD series connectors are quality connectors recommended for use in sheltered, non-corrosive indoor and outdoor environments having normal ventilation, but without temperature or humidity controls. Signal contacts are offered with open entry professional level or PosiBand closed entry industrial level signal contacts. CBD series connectors meet performance requirements of IEC 60807-2, Performance Level One or Two. CBM series connectors are military quality connectors recommended for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. CBM series connectors will meet the applicable performance requirements of DSCC 85039.

Combo-D series connectors utilize precision machined signal contacts. Connector variants are available with contact terminations for solder and straight and right angle (90°) printed board mount terminations featuring a choice of inch or metric printed board footprints.

Power, shielded and high voltage contacts are removable, having solder and straight and right angle (90°) printed board mount terminations. Power and shielded contacts are available with crimp terminations. Air contact options are also available, see page 80 for details.

For low level shielding requirements, ferrite inductors may be attached to both signal and power contacts of connectors having contact terminations which are straight or right angle (90°) for printed board mounting applications. For additional information contact Technical Sales.

The female power contacts feature the Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contacts and reduced contact resistance during operation.

A wide assortment of printed board mounting hardware, cable support hoods, and locking systems is available from stock.

A blind mating system is available for applications requiring connector coupling in recessed areas or mobile power coupling systems.

Straight and right angle (90°) PCB mount thermocouple contacts are available, please contact Technical Sales for details.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94V-0, blue color, and composite.
Contacts:	Precision machined copper alloy.
Contact Plating:	
SIGNAL:	Gold flash over nickel plate and gold 0.000050 [1.27μ] over nickel plate. Other finishes available upon request, see page 81.
POWER:	Gold flash over nickel. Other finishes available upon request, see page 81.
SHIELDED:	For contact platings, see page 68.
HIGH VOLTAGE:	For contact platings, see page 68.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; polyester; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Push-On Fasteners:	Phosphor bronze and beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Signal Contacts, Fixed:	Size 20 contacts, male - 0.040 inch [1.02mm] diameter. CBD series has open entry female contacts. PosiBand closed entry female options are also available. CBM series has PosiBand closed entry female contacts, see page 68 for details.
Contact Retention in Insulator:	Signal: 9 lbs. [40N]. Power, shielded and high voltage: 22 lbs [98N].
Resistance to Solder Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6.
Signal Contact Terminations:	Solder contacts - 0.042 inch [1.06mm] minimum hole diameter for 20 AWG [0.5 mm ²] wire maximum. Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter. Right Angle (90°) Printed Board Mount - 0.028 inch [0.71 mm] termination diameter.
Power Contacts, Removable, Crimp or Solder Termination:	Size 8 contact, male - 0.142 inch [3.61mm] mating diameter. Terminations for 6, 8, 10, 12, and 16 AWG. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Closed crimp barrel.
Power Contacts, Printed Board Mount:	Size 8 contact, male - 0.142 inch [3.61mm] mating diameter. Printed board terminations with 0.078 inch [1.98mm], 0.094 inch [2.39mm] and 0.125 inch [3.18mm] termination diameters.
Shielded Contacts, Removable:	See table of cable sizes for contact termination dimensions, page 78.

High Voltage Contacts:	Straight and right angle (90°) terminations - 0.041 inch [1.04mm] minimum hole diameter.
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting to Angle Brackets:	Jackscrews and riveted fasteners with 0.120 inch [3.05mm] diameter hole, and threaded riveted fasteners with 4-40 threads and nylon inserts.
Mounting to Printed Board:	Rapid installation push-on fasteners and threaded posts.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	CBD series, open entry contacts, 500 operations. CBD series, PosiBand closed entry and CBM series, 1,000 operations. Per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

Contact Current Rating - Tested per UL 1977:

Standard Contact Material:

0.078 inches diameter / 12 AWG terminations:	39 amperes.
0.094 inches diameter / 10 AWG terminations:	50 amperes.
0.125 inches diameter / 8 AWG terminations:	70 amperes.

See Temperature Rise Curves on page 1 for details.

High Conductivity Contact Material:

8 AWG terminations:	80 amperes.
---------------------	-------------

See Temperature Rise Curves on page 2 for details.

Initial Contact Resistance:

Standard Contact Material:	0.0005 ohms max. per IEC 60512-2, Test 2b.
-----------------------------------	--

High Conductivity Contact Material:	0.00035 ohms max. per IEC 60512-2, Test 2b.
--	---

Proof Voltage:	1000 V r.m.s.
-----------------------	---------------

SHIELDED CONTACTS

For electrical characteristics, see page 69.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 69.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 [1.0mm] minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

THERMOCOUPLE CONTACTS:

Straight and right angle PCB mount contacts are available, please contact Technical Sales for details.

Size 20 crimp contacts are available in CBC series, see page 74 for details.



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

CONTACT VARIANTS FACE VIEW OF MALE OR REAR VIEW OF FEMALE

SHELL SIZE 1



*1 2WK2



5W1

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

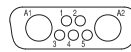
SHELL SIZE 2



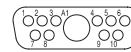
3W3



*2 3WK3

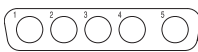


7W2

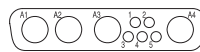


11W1

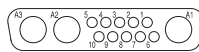
SHELL SIZE 3



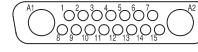
5W5



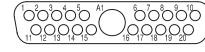
9W4



13W3

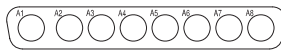


17W2

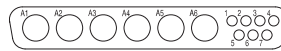


21W1

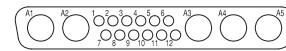
SHELL SIZE 4



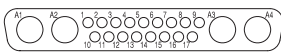
8W8



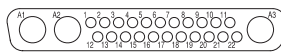
13W6



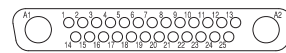
17W5



21WA4

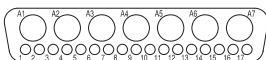


25W3

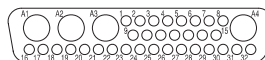


27W2

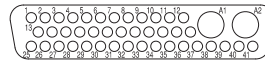
SHELL SIZE 5



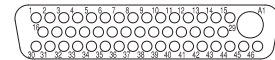
24W7



36W4

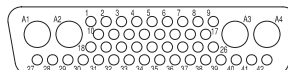


43W2



47W1

SHELL SIZE 6



46W4

Notes:

*1 2WK2 connectors have 1 male and 1 female contacts. Female connector should be loaded with female contact in A2 position.

*2 3WK3 male variant contains 2 male contacts and 1 female contact. Female variant contains 2 female contacts and 1 male contact

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

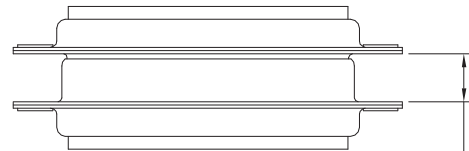
STANDARD SHELL ASSEMBLY



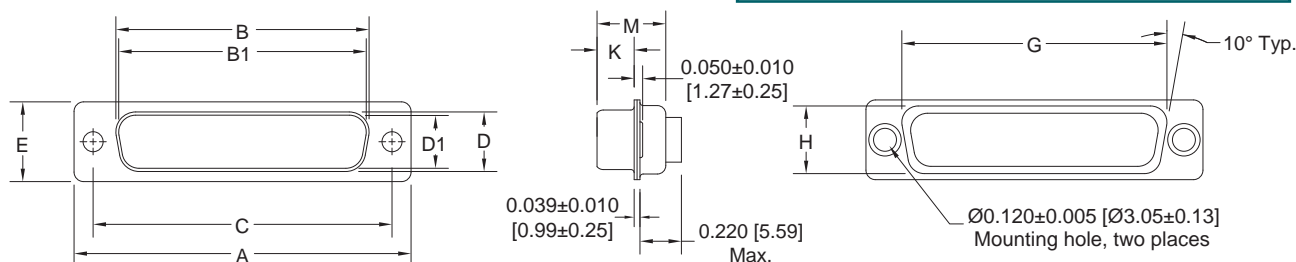
CBD3W3M00000

CBD5W5M00000

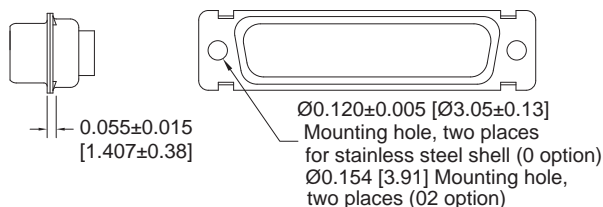
RECOMMENDED MATING DIMENSIONS



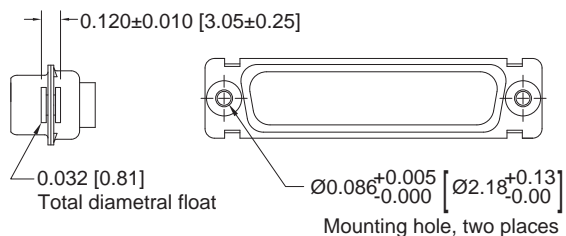
Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



SHELL SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
SHELL SIZE 1 MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SHELL SIZE 1 FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 2 MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SHELL SIZE 2 FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 3 MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 3 FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 4 MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 4 FEMALE	2.729 [69.32]	2.169 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 5 MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 5 FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 6 MALE	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 6 FEMALE	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

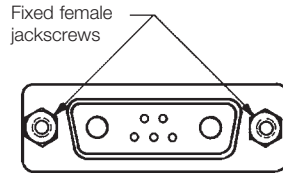
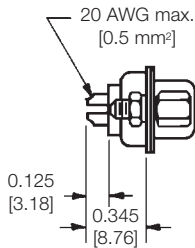


Positronic
connectpositronic.com

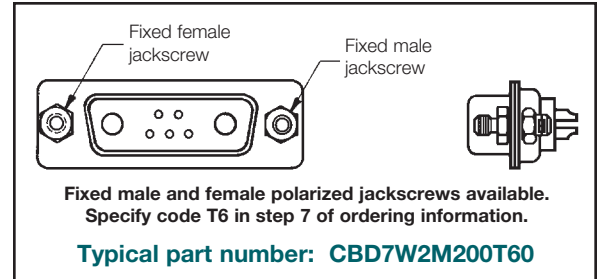
PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

SOLDER CUP CONNECTOR
CODE 2



For solder cup contacts,
specify code 2 in step 4
of ordering information.



Typical part number: **CBD7W2M200T0**



CBD17W2F200E0 with FS4008D contacts.

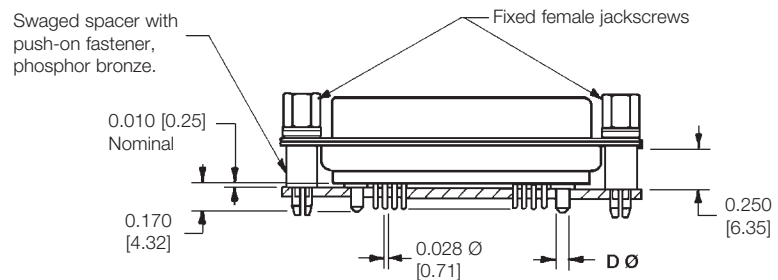
CBD17W2M55B30T20

STRAIGHT PRINTED BOARD MOUNT CONNECTOR
CODE 3, 35, 36 AND 37

For Code 93 Press-Fit Board Mount Connectors, see page 20.

CONTACT CODE	D Ø
3	-----
35	0.078 [1.98]
36	0.094 [2.39]
37	0.125 [3.18]

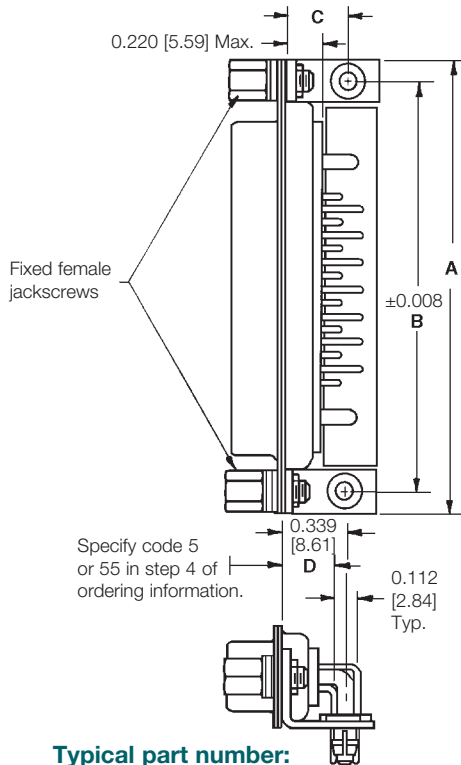
For straight printed board
mount contacts, specify
code no. in step 4 of
ordering information.



Typical part number: **CBD17W2F35S60T2X**

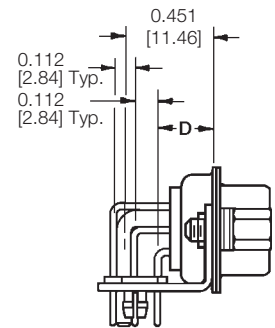
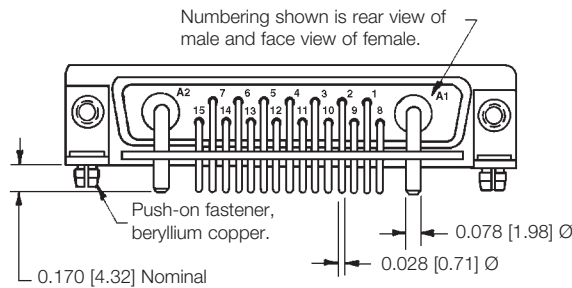
**RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.078 [1.98] Ø POWER CONTACTS
CODE 5 AND 55, 0.283 [7.19] CONTACT EXTENSION**

See temperature rise curves on pages 1 and 2



**Typical part number:
CBD17W2M55R7NT20**

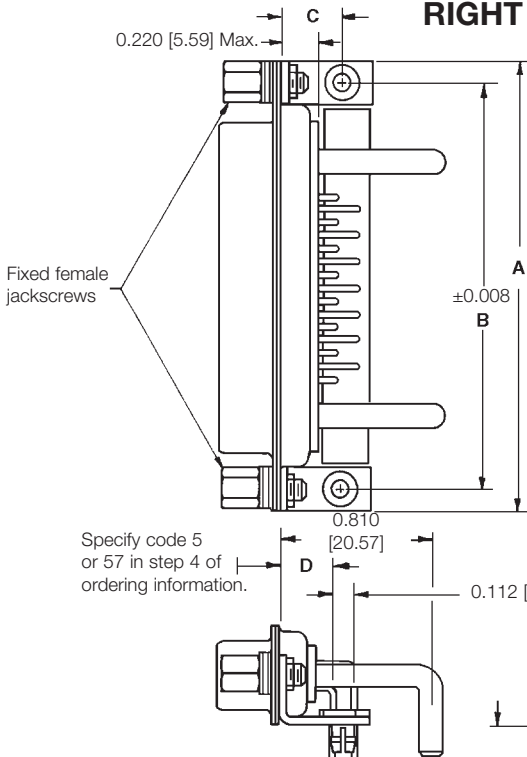
CBD***R7*** 0.283 [7.19] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]



**Typical part number:
CBD36W4F55R7NT2X**

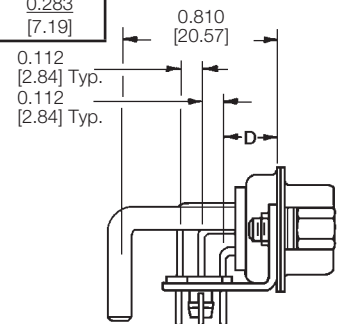
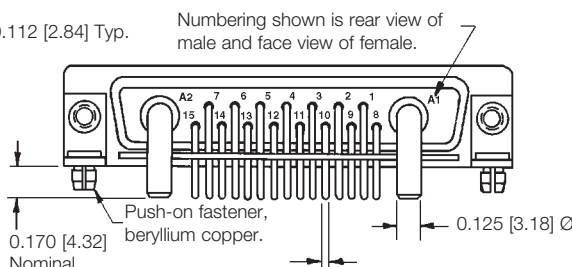
**RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.125 [3.18] Ø POWER CONTACTS
CODE 5 AND 57, 0.283 [7.19] CONTACT EXTENSION**

See temperature rise curves on pages 1 and 2.



**Typical part number:
CBD17W2M57R7NT20**

CBD***R7*** 0.283 [7.19] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]



**Typical part number:
CBD36W4F57R7NT2X**



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

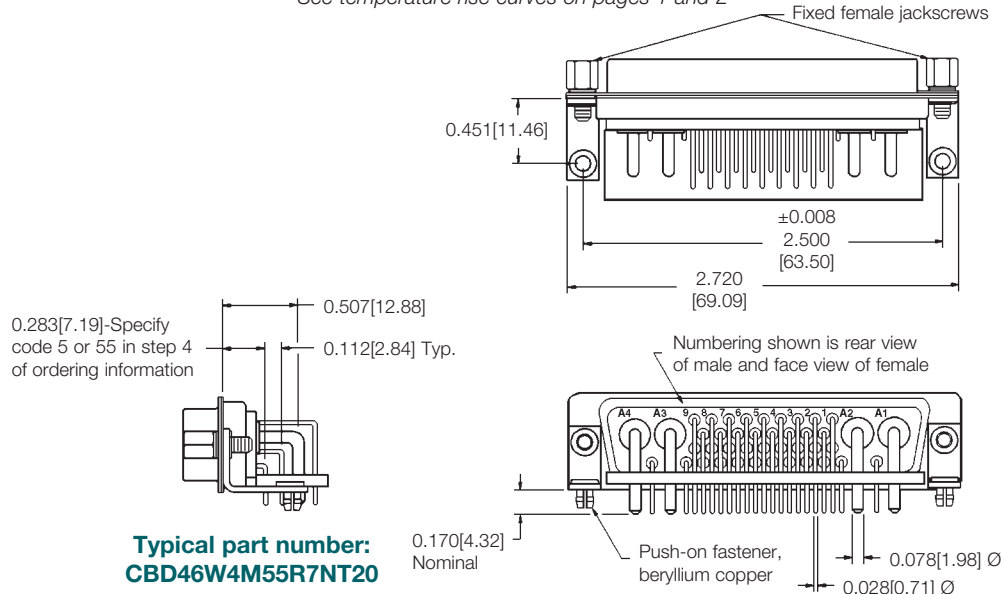
SHELL SIZE 6

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.078 [1.98] Ø POWER CONTACTS

CODE 5 AND 55, 0.283 [7.19] CONTACT EXTENSION

CONNECTOR VARIANT 46W4

See temperature rise curves on pages 1 and 2



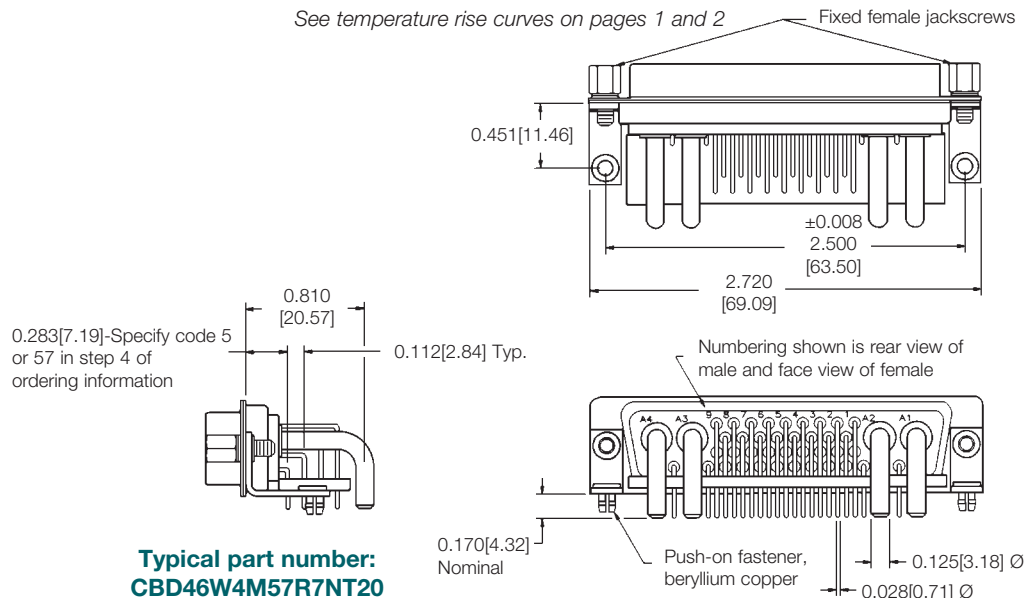
SHELL SIZE 6

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.125 [3.18] Ø POWER CONTACTS

CODE 5 OR 57, 0.283 [7.19] CONTACT EXTENSION

CONNECTOR VARIANT 46W4

See temperature rise curves on pages 1 and 2



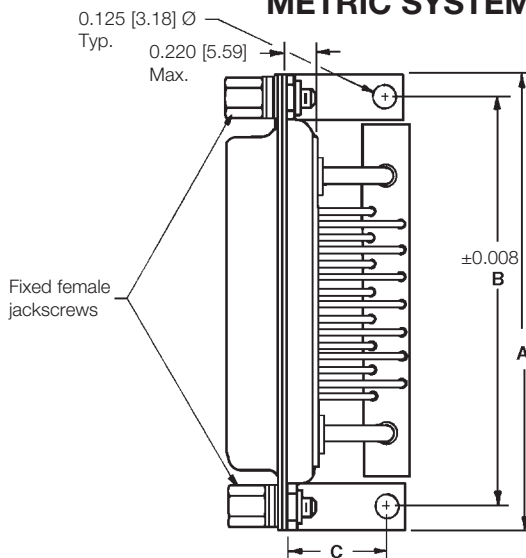
**METRIC SYSTEM RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.078 [1.98] Ø POWER CONTACTS**

CODE 7 AND 75, 0.370 [9.40] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2

CBD*R7*** 0.370 [9.40] CONTACT EXTENSION**

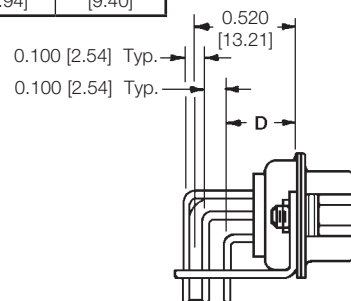
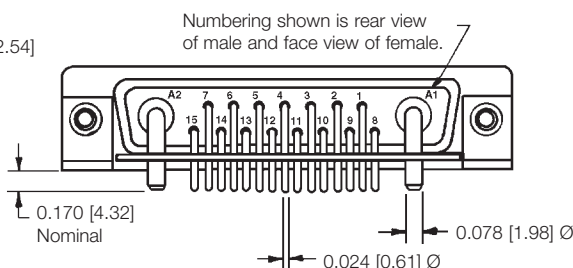
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]



Specify code 7 or 75 in step 4 of ordering information.

0.420 [10.67] Typ.
0.100 [2.54] Typ.

Typical part number:
CBD17W2M75R70T20



Typical part number:
CBD36W4M75R70T20

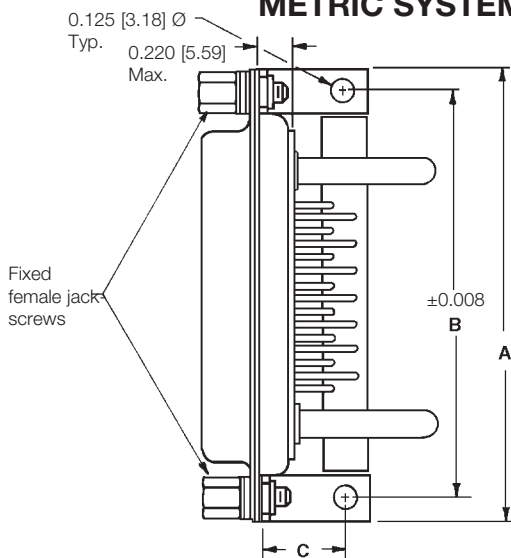
**METRIC SYSTEM RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.125 [3.18] Ø POWER CONTACTS**

CODE 7 AND 77, 0.370 [9.40] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2

CBD*R7*** 0.370 [9.40] CONTACT EXTENSION**

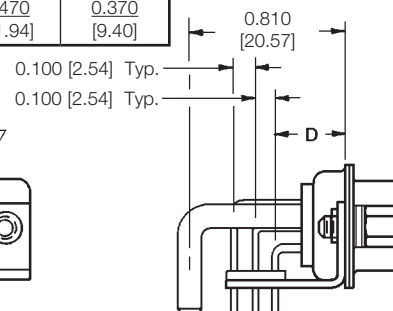
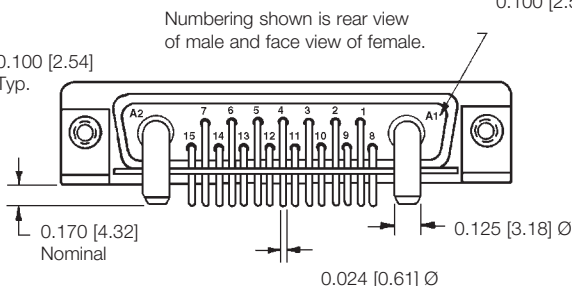
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]



Specify code 7 or 77 in step 4 of ordering information.

0.810 [20.57] Typ.
0.100 [2.54] Typ.

Typical part number:
CBD17W2M77R70T20



Typical part number:
CBD36W4M77R70T20



Positronic
connectpositronic.com

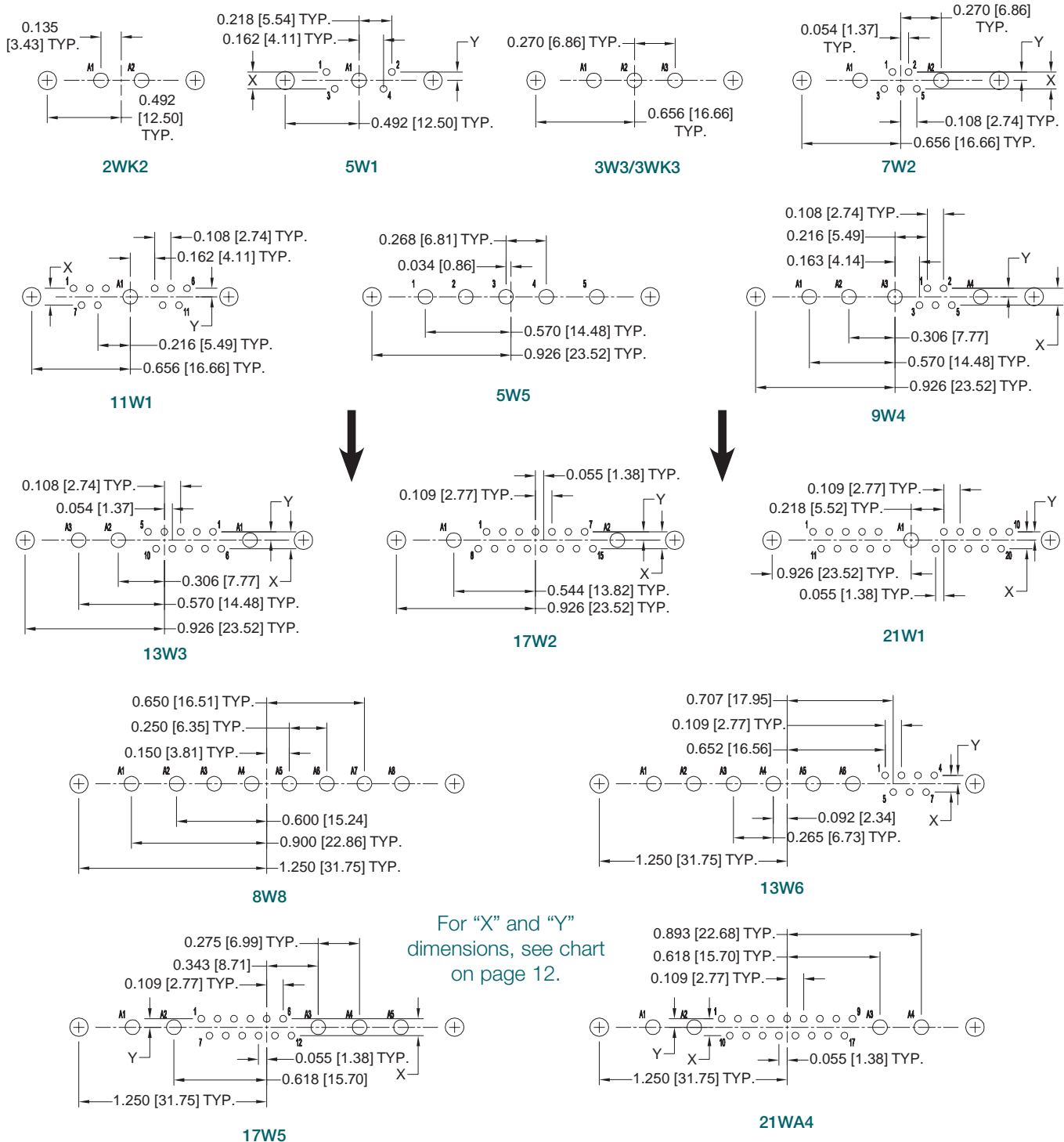
PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø POWER CONTACTS AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø, 0.094 [2.39] Ø AND 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 86.

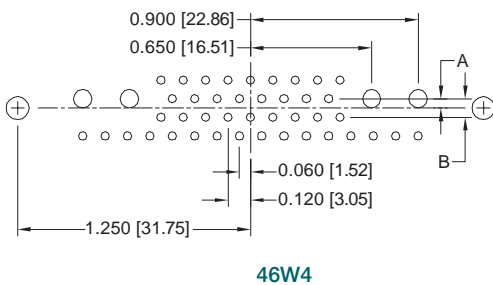
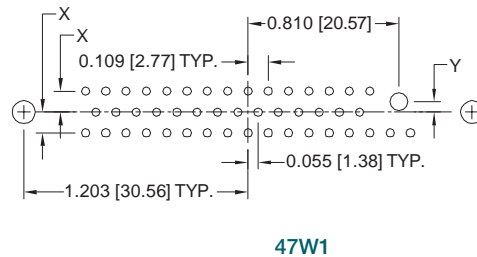
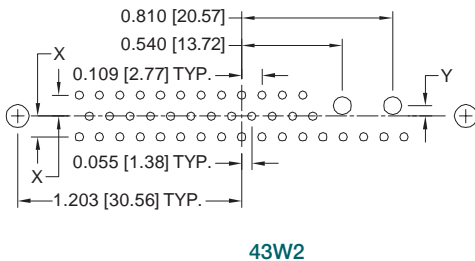
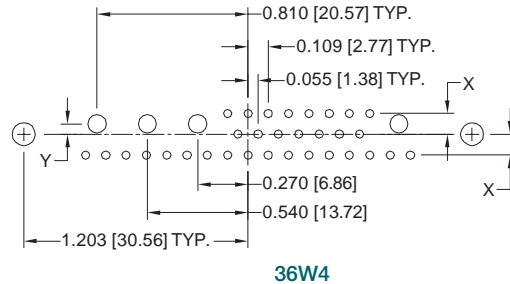
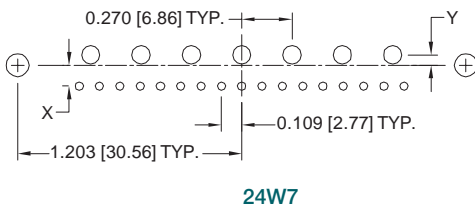
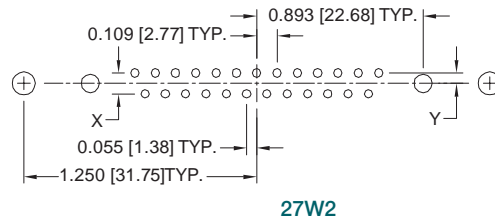
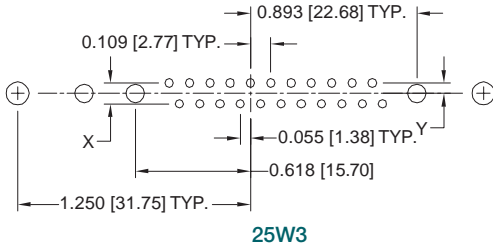
For press-fit connector installation tools, see page 86.

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.114 [2.90] Ø hole for 0.094 [2.39] Ø power contact termination positions.
Suggest 0.145 [3.68] Ø hole for 0.125 [3.18] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø POWER CONTACTS AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø, 0.094 [2.39] Ø AND 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



CODE NO.	X	Y	A	B
3				
35	0.112 [2.84]	0.056 [1.42]	0.050 [1.27]	0.100 [2.54]
36				
37				
5	0.112 [2.84]	0.056 [1.42]	0.056 [1.42]	0.112 [2.84]
55				
7	0.100 [2.54]	0.050 [1.27]	0.050 [1.27]	0.100 [2.54]
75				

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.114 [2.90] Ø hole for 0.094 [2.39] Ø power contact termination positions.
Suggest 0.145 [3.68] Ø hole for 0.125 [3.18] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 85.

For press-fit connector installation tools, see page 86.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 12**



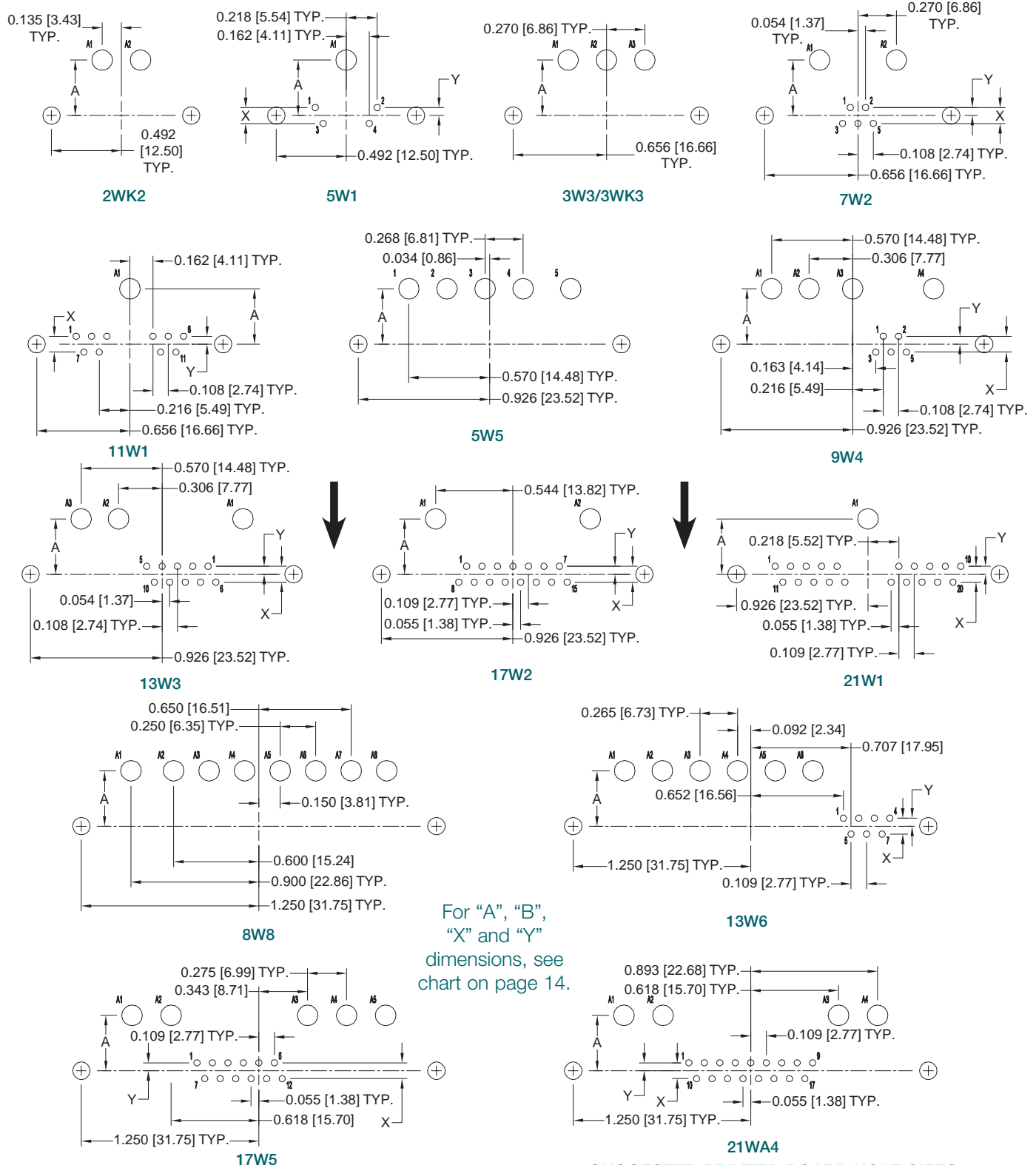
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

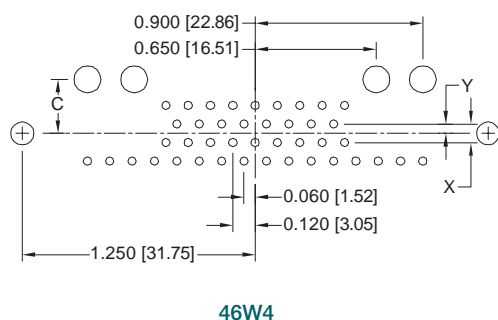
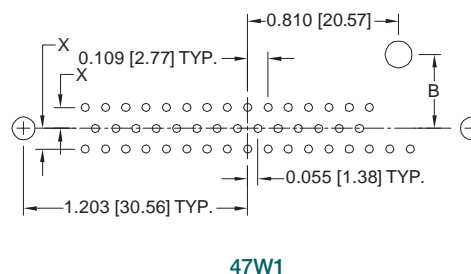
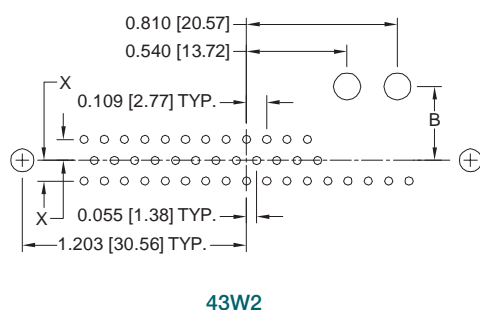
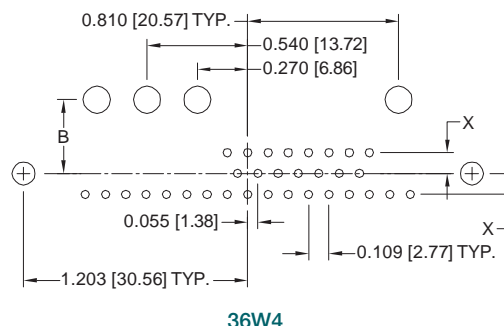
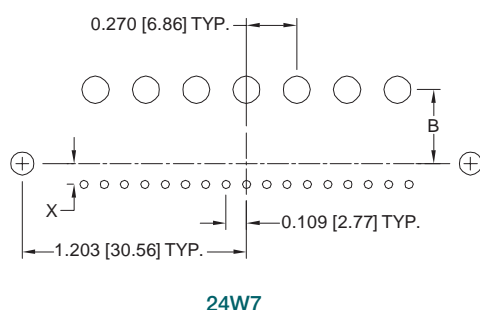
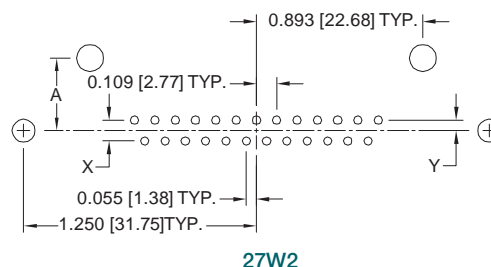
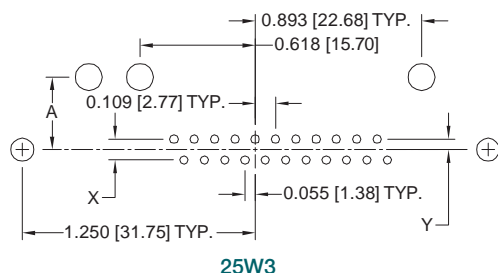
RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN
WITH 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN WITH 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.145 [3.68] Ø hole for power contact termination positions.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

CODE NO.	5 & 57	7 & 77
A	0.471 [11.96]	0.390 [9.91]
B	0.415 [10.54]	0.340 [8.64]
C	0.359 [9.12]	0.290 [7.37]
X	0.112 [2.84]	0.100 [2.54]
Y	0.056 [1.42]	0.050 [1.27]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



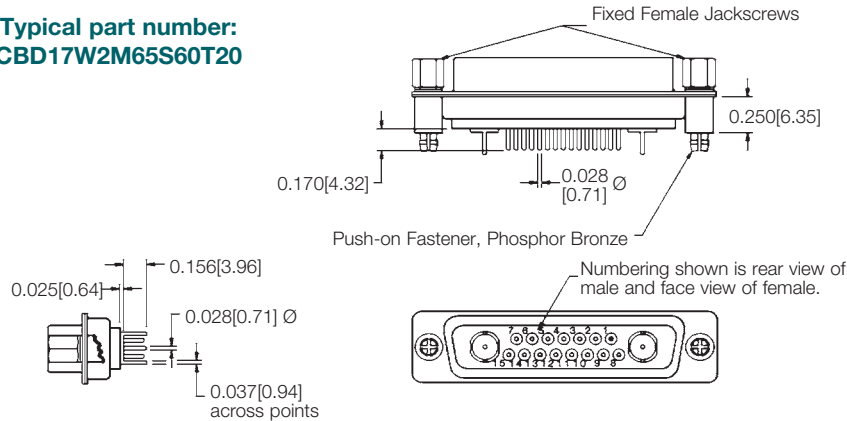
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

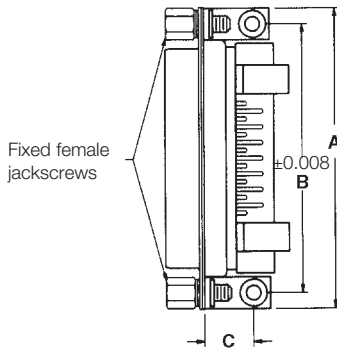
Combo-D
D-Sub

STRAIGHT PRINTED BOARD MOUNT CONNECTOR
WITH FDS4201D OR MDS4201D SHIELDED CONTACTS
CODE 65

Typical part number:
CBD17W2M65S60T20

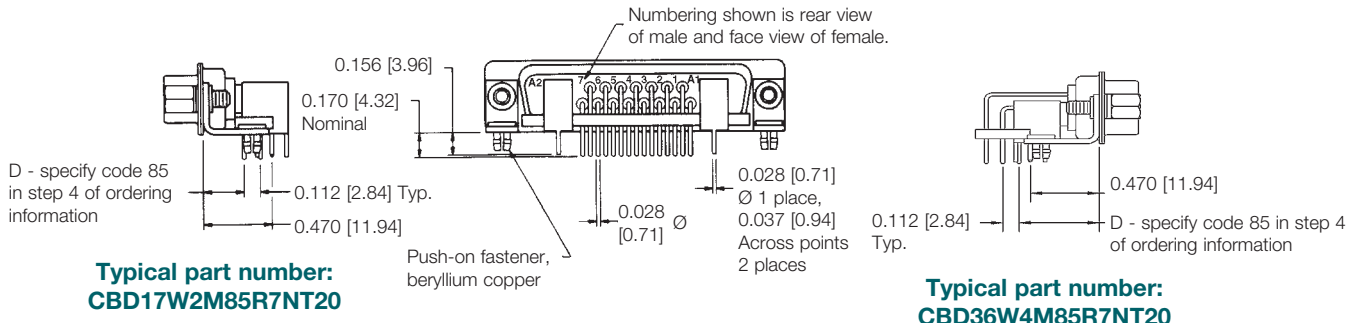


RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH FRT4201D OR MRT4201D SHIELDED CONTACTS
CODE 85



CBD**85**** 0.283 [7.19] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
**SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.545 [13.84]

***NOTE:**
Shell size 5 connectors are supplied inverted when ordered with right angle (90°) printed board mount shielded contacts.

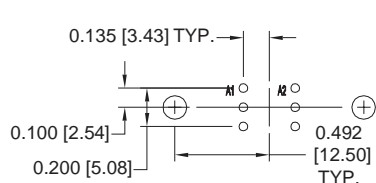


Typical part number:
CBD17W2M85R7NT20

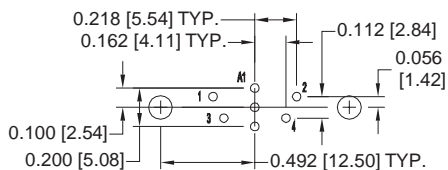
Typical part number:
CBD36W4M85R7NT20

STRAIGHT PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FDS4201D AND MDS4201D SHIELDED CONTACTS

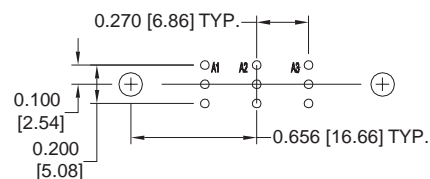
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.



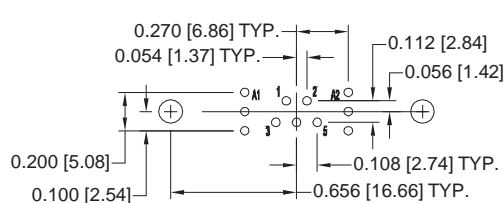
2WK2



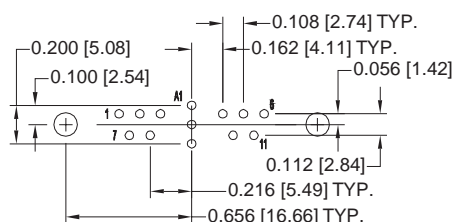
5W1



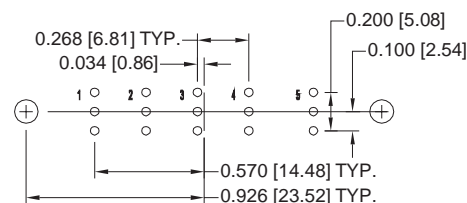
3W3/3WK3



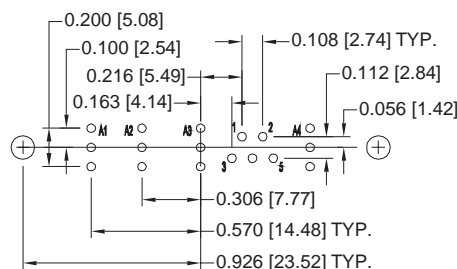
7W2



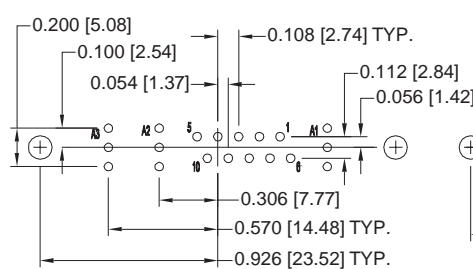
11W1



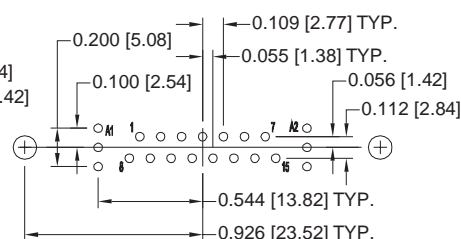
5W5



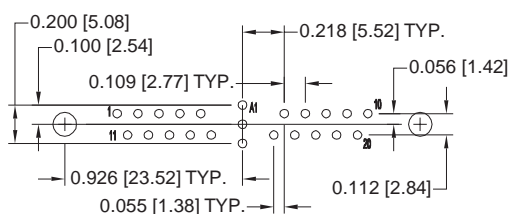
9W4



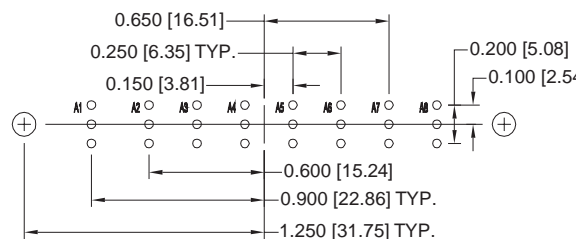
13W3



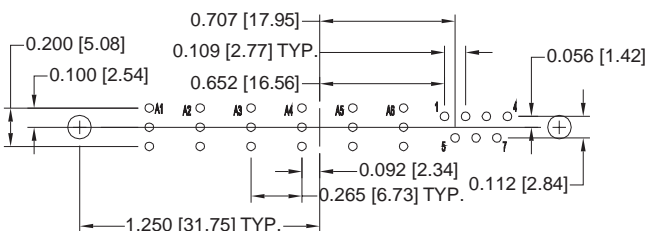
17W2



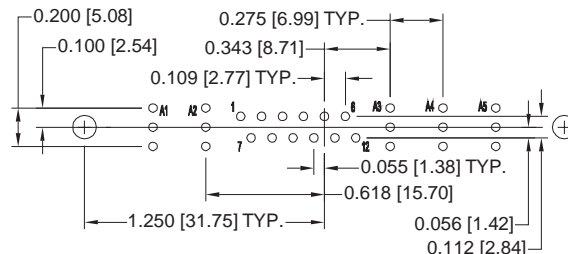
21W1



8W8



13W6



17W5

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 16



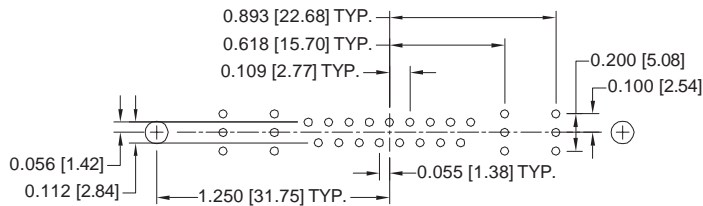
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO STANDARD DENSITY PCB MOUNT

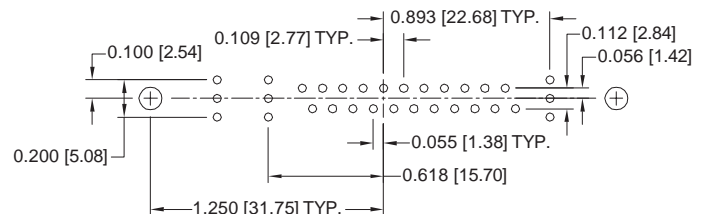
Combo-D
D-Sub

STRAIGHT PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FDS4201D AND MDS4201D SHIELDED CONTACTS

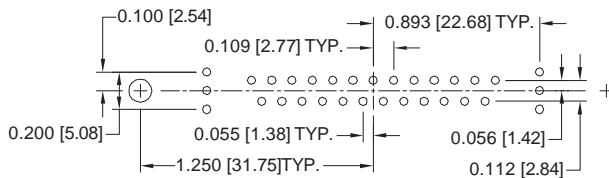
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.



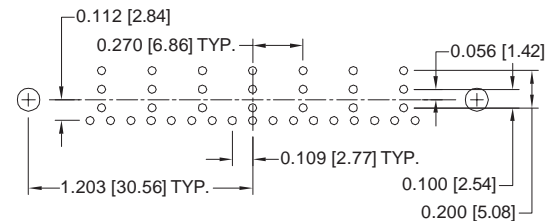
21WA4



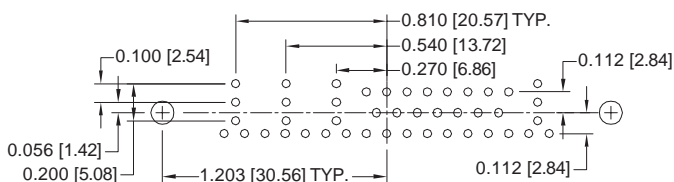
25W3



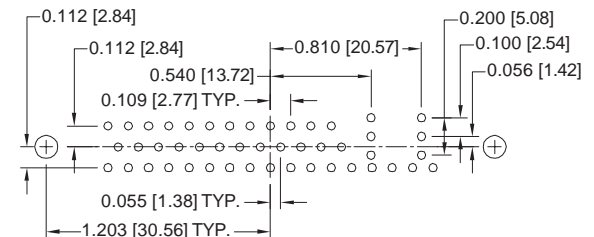
27W2



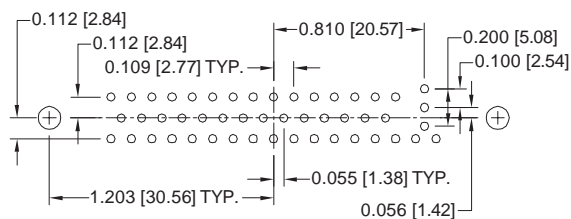
24W7



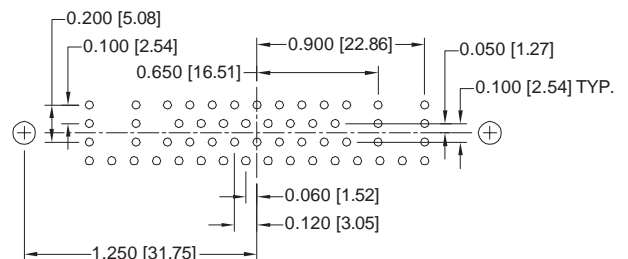
36W4



43W2



47W1



46W4

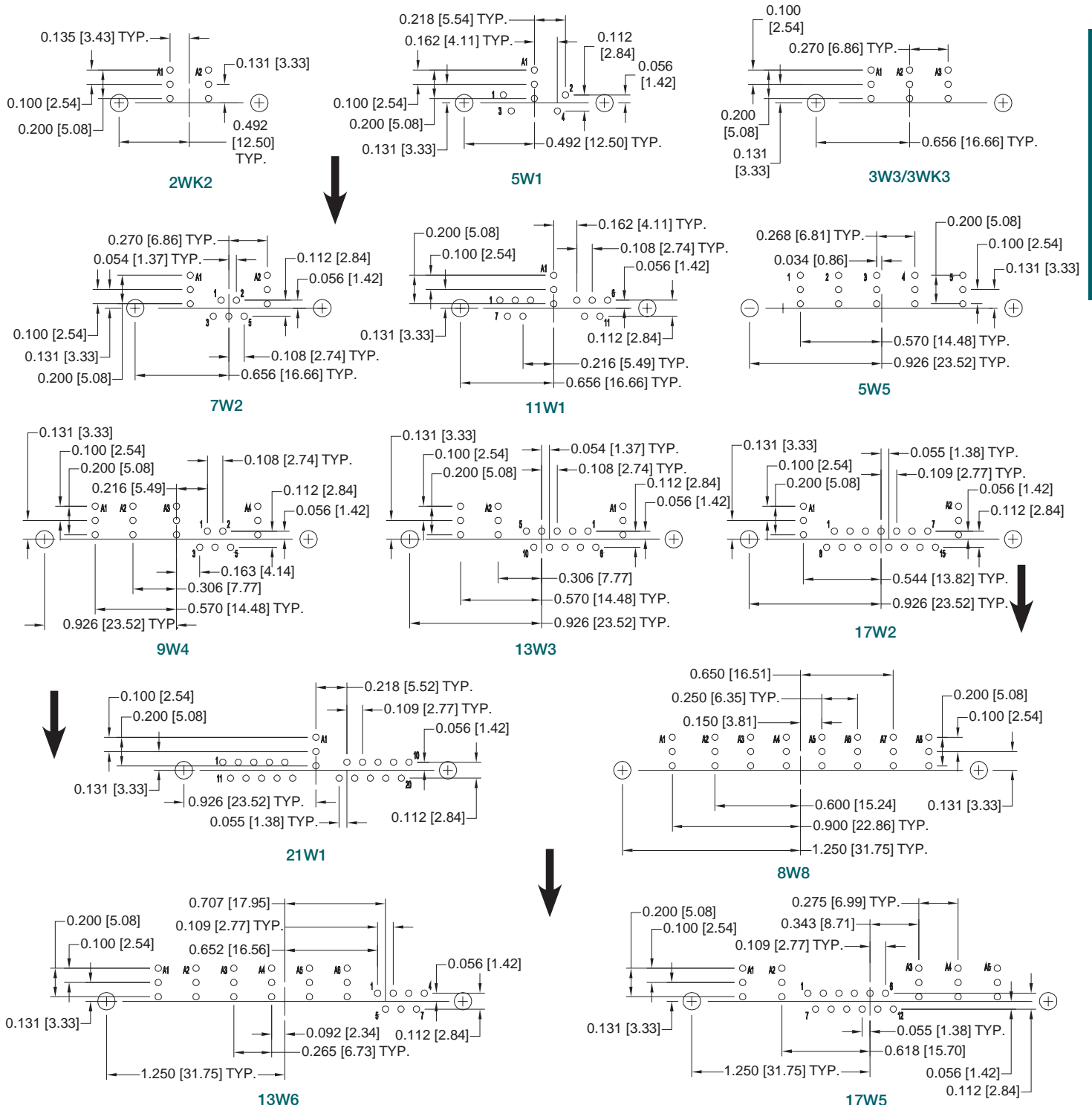
SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.

Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FRT4201D AND MRT4201D SHIELDED CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 18



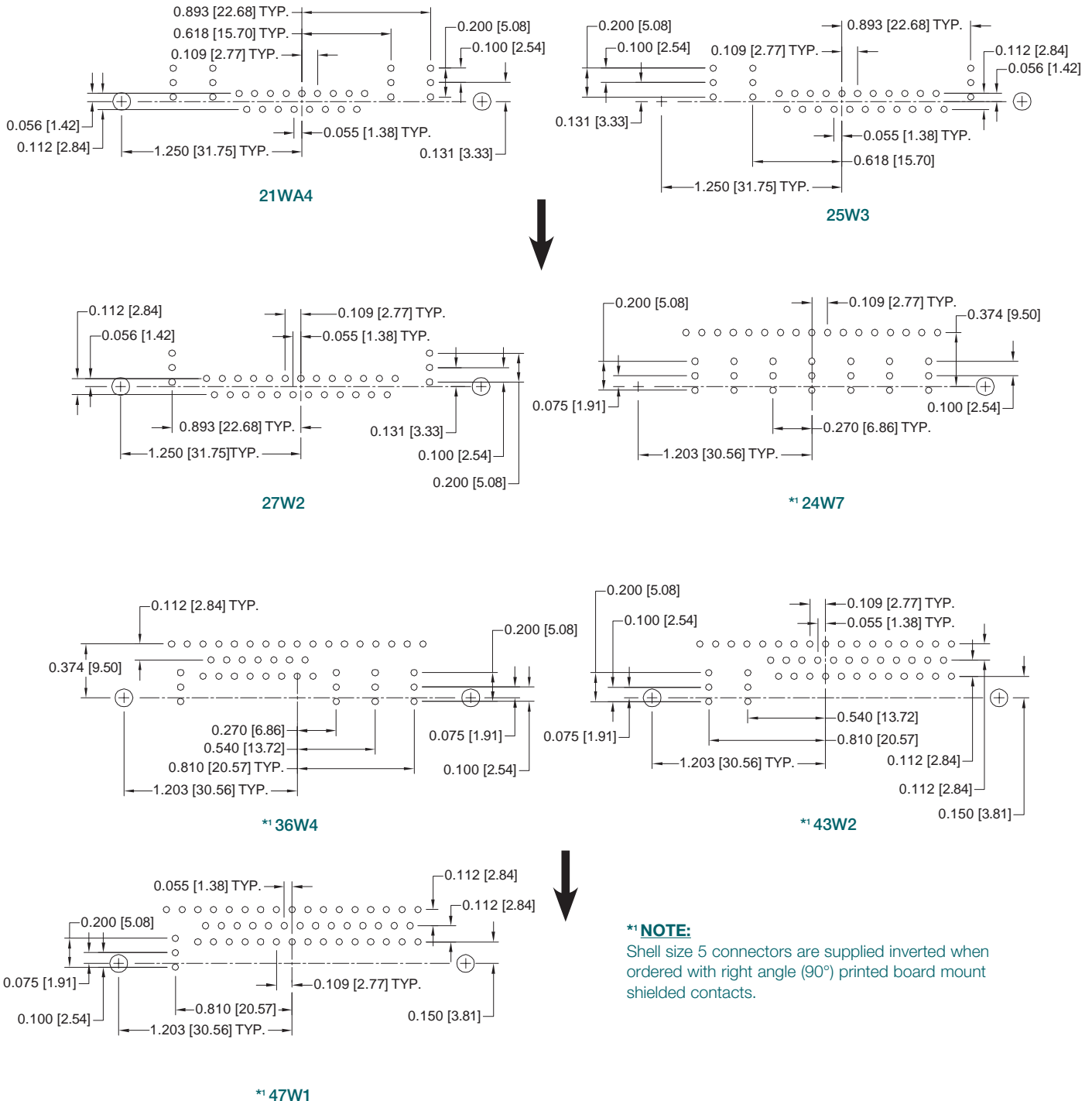
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FRT4201D AND MRT4201D SHIELDED CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

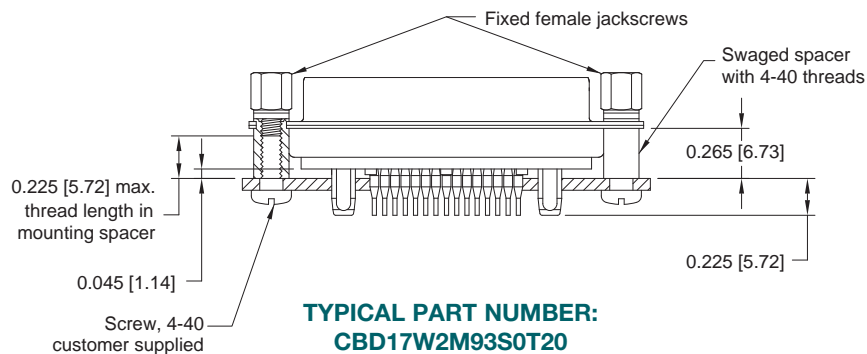


SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

COMPLIANT PRESS-FIT CONNECTOR CODE 93

Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board.



SUGGESTED PRINTED BOARD HOLE SIZES:

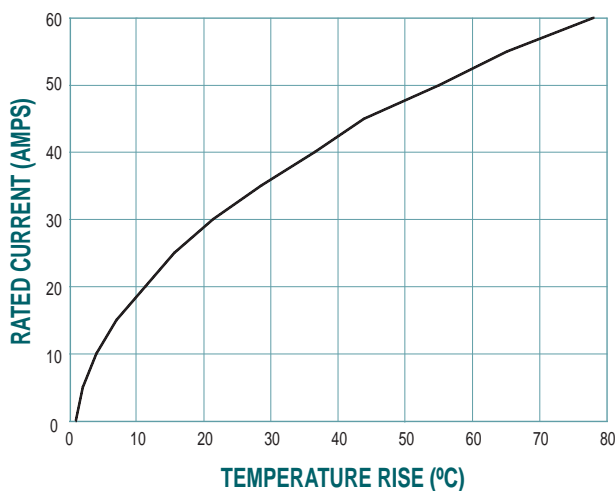
Suggest 0.123 [3.12] Ø hole for connector mounting holes.

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 85.

For press-fit connector installation tools, see page 86.

FOR STRAIGHT PRINTED BOARD
CONTACT HOLE PATTERNS,
SEE PAGES 11 AND 12.

TEMPERATURE RISE CURVE



Test conducted in accordance with UL1977.

All power contacts under load.

Curve developed using CBD8W8M00000 and CBD8W8F93S000 connectors with MC4008D contacts terminated to 8 AWG wire.



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY

THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO

STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	CBD	17W2	F	55	R7	N	T2	X	/AA	-14

STEP 1 - BASIC SERIES

CBD – Professional/Industrial Quality, see Step 3.
CBM – Military conformance with "closed entry" female signal contacts plated 0.000050 [1.27μ] gold over nickel plate. Choose "S" or "M" in Step 3.

STEP 2 - CONNECTOR VARIANTS

Shell Size 1 - 2WK2, 5W1
Shell Size 2 - 3W3, 3WK3, 7W2, 11W1
Shell Size 3 - 5W5, 9W4, 13W3, 17W2, 21W1
Shell Size 4 - 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2
Shell Size 5 - 24W7, 36W4, 43W2, 47W1
Shell Size 6 - 46W4

STEP 3 - CONNECTOR GENDER

F - Female - Professional Level - Open Entry Signal Contacts
M - Male
S - Female - Industrial / Military Level - PosiBand Closed Entry Signal Contacts

STEP 4 - CONTACT TERMINATION TYPE

- 0 – Connector ordered without size 8 power, shielded, air or high voltage removable contacts. See pages 60-88 for contact part numbers. Available on 2WK2, 3W3, 3WK3, 5W5 and 8W8.
- 2 – Fixed Solder Cup, Signal Contacts only.
- 3 – Solder, Straight Printed Board Mount with Signal Contacts, 0.170 [4.32] Tail Length.
- 35 – Solder, Straight Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.170 [4.32] Tail Length.
- 36 – Solder, Straight Printed Board Mount with Signal and 0.094 [2.39] Ø Power Contacts, 0.170 [4.32] Tail Length.
- 37 – Solder, Straight Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.170 [4.32] Tail Length.
- 5 – Solder, Right Angle (90°) Printed Board Mount with Signal Contacts only, 0.283 [7.19] Signal Contact Extension.
- 55 – Solder, Right Angle (90°) Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.283 [7.19] Signal Contact Extension.
- 57 – Solder, Right Angle (90°) Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.283 [7.19] Signal Contact Extension.
- 65 – Solder, Straight Printed Board Mount with Signal and Shielded Contacts MDS/FDS 4201D footprint, 0.170 [4.32] Signal Contact Tail Length.
- 7 – Solder, Metric System Right Angle (90°) Printed Board Mount with Signal Contacts only, 0.370 [9.40] Signal Contact Extension.
- 75 – Solder, Metric System Right Angle (90°) Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.370 [9.40] Signal Contact Extension.
- 77 – Solder, Metric System Right Angle (90°) Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.370 [9.40] Signal Contact Extension.
- *1 85 – Solder, Right Angle (90°) Printed Board Mount with Signal and Shielded Contacts MRT/FRT 4201D footprint, 0.283 [7.19] Signal Contact Extension.
- 93 – Size 20 Omega type compliant and Size 8 Bi-Spring type compliant, termination length 0.225 [5.72].

NOTES

- *1 Not available on shell size 6, CBD 46W4.
- *2 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog.
- *3 When using G hood with CBD variants, use the extended height hood. See Accessory Catalog for extended G hood options.
- *4 For stainless steel dimpled male versions, contact Technical Sales.
- *5 Not available when using 2WK2, 3W3, 3WK3, 5W5, 8W8, instead use B, R, R3, R4, or R5.

DIMENSIONS ARE IN INCHES [MILLIMETERS].

21 ALL DIMENSIONS ARE SUBJECT TO CHANGE.

*2 STEP 10 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.

CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING:

Other Special Requirements.
Straight / Right Angle Thermocouple PCB mount contacts.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBD17W2F55R7NT2X

STEP 8 - SHELL OPTIONS

- 0 – Zinc Plated, with Chromate Seal.
- *4 S – Stainless Steel, passivated.
- X – Tin Plated.
- Z – Tin Plated and Dimpled (male connectors only).

*2 STEP 7 - LOCKING AND POLARIZING SYSTEMS

- 0 – None.
- V3 – Lock Tab, connector front panel mounted.
- V5 – Lock Tab, connector rear panel mounted.
- VL – Lock Lever, used with Hoods only.
- T – Fixed Female Jackscrews.
- T2 – Fixed Female Jackscrews.
- T6 – Fixed Male and Female Polarized Jackscrews.
- E – Rotating Male Jackscrews.
- E2 – Rotating Male Screw Locks.
- E3 – Rotating Male with Internal Hex for 3/32 Hex Drives
- E6 – Rotating Male and Female Polarized Jackscrews.

*2 STEP 6 - HOODS AND PUSH-ON FASTENERS

- 0 – None
- AN – Lightweight Aluminum Hood, nickel finish.
- AC – Lightweight Aluminum Hood, no finish.
- Z – Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating male jackscrews, shell sizes 1 through 5
- H – Hood, Top Opening, Metal, shell sizes 2 through 5
- *3 G – Hood, EMI/RFI, Die Cast Zinc, shell sizes 1 through 6
- N – Push-on Fastener, for Right Angle (90°) Mounting Brackets

*2 STEP 5 - MOUNTING STYLE

- 0 – Mounting Hole, 0.120 [3.05] Ø
- 02 – Mounting Hole, 0.154 [3.91] Ø
- *5 B3 – Bracket, Mounting, Right Angle (90°) Metal with Cross Bar
- *5 B8 – Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar
- F – Float Mounts, Universal
- P – Threaded Post, Brass, 0.250 [6.35] Length
- P2 – Threaded Post, Nylon, 0.250 [6.35] Length
- *5 R2 – Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar
- *5 R6 – Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar
- *5 R7 – Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar
- *5 R8 – Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar
- S – Swaged Spacer, 4-40 Threads, 0.250 [6.35] Length, Spacer length changes to 0.265 [6.73] when used in conjunction with Code 93 contacts
- S2 – Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length
- S5 – Swaged Locknut, 4-40 Threads
- S6 – Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.250 [6.35] Length

Size 20 Removable Signal and
Thermocouple Crimp Contacts

Size 8 Removable Power, Shielded,
Air and High Voltage Contacts

DSCC 85039

IEC 60807-3

UL Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication UL File #E140980



CBC series connectors offer professional, industrial and military performance levels. Connectors are designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. CBC series connectors offer mixed crimp-removable contact combinations of power, shielded, air, high voltage, signal, and thermocouple contacts within the same connector body. Refer to size 8 removable contacts power, shielded, air and high voltage section, pages 68-80 for technical characteristics. Sixteen connector variants are offered in six standard shell sizes.

A wide assortment of cable support hoods and locking systems is available from stock.

CBC series connectors also offer a Blind Mating connector system for applications requiring connector couplings in recessed areas or for mobile power coupling systems.

CBC series connectors utilize precision machined contacts and they meet the applicable performance and dimensional requirements of IEC 60807-3, Performance Levels One and Two, DSCC 85039 and MIL-DTL-24308.

Connectors Designed To Customer Specifications

Positronic Combo-D connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO STANDARD DENSITY CRIMP REMOVABLE CONTACTS

Combo-D
D-Sub

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927, UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
<u>SIGNAL:</u>	Gold flash over nickel plate and gold 0.000050 [1.27μ] over nickel plate. Other finishes available upon request, see page 81.
<u>POWER:</u>	Gold flash over nickel. Other finishes available upon request, see page 81.
<u>SHIELDED:</u>	For contact platings, see page 68.
<u>HIGH VOLTAGE:</u>	For contact platings, see page 68.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Nylon; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic UL94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Signal Contacts, Crimp Removable:	Size 20 contacts, male – 0.040 inch [1.02mm] mating diameter; Female rugged open entry or PosiBand closed entry contact design, see page 69 for details.
Contact Retention In Insulator:	Signal: 9 lbs. [40N]. Power, shielded and high voltage: 22 lbs. [98N]
Crimp Contact Terminations:	Closed barrel crimp, wire sizes 18 AWG [1.0mm ²] through 30 AWG [0.05 mm ²]
Power Contacts, Removable, Crimp or Solder Termination:	Size 8 contacts, male – 0.142 inch [3.61mm] mating diameter. Terminations for 6, 8, 10, 12, and 16 AWG. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Closed crimp barrel.
Shielded Contacts, Removable:	See table of cable sizes for contact termination dimensions, page 78.
High Voltage Contacts:	Straight and right angle (90°) terminations – 0.041 inch [1.04mm] min. hole diameter.

Shells:

Male shells may be dimpled for EMI/ESD ground paths.

Polarization:

Trapezoidally shaped shells and polarized jackscrews.

Locking Systems:

Jackscrews and vibration locking systems.

Mechanical Operations:

500 operations for open entry contact, 1000 operations for PosiBand closed entry contact with 0.000050 [1.27μ] gold plating. Per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

For electrical characteristics, see page 4.

SHIELDED CONTACTS

For electrical characteristics, see page 69.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 69.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 [1.0mm] minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

THERMOCOUPLE CONTACTS:

Size 20 crimp contacts are available. See page 74 for details.

PCB mount contacts are available in CBD/CBM series, see page 4 for details.



**CBC11W1M10Z00
WITH MS4012D CONTACT**

**CBC11W1S100T20
WITH FC4008D CONTACT**

*1 CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

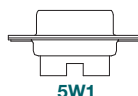
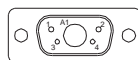
NOTES:

*1 Additional contact variants may be tooled at customer request.

*2 13W6 and 27W2 variant currently available in female only. Contact Technical Sales for availability of male connector.

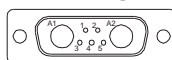
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

— SHELL SIZE 1 —

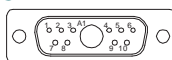


5W1

— SHELL SIZE 2 —

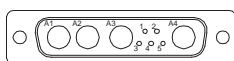


7W2

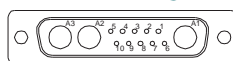


11W1

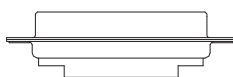
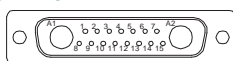
— SHELL SIZE 3 —



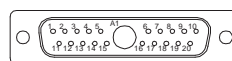
9W4



13W3

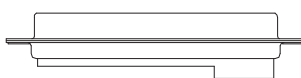
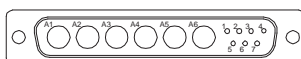


17W2

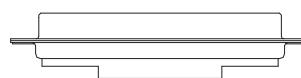
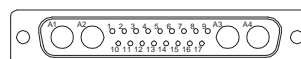


21W1

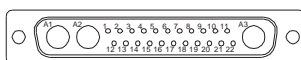
— SHELL SIZE 4 —



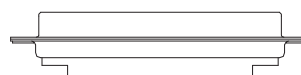
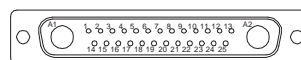
*2 13W6



21WA4

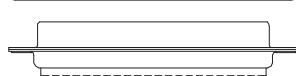
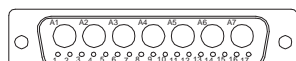


25W3

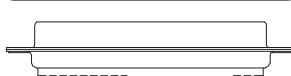


*2 27W2

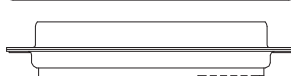
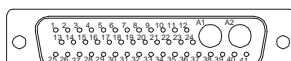
— SHELL SIZE 5 —



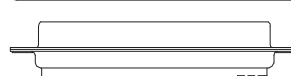
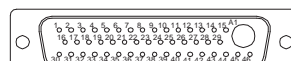
24W7



36W4

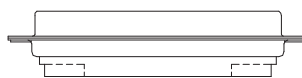
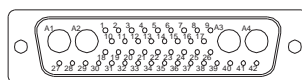


43W2



47W1

— SHELL SIZE 6 —



46W4

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY CRIMP REMOVABLE CONTACTS

Combo-D
D-Sub

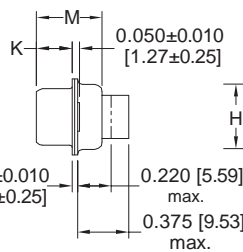
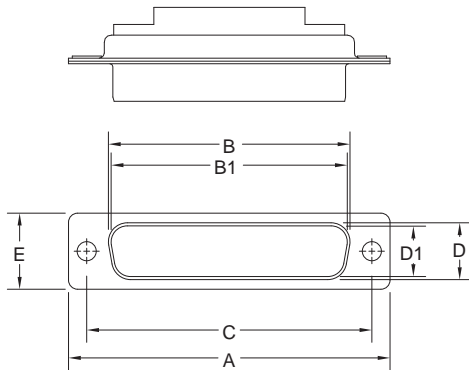
STANDARD SHELL ASSEMBLY



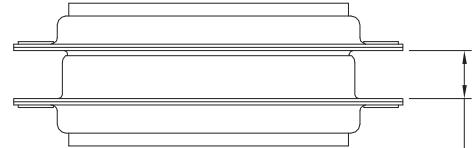
CBC7W2S00000

CBC17W2M00000

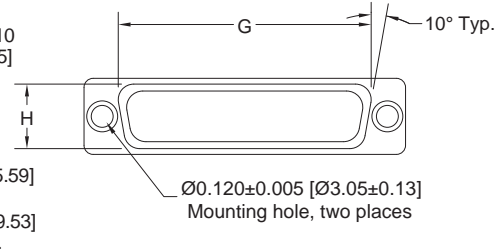
TYPICAL CONNECTOR TOP VIEW



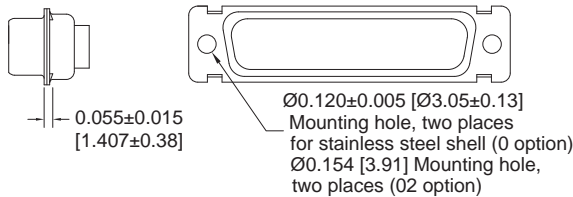
RECOMMENDED MATING DIMENSIONS



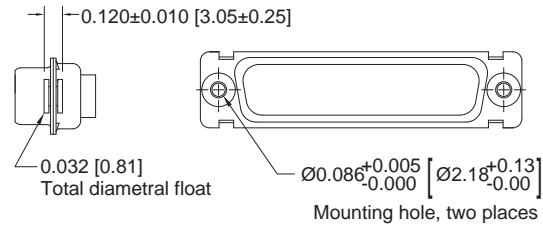
Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]



OPTIONAL SHELL ASSEMBLY (0, 02)



**OPTIONAL SHELL ASSEMBLY
WITH UNIVERSAL FLOAT MOUNTS (F)**



SHELL SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
SHELL SIZE 1 MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SHELL SIZE 1 FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 2 MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
SHELL SIZE 2 FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 3 MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 3 FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 4 MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 4 FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 5 MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 5 FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
SHELL SIZE 6 MALE	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
SHELL SIZE 6 FEMALE	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

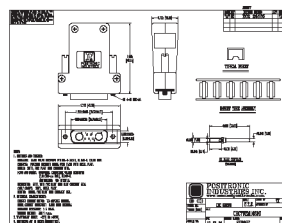
STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	CBC	7W2	M	1	0	Z	0	0	/AA	-14
STEP 1 - BASIC SERIES CBC Series										*2 STEP 10 - SPECIAL OPTIONS FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.
STEP 2 - CONNECTOR VARIANTS Shell Size 1 5W1 Shell Size 2 7W2, 11W1 Shell Size 3 9W4, 13W3, 17W2, 21W1 Shell Size 4 *113W6, 21WA4, 25W3, *127W2 Shell Size 5 24W7, 36W4, 43W2, 47W1 Shell Size 6 46W4										STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBC7W2M10Z00
STEP 3 - CONNECTOR GENDER M - Male S - Female - Industrial or Military Level PosiBand Closed Entry Signal Contacts Professional Level female open entry contacts are available and can be ordered separately, see page 73.										STEP 8 - SHELL OPTIONS 0 - Zinc Plated, with Chromate Seal. *4 S - Stainless Steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only)
STEP 4 - CONTACT TERMINATION TYPE 0 - Connector ordered without contacts. Order signal, power, shielded, high voltage, air and thermocouple contacts separately. See pages 68-80 for contact part numbers. 1 - Signal contacts, 20 AWG-24 AWG [0.5mm ² -0.25mm ²]. 11 - Signal contacts, 20 AWG-24 AWG [0.5mm ² -0.25mm ²] with MC/FC 4012D Power Contact. 12 - Signal contacts, 20 AWG-24 AWG [0.5mm ² -0.25mm ²] with MC/FC 4016D power contact. 13 - Signal contacts, 20 AWG-24 AWG [0.5mm ² -0.25mm ²] with MCC/FCC 4101D shielded contacts. 14 - Signal contacts, 20 AWG-24 AWG [0.5mm ² -0.25mm ²] with MCC/FCC 4102D shielded contacts.										*2 STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with Internal Hex for 3/32 Hex Drives E6 - Rotating Male and Female Polarized Jackscrews.
*2 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø 02 - Mounting Hole, 0.154 [3.91] Ø F - Float Mounts, Universal S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length S5 - Swaged Locknut, 4-40 Threads										*2 STEP 6 - HOODS 0 - None H - Hood, Top Opening, Metal, shell sizes 2 through 5 AN - Lightweight Aluminum Hood, nickel finish. AC - Lightweight Aluminum Hood, no finish. *3 G - Hood, EMI/RFI, Die Cast Zinc, shell sizes 1 through 6 Z - Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating jackscrews, shell sizes 1 through 5

NOTES

- *1 Connector variant 13W6 and 27W2 are currently available in female only, contact Technical Sales for availability of male connector.
- *2 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog.
- *3 When using G hood with CBC variants, use the extended height hood. See Accessories Catalog for extended G hood options.
- *4 For stainless steel dimpled male versions, contact Technical Sales.

For crimping information and crimp tools, see Application Tools section, page 82.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY

THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO

HIGH DENSITY PCB MOUNT

Combo-D
D-Sub

**Size 22 Fixed Signal and
Thermocouple Contacts**

Size 16 Fixed Power Contacts

**Size 8 Removable Power, Shielded,
Air and High Voltage Contacts**

**UL and CSA Recognition,
for status contact Technical Sales**



Positronic's Combo-D connectors are a popular choice for a wide variety of applications. Many options make the Combo-D a versatile connector choice.

CBDD high density series connectors are quality connectors recommended for use in sheltered, non-corrosive indoor and outdoor environments having normal ventilation, but without temperature or humidity controls.

CBDD series connectors offer mixed contact combinations of power, signal, and thermocouple contacts within the same connector body.

CBDD series connectors utilize precision machined contacts offering high reliability. Connector variants are available with straight and right angle (90°) printed board mount terminations, including compliant press-fit. For cable connectors see CBCD section, page 39.

Female power contacts feature the Large Surface Area (L.S.A.)

closed entry contact design, which provides maximum mating surfaces between male and female contacts and reduced contact resistance during operation.

Fixed signal contacts are available with open entry female contacts, professional level or PosiBand closed entry female contacts, industrial level. Military contact plating is optional.

A wide assortment of printed board mounting hardware, cable support hoods, and locking systems is available from stock.

A blind mating system is available for applications requiring connector coupling in recessed areas or mobile power coupling systems.

Straight and right angle PCB mount thermocouple contacts are available, please contact Technical Sales for details.

CBDD series connectors utilize precision machined contacts and meet applicable performance and dimensional requirements of IEC 60807-7, MIL-DTL-24308 and AS39029.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	
SIGNAL:	Gold flash over nickel plate. Other finishes available upon request, see page 81.
POWER:	Gold flash over nickel. Other finishes available upon request, see page 81.
SHIELDED:	For contact platings, see page 68.
HIGH VOLTAGE:	For contact platings, see page 68.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; polyester; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Push-On Fasteners:	Phosphor bronze and beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Signal Contacts,	
Fixed:	Size 22 contacts, male – 0.030 inch [0.76mm] mating diameter. Female – open entry or PosiBand closed entry design, see page 69 for details.
Power Contacts,	
Fixed:	Size 16 contacts, male – 0.0625 inch [1.588mm] mating diameter. Female contacts - closed entry design. Size 8 contacts, male - 0.142 inch [3.61mm] mating diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Closed crimp barrel.
Contact Retention in Insulator:	
SIGNAL SIZE 22	5 lbs. [21N] minimum
POWER SIZE 16	6 lbs [26N] minimum
SIZE 8	22 lbs [98N] for power, shielded and high voltage.
Resistance to Solder Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6.
Signal Contact Terminations:	Solder contacts - 0.035 inch [0.89mm] minimum hole diameter for 22 AWG [0.3 mm ²] wire maximum.

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . . .

Power Contacts, Terminations:	Straight Printed Board Mount – 0.020 inch [0.51mm] diameter.
	Right Angle (90°) Printed Board Mount – 0.030 inch [0.76 mm] diameter.
Shielded Contacts, Removable:	Size 16 contacts- printed board terminations with 0.063 inch [1.60mm] diameters.
	Size 8 contacts - printed board terminations with 0.078 inch [1.98mm], 0.094 inch [2.39mm] and 0.125 inch [3.18mm] termination diameters.
High Voltage Contacts:	See table of cable sizes for contact termination dimensions, page 78.
Shells:	Straight and right angle (90°) terminations – 0.041 inch [1.04mm] minimum hole diameter.
Polarization:	Male shells may be dimpled for EMI/ESD ground paths.
Mounting to Angle Brackets:	Trapezoidally shaped shells and polarized jackscrews.
Mounting to Printed Board:	Jackscrews and riveted fasteners with 0.120 inch [3.05mm] diameter hole, and threaded riveted fasteners with 4-40 threads and nylon inserts.
Locking Systems:	Rapid installation push-on fasteners and threaded posts.
Mechanical Operations:	Jackscrews and vibration locking systems.
	Open entry, 500 operations. PosiBand closed entry, 1000 operations minimum. Per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 22 CONTACT

Contact Current Rating:	5 amperes nominal.
Initial Contact Resistance:	0.010 ohms maximum for open entry 0.005 ohms maximum for closed entry
Proof Voltage:	1000 V r.m.s.

SIZE 16 CONTACTS

POWER CONTACTS

Contact Current Rating - Tested per UL 1977:

Standard Contact Material: 28 amperes.

High Conductivity Contact Material: 40 amperes.

See Temperature Rise Curves on page 2 for details.

Initial Contact Resistance:

Standard Contact Material: 0.0016 ohms max. Per IEC 60512-2, Test 2b.

High Conductivity Contact Material: 0.001 ohms max. Per IEC 60512-2, Test 2b.
1000 V r.m.s.

Proof Voltage:

SIZE 8 CONTACTS

POWER CONTACTS

For electrical characteristics, see page 4.

SHIELDED CONTACTS

For electrical characteristics, see page 69.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 69.

CONNECTOR

Insulation Resistance: 5 G ohms.

Clearance and Creepage Distance: 0.042 inch [1.06mm] minimum.

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

Damp Heat, Steady State: 10 days.

THERMOCOUPLE CONTACTS:

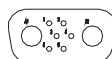
Straight and right angle PCB mount contacts are available, please contact Technical Sales for details.

Size 22 crimp contacts are available in CBDD series, see page 71 for details.

*1 CONTACT VARIANT

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

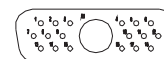
— SHELL SIZE 1 —



8W2

Six Size 22 Signal Contacts and
Two Size 16 Power Contacts

— SHELL SIZE 2 —



19W1

Eighteen Size 22 Signal Contacts
and One Size 8 Power Contact

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

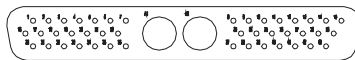
— SHELL SIZE 3 —



***2 15W4**

Eleven Size 22 Signal Contacts
and Four Size 8 Power Contacts

— SHELL SIZE 4 —



***3 45W2**

Forty-three Size 22 Signal Contacts
and Two Size 8 Power Contacts

NOTES:

*1 Additional contact variants may be tooled at customer request.

*2 For technical, dimensional and PCB layout information on 15W4 variants, contact Technical Sales.

*3 45W2 variant currently available in male only. Contact Technical Sales for availability of female connector.

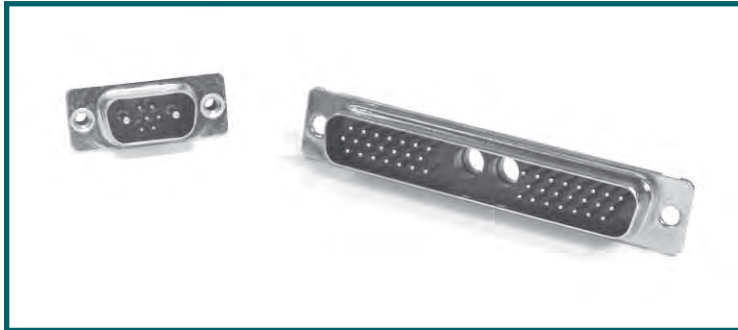


Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY PCB MOUNT

Combo-D
D-Sub

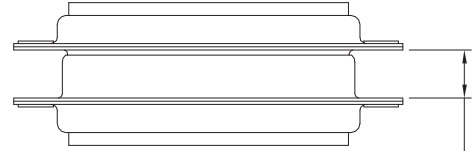
STANDARD SHELL ASSEMBLY



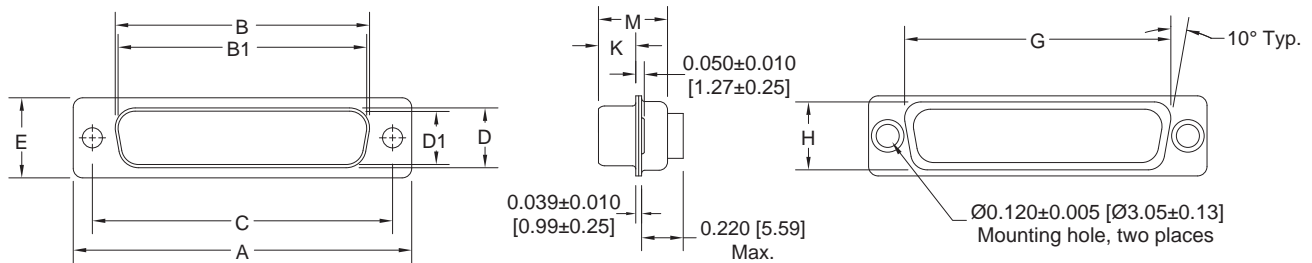
CBDD8W2M3S000

CBDD45W2M30000

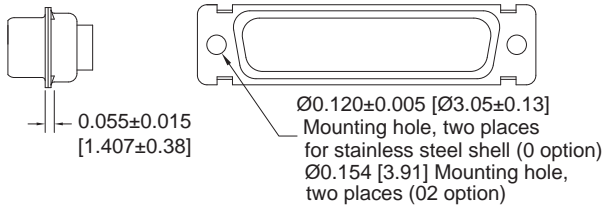
RECOMMENDED MATING DIMENSIONS



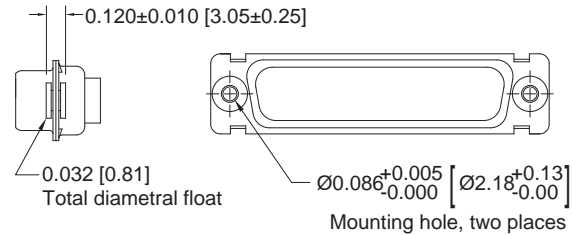
Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]



OPTIONAL SHELL ASSEMBLY (0, 02)

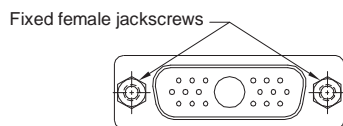
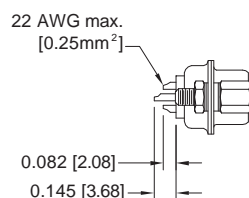


OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



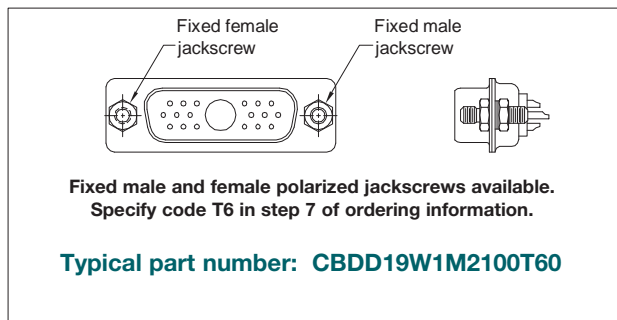
SHELL SIZES	VARIANT	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
1	8W2M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	8W2F	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
	8W2S											
2	19W1M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	19W1F	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
	19W1S											
4	45W2M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]

SOLDER CUP CONNECTOR CODE 21



For solder cup contacts, specify code 21 in step 4 of ordering information.

Typical part number: **CBDD19W1M2100T0**



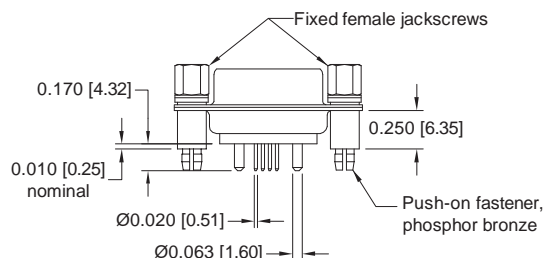
STRAIGHT PRINTED BOARD MOUNT CONNECTOR CODE 3, 35, 36, AND 37

CONTACT CODE	D Ø
3	-----

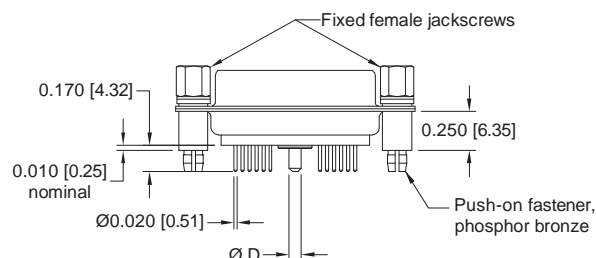
For straight printed board mount contacts, specify code 3 in step 4 of ordering information.

CONTACT CODE	D Ø
3	-----
35	0.078 [1.98]
36	0.094 [2.39]
37	0.125 [3.18]

For straight printed board mount contacts, specify code no. in step 4 of ordering information.



Typical part number: **CBDD8W2F3S60T2X**



Typical part number: **CBDD19W1F35S60T2X**



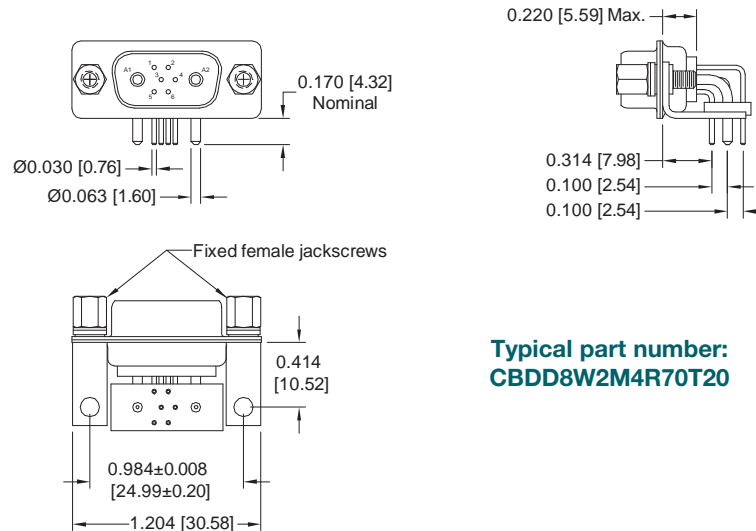
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY PCB MOUNT

Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
SIZE 16 POWER CONTACTS WITH 0.063 [1.60] Ø TERMINATIONS
CODE 4, 0.314 [7.98] CONTACT EXTENSION

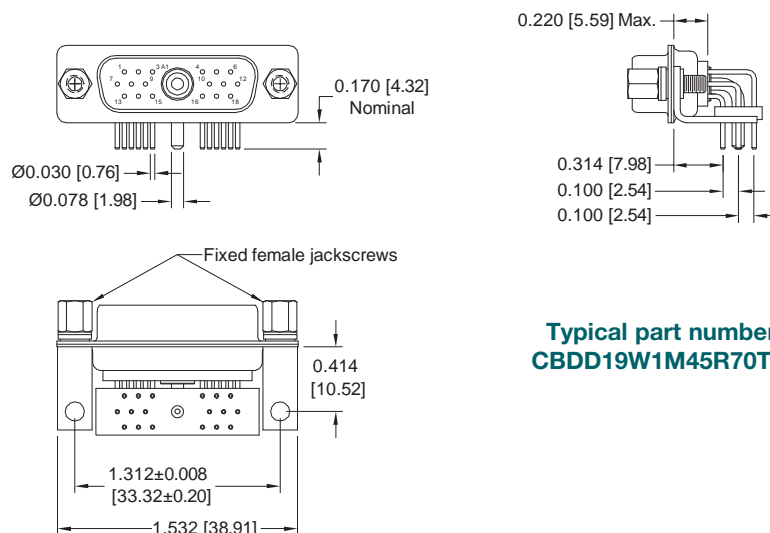
See temperature rise curves on pages 1 and 2



Typical part number:
CBDD8W2M4R70T20

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
SIZE 8 POWER CONTACTS WITH 0.078 [1.98] Ø TERMINATIONS
CODE 4 AND 45, 0.314 [7.98] CONTACT EXTENSION

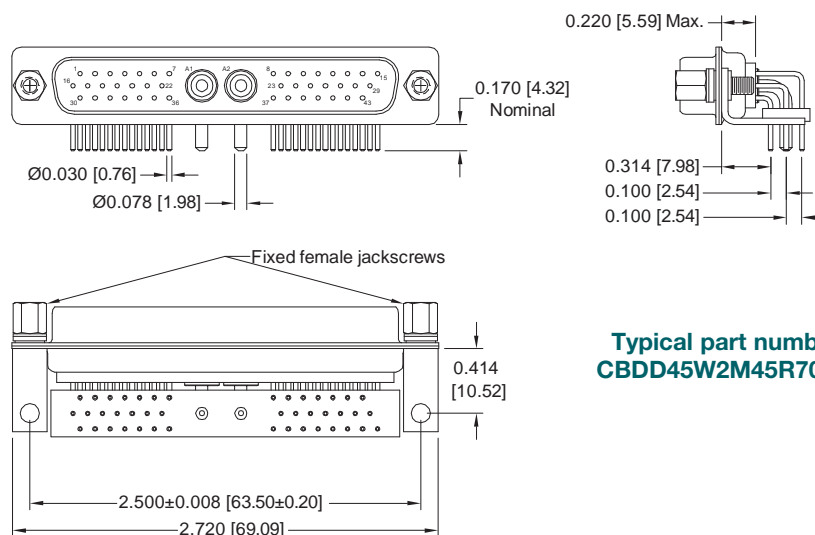
See temperature rise curves on pages 1 and 2



Typical part number:
CBDD19W1M45R70T20

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
SIZE 8 POWER CONTACTS WITH 0.078 [1.98] Ø TERMINATIONS
CODE 4 AND 45, 0.314 [7.98] CONTACT EXTENSION

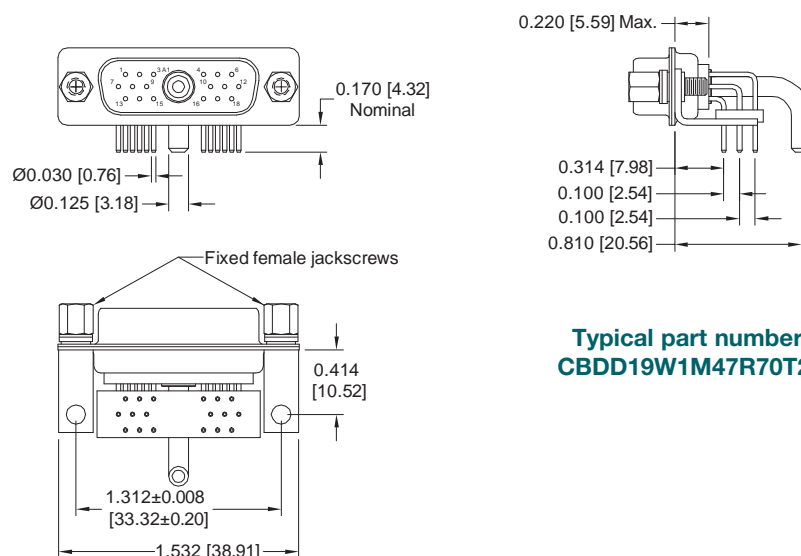
See temperature rise curves on pages 1 and 2



Typical part number:
CBDD45W2M45R70T20

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
SIZE 8 POWER CONTACTS WITH 0.125 [3.18] Ø TERMINATIONS
CODE 4 AND 47, 0.314 [7.98] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2



Typical part number:
CBDD19W1M47R70T20



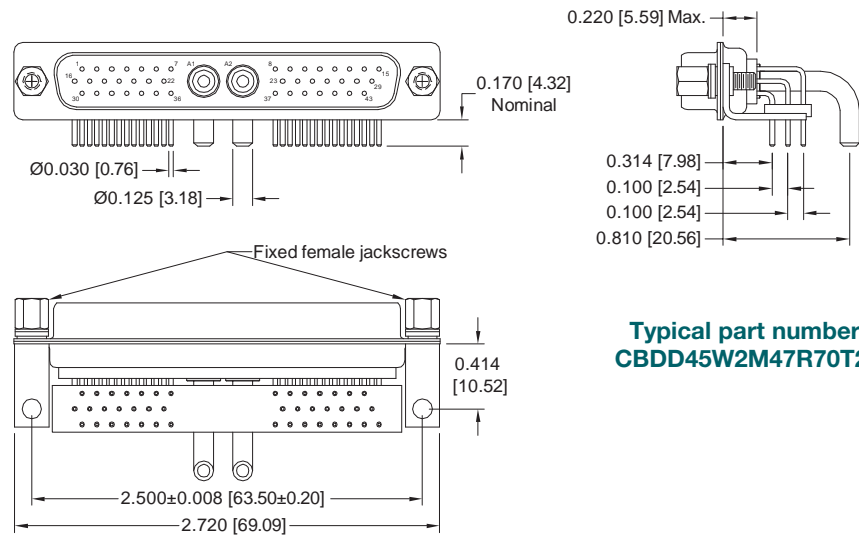
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY PCB MOUNT

Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
SIZE 8 POWER CONTACTS WITH 0.125 [3.18] Ø TERMINATIONS
CODE 4 AND 47, 0.314 [7.98] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2



Typical part number:
CBDD45W2M47R70T20

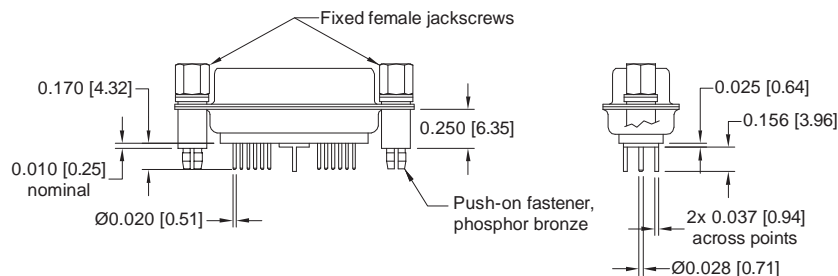
Connectors Designed To Customer Specifications

Positronic Combo-D connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.

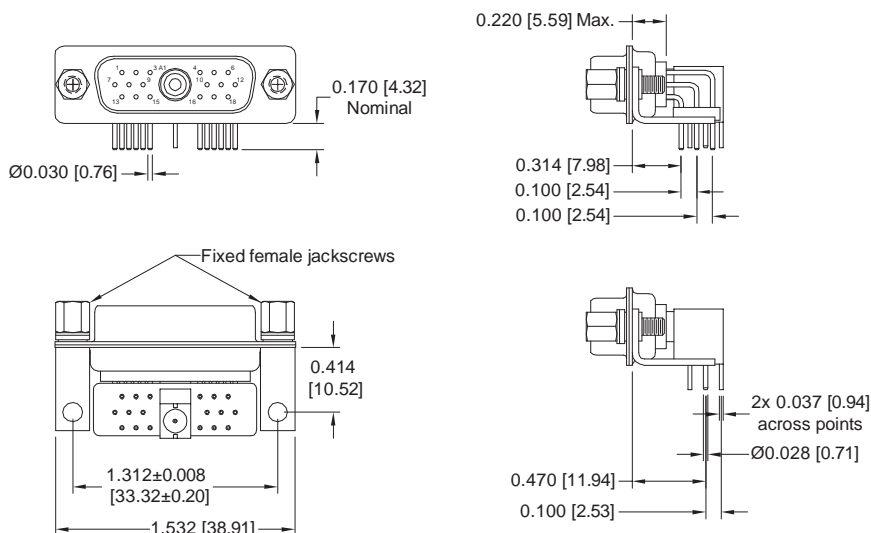
**STRAIGHT PRINTED BOARD MOUNT CONNECTOR
WITH FDS4201D OR MDS4201D SHIELDED CONTACTS
CODE 65**



Typical part number:
CBDD19W1M65S60T20

Shielded contacts only
visible this view for clarity

**RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH FRT4201D OR MRT4201D SHIELDED CONTACTS
CODE 84**



Typical part number:
CBDD19W1M84R70T20

Shielded contacts only
visible this view for clarity



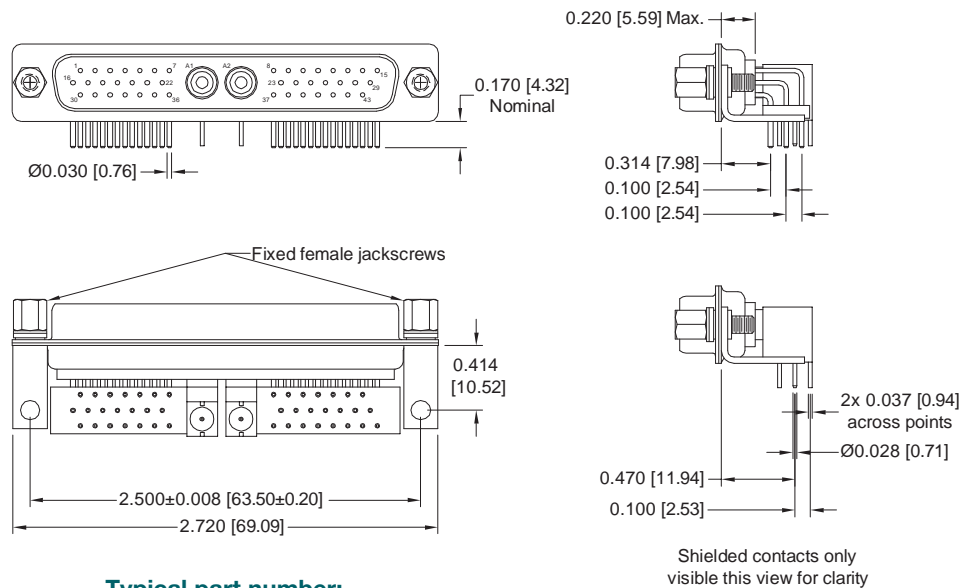
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY PCB MOUNT

Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR WITH FRT4201D OR MRT4201D SHIELDED CONTACTS

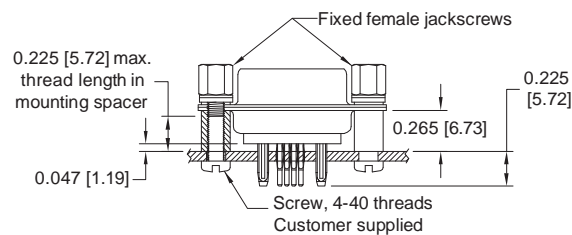
CODE 84



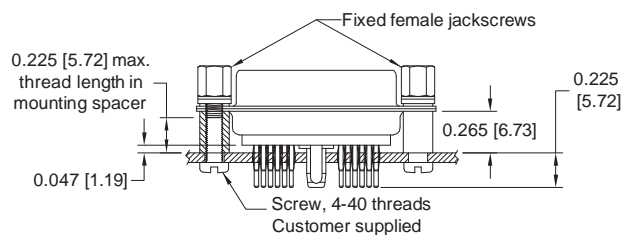
Typical part number:
CBDD45W2M84R70T20

COMPLIANT PRESS-FIT CONNECTOR CODE 93

Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board.



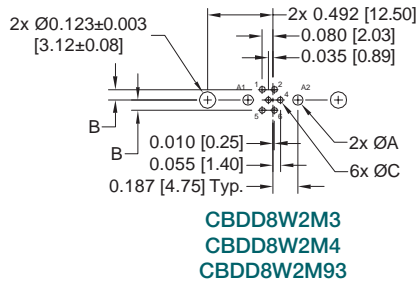
TYPICAL PART NUMBER: **CBDD8W2M93S0T20**



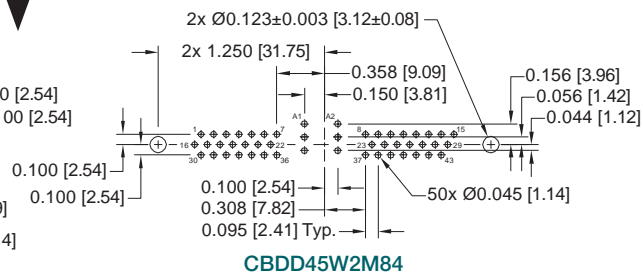
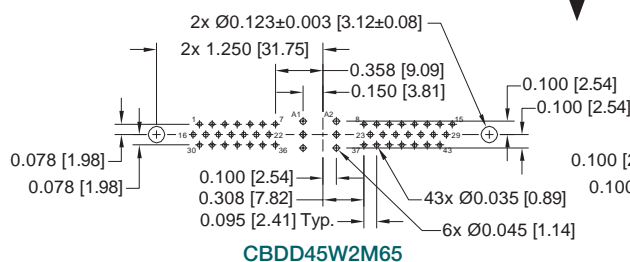
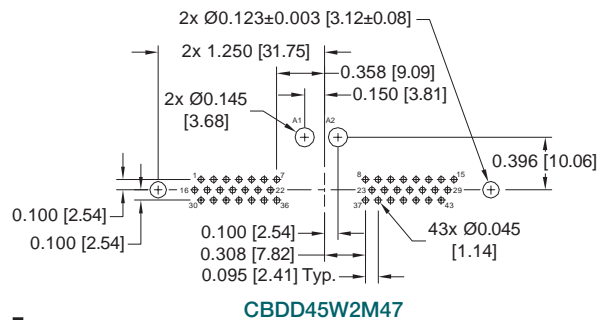
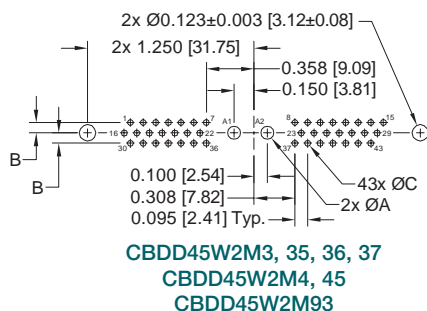
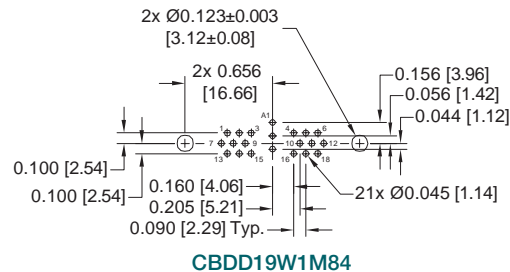
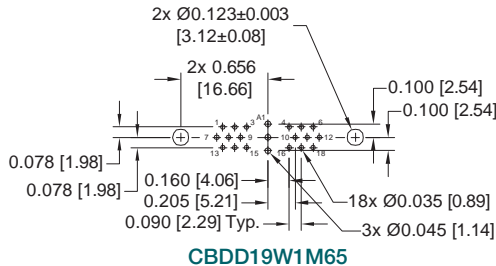
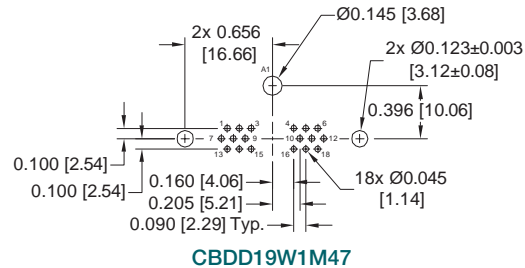
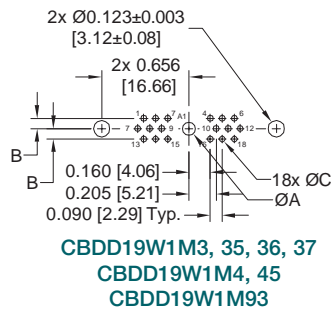
TYPICAL PART NUMBER: **CBDD19W1M93S0T20**

PRINTED BOARD MOUNT CONTACT HOLE PATTERN

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT RIGHT ANGLE (90°) CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED BOARD HOLE SIZES	VARIANT	CODE	ØA	B	ØC
	8W2	3	0.080 [2.03]	0.078 [1.98]	0.035 [0.89]
		4	0.080 [2.03]	0.100 [2.54]	0.045 [1.14]
		93	See chart for size 16 contact on page 85.	0.078 [1.98]	See chart for size 22 contact on page 85.
	19W1 AND 45W2	3, 35	0.098 [2.49]	0.078 [1.98]	0.035 [0.89]
		36	0.114 [2.90]		
		37	0.145 [3.68]		
		4, 45	0.098 [2.49]	0.100 [2.54]	0.045 [1.14]
		47	N/A	N/A	N/A
		65	N/A	N/A	N/A
		84	N/A	N/A	N/A
		93	See chart for size 8 contact on page 85.	0.078 [1.98]	See chart for size 22 contact on page 85.





Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY PCB MOUNT

Combo-D
D-Sub



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

FOR CONNECTORS
NOT INCLUDING SIZE 8 CONTACTS

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	CBDD	8W2	M	93	S	0	0	0	/AA	-14
<div> <div> STEP 1 - BASIC SERIES CBDD Series - CBHD Series - High Conductivity Power Contacts </div> <div> STEP 2 - CONNECTOR VARIANTS Shell Size 1 - 8W2 <i>See next page for ordering information for other shell size options.</i> </div> <div> STEP 3 - CONNECTOR GENDER *1 F - Female - Professional Level - Open Entry Signal Contacts M - Male *1 S - Female - Industrial / Military Level - PosiBand Closed Entry Signal Contacts </div> <div> STEP 4 - CONTACT TERMINATION TYPE *5 21 - Fixed Solder Cup, 22 AWG-30 AWG [0.3mm²-0.05mm²]. *5 3 - Solder, Straight Printed Board Mount, 0.170 [4.32] Tail length. *5 4 - Solder, Right Angle (90°) Printed Board Mount, 0.314 [7.98] Signal Contact Extension. 93 - Signal Omega type compliant and Power Bi-Spring type compliant, termination length 0.225 [5.72]. </div> <div> *2 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø 02 - Mounting Hole, 0.154 [3.91] Ø B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar F - Float Mounts, Universal P - Threaded Post, Brass, 0.250 [6.35] Length P2 - Threaded Post, Nylon, 0.250 [6.35] Length R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar S - Swaged Spacer, 4-40 Threads, 0.250 [6.35] Length, Spacer length changes to 0.265 [6.73] when used in conjunction with Code 93 contacts S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length S5 - Swaged Locknut, 4-40 Threads S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.250 [6.35] Length </div> <div> *2 STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None AN - Lightweight Aluminum Hood, nickel finish AC - Lightweight Aluminum Hood, no finish H - Hood, Top Opening, Metal *3 G - Hood, EMI/RFI, Die Cast Zinc N - Push-on Fastener, for Right Angle (90°) Mounting Brackets Z - Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating male jackscrews </div> <div> STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with Internal Hex for 3/32 Hex Drives E6 - Rotating Male and Female Polarized Jackscrews. </div> <div> STEP 8 - SHELL OPTIONS 0 - Zinc Plated, with Chromate Seal. *4 S - Stainless Steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only). </div> <div> *2 STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBDD8W2M93S000 </div> <div> *2 STEP 10 - SPECIAL OPTIONS FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81. CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING: Other Special Requirements. Straight and Right Angle Thermocouple PCB mount contacts </div> </div>										

NOTES

- *1 Power contacts are always supplied with "Closed Entry" female contacts.
- *2 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog.
- *3 When using G hood with CBDD variants, use the extended height hood. See Accessories Catalog for extended G hood options.
- *4 For stainless steel dimpled male versions, contact Technical Sales.
- *5 Size 16 power contact are included.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

FOR CONNECTORS INCLUDING SIZE 8 CONTACTS

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	CBDD	19W1	M	93	S	0	0	0	/AA	-14
<div> <div> STEP 1 - BASIC SERIES CBDD Series - CBHD Series - High Conductivity Power Contacts </div> <div> STEP 2 - CONNECTOR VARIANTS Shell Size 2 - 19W1 *6 Shell Size 3 - 15W4 *1 Shell Size 4 - 45W2 </div> <div> STEP 3 - CONNECTOR GENDER *2 F - Female - Professional Level - Open Entry Signal Contacts M - Male *2 S - Female - Industrial / Military Level - PosiBand Closed Entry Signal Contacts </div> <div> STEP 4 - CONTACT TERMINATION TYPE 21 - Fixed Solder Cup, 22 AWG-30 AWG [0.3mm²-0.05mm²]. 3 - Solder, Straight Printed Board Mount with Signal Contacts 0.170 [4.32] Tail Length. 35 - Solder, Straight Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.170 [4.32] Tail Length. 36 - Solder, Straight Printed Board Mount with Signal and 0.094 [2.39] Ø Power Contacts, 0.170 [4.32] Tail Length. 37 - Solder, Straight Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.170 [4.32] Tail Length. 4 - Solder, Right Angle (90°) Printed Board Mount with Signal Contacts, 0.314 [7.98] Signal Contact Extension. 45 - Solder, Right Angle (90°) Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.314 [7.98] Signal Contact Extension. 47 - Solder, Right Angle (90°) Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.314 [7.98] Signal Contact Extension. 65 - Solder, Straight Printed Board Mount with Signal and Shielded Contacts MDS/FDS 4201D footprint, 0.170 [4.32] Signal Contact Tail Length. 84 - Solder, Right Angle (90°) Printed Board Mount with Signal and Shielded Contacts MRT/FRT 4201D footprint, 0.314 [7.98] Signal Contact Extension. 93 - Signal Omega type termination and Power Bi-Spring type compliant, termination length 0.225 [5.72]. </div> <div> *3 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø 02 - Mounting Hole, 0.154 [3.91] Ø B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar F - Float Mounts, Universal P - Threaded Post, Brass, 0.250 [6.35] Length P2 - Threaded Post, Nylon, 0.250 [6.35] Length R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar S - Swaged Spacer, 4-40 Threads, 0.250 [6.35] Length, Spacer length changes to 0.265 [6.73] when used in conjunction with Code 93 contacts S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length S5 - Swaged Locknut, 4-40 Threads S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.250 [6.35] Length </div> </div>										
<div> <div> *3 STEP 10 - SPECIAL OPTIONS FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81. CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING: Other Special Requirements. Straight and Right Angle Thermocouple PCB mount contacts </div> <div> STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBDD8W2M93S000 </div> <div> STEP 8 - SHELL OPTIONS 0 - Zinc Plated, with Chromate Seal. *5 S - Stainless Steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only). </div> <div> *3 STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with Internal Hex for 3/32 Hex Drives E6 - Rotating Male and Female Polarized Jackscrews. </div> <div> *3 STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None AN - Lightweight Aluminum Hood, nickel finish AC - Lightweight Aluminum Hood, no finish H - Hood, Top Opening, Metal *4 G - Hood, EMI/RFI, Die Cast Zinc N - Push-on Fastener, for Right Angle (90°) Mounting Brackets Z - Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating male jackscrews </div> </div>										
NOTES *1 45W2 variant currently available in male only. *2 Power contacts are always supplied with "Closed Entry" female contacts. *3 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog. *4 When using G hood with CBDD variants, use the extended height hood. See Accessories Catalog for extended G hood options. *5 For stainless steel dimpled male versions, contact Technical Sales. *6 For technical, dimensional and PCB layout information on 15W4 variants, contact Technical Sales.										



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY CRIMP / SOLDER REMOVABLE CONTACTS

Combo-D
D-Sub

**Size 22 Removable Signal and
Thermocouple Crimp Contacts**

Size 16 Removable Power Contacts

**Size 8 Removable Power, Shielded,
Air and High Voltage Contacts**

**UL and CSA Recognition,
for status contact Technical Sales**



CBCD high density series connectors are quality connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. CBCD series connectors offer mixed crimp-removable contact combinations of power, signal, and thermocouple contacts within the same connector body.

A wide assortment of cable support hoods and locking systems is available from stock.

CBCD series connectors also offer a blind mating connector system for applications requiring connector couplings in recessed areas or for mobile power coupling systems.

CBCD series connectors utilize precision machined contacts and meet applicable performance and dimensional requirements of IEC 60807-7, MIL-DTL-24308 and AS39029.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	
<u>SIGNAL:</u>	Gold flash over nickel plate and gold 0.000050 [1.27µ] over nickel plate. Other finishes available upon request, see page 81.
<u>POWER:</u>	Gold flash over nickel. Other finishes available upon request, see page 81.
<u>SHIELDED:</u>	For contact platings, see page 68.
<u>HIGH VOLTAGE:</u>	For contact platings, see page 68.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers:	Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal. Aluminum; aluminum with electroless nickel plate. For aluminum hoods, zinc content is 1% maximum. Die cast zinc.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Signal Contacts,

Crimp Removable:

Size 22 contacts, male – 0.030 inch
[0.76mm] mating diameter. Terminations
for 20, 22, 24, 26, 28 and 30 AWG.
Female PosiBand closed entry design,
see page 69 for details. Closed crimp
barrel.

Power Contacts,

Crimp Removable:

Size 16 contacts, male – 0.0625
inch [1.588mm] mating diameter.
Terminations for 12, 14, 16, 18, 20,
22, and 24 AWG. Female closed entry
design. Closed crimp barrel.

Size 8 contacts, male – 0.142 inch
[3.61mm] mating diameter. Terminations
for 6, 8, 10, 12, and 16 AWG. Female
contact features Large Surface Area
(L.S.A.) closed entry contact design
utilizing BeCu mechanical retention
member. Closed crimp barrel.

Contact Retention In Insulator:

SIGNAL SIZE 22

POWER SIZE 16

POWER SIZE 8

9 lbs. [40N].

15 lbs. [67N]

22 lbs. [98N] - power, shielded and
high voltage.

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . .

MECHANICAL CHARACTERISTICS, continued:

Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	1000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 22 CONTACTS

Contact Current Rating:	5 amperes nominal.
Initial Contact Resistance:	0.005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 16 CONTACTS

POWER CONTACTS

Contact Current Rating - Tested per UL 1977:

Standard Contact Material:	28 amperes.
High Conductivity Contact Material:	40 amperes.

See Temperature Rise Curves on page 2 for details.

Initial Contact Resistance:

Standard Contact Material:	0.0016 ohms max. Per IEC 60512-2, Test 2b.
----------------------------	--

High Conductivity

Contact Material:	0.001 ohms max. Per IEC 60512-2, Test 2b.
-------------------	---

Proof Voltage:	1000 V r.m.s.
----------------	---------------

SIZE 8 CONTACTS

POWER CONTACTS

For electrical characteristics, see page 4.

SHIELDED CONTACTS

For electrical characteristics, see page 69.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 69.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.042 inch [1.06mm] minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

THERMOCOUPLE CONTACTS:

Size 22 crimp contacts are available. See page 71 for details.

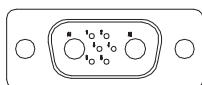
PCB mount contacts are available in CBDD series, see page 27 for details.

*1 CONTACT VARIANT

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

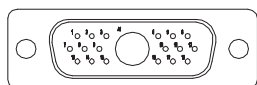
— SHELL SIZE 1 —



8W2

Six Size 22 Signal Contacts and
Two Size 16 Power Contacts

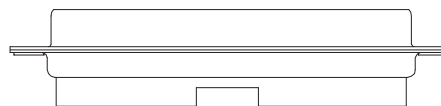
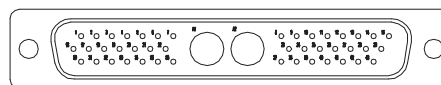
— SHELL SIZE 2 —



19W1

Eighteen Size 22 Signal Contacts
and One Size 8 Power Contact

— SHELL SIZE 4 —



***2 45W2**

Forty-three Size 22 Signal Contacts
and Two Size 8 Power Contacts

NOTES:

*1 Additional contact variants may be tooled at customer request.

*2 45W2 variant currently available in female only. Contact Technical Sales for availability of male connector.

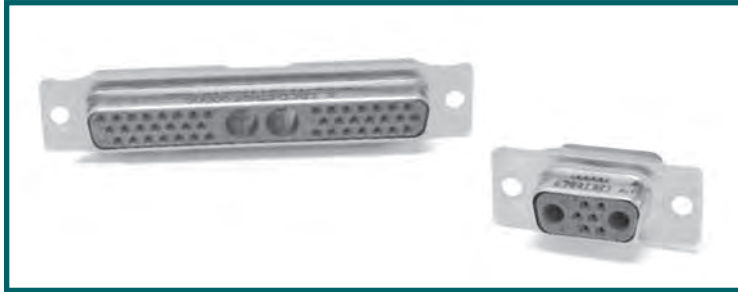


Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
HIGH DENSITY CRIMP / SOLDER REMOVABLE CONTACTS

Combo-D
D-Sub

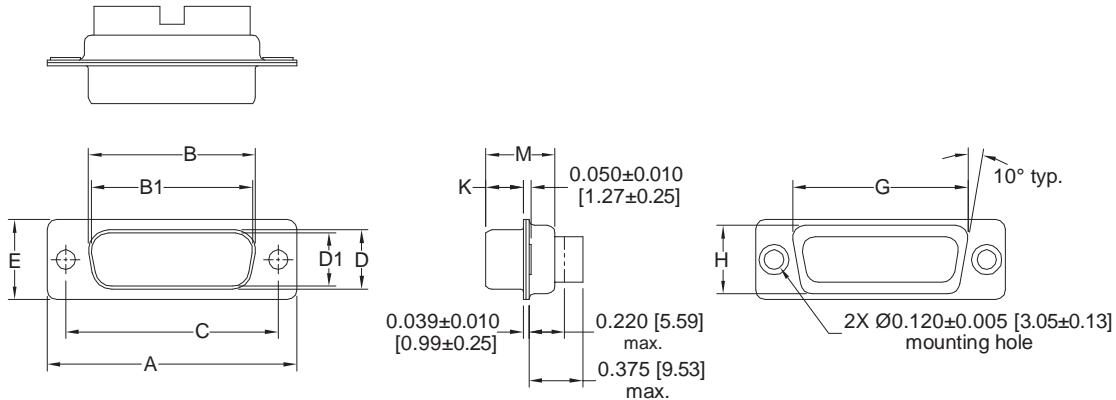
STANDARD SHELL ASSEMBLY



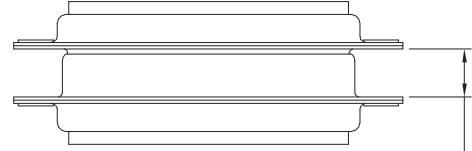
CBCD45W2S00000

CBCD8W2S00000

TYPICAL CONNECTOR TOP VIEW

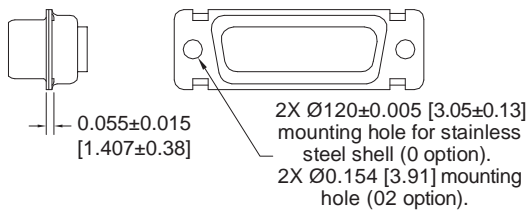


RECOMMENDED MATING DIMENSIONS

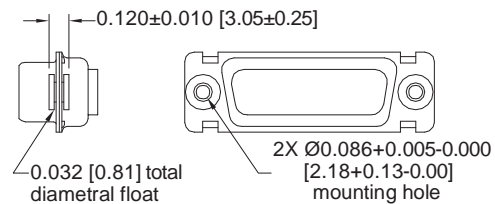


Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]

OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



SHELL SIZES	VARIANT	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
1	8W2M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	8W2S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
2	19W1M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	19W1S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
4	45W2S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]

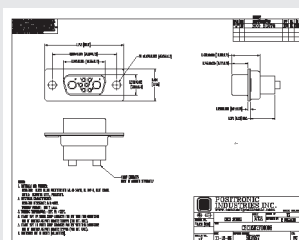
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	CBCD	8W2	S	0	0	0	0	S	/AA	-14
STEP 1 - BASIC SERIES CBCD Series										*3 STEP 10 - SPECIAL OPTIONS FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.
STEP 2 - CONNECTOR VARIANTS Shell Size 1 - 8W2 Shell Size 2 - 19W1 *1 Shell Size 4 - 45W2										STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBCD8W2S0000S
STEP 3 - CONNECTOR GENDER M - Male S - Female - PosiBand Closed Entry Signal Contacts										STEP 8 - SHELL OPTIONS 0 - Zinc Plated, with Chromate Seal. *5 S - Stainless Steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only).
STEP 4 - CONTACT TERMINATION TYPE 0 - Connector ordered without contacts. Order signal, power, thermocouple, shielded, high voltage or air contacts separately. See pages 68-80 for contact part numbers. 1 - Signal contacts, 22 AWG-30 AWG [0.03mm ² -0.05mm ²]. *2 11 - Signal contacts, 22 AWG-30 AWG [0.03mm ² -0.05mm ²] with MC/FC 4012D power contact. *2 12 - Signal contacts, 22 AWG-30 AWG [0.03mm ² -0.05mm ²] with MC/FC 4016D power contact. *2 13 - Signal contacts, 22 AWG-30 AWG [0.03mm ² -0.05mm ²] with MCC/FCC 4101D shielded contacts. *2 14 - Signal contacts, 22 AWG-30 AWG [0.03mm ² -0.05mm ²] with MCC/FCC 4102D shielded contacts.										*3 STEP 7 - LOCKING AND POLARIZING SYSTEMS 0 - None. V3 - Lock Tab, connector front panel mounted. V5 - Lock Tab, connector rear panel mounted. VL - Lock Lever, used with Hoods only. T - Fixed Female Jackscrews. T2 - Fixed Female Jackscrews. T6 - Fixed Male and Female Polarized Jackscrews. E - Rotating Male Jackscrews. E2 - Rotating Male Screw Locks. E3 - Rotating Male with Internal Hex for 3/32 Hex Drives E6 - Rotating Male and Female Polarized Jackscrews.
*3 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø 02 - Mounting Hole, 0.154 [3.91] Ø F - Float Mounts, Universal S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length S5 - Swaged Locknut, 4-40 Threads										*3 STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None AN - Lightweight Aluminum Hood, nickel finish. AC - Lightweight Aluminum Hood, no finish. H - Hood, Top Opening, Metal *4 G - Hood, EMI/RFI, Die Cast Zinc Z - Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating male jackscrews

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model

NOTES

- *1 45W2 variant currently available in female only.
- *2 Available on 19W1 and 45W2 connectors only.
- *3 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog.
- *4 When using G hood with CBCD variants, use the extended height hood. See Accessories Catalog for extended G hood options.
- *5 For stainless steel dimpled male versions, contact Technical Sales.

For crimping information and crimp tools,
see Application Tools section, page 82.



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
VERTICALLY STACKED STANDARD DENSITY PCB MOUNT

**Combo-D
D-Sub**

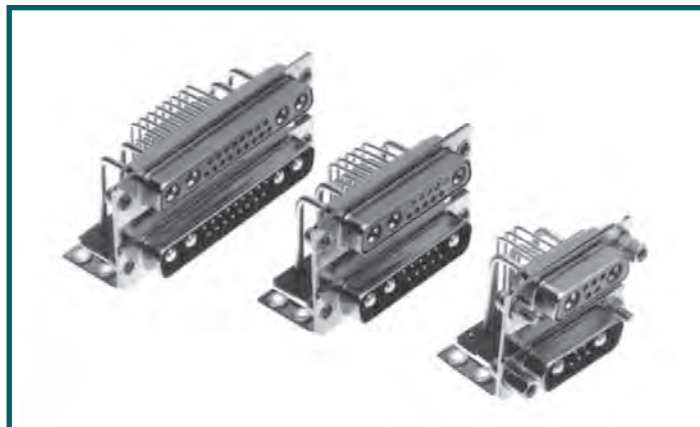
Size 20 Signal Contacts

Size 8 Power Contacts

**UL Recognized
File #E49351**

**CSA Recognized
File #LR54219**

**Telecommunication
UL File #14095**



The Combo-Dual Port connector series offers several combinations of power and signal contacts within the same connector assembly. Seventeen different combinations of power and signal contact stacked assemblies are available within four standard shell sizes. The connector assembly can be partially populated with either signal or power contacts installed in the connector bodies to customer selected contact positions. The stacked connectors may be spaced apart to two dimensional spacings.

On special order, the right angle (90°) printed board mount contacts may be replaced with size 8 power,

shielded or high voltage contacts having crimp or solder cup terminations. Signal contacts remain in dual port configuration.

Mounting angle brackets can be ordered riveted to the connector by specifying R2, R6, R7 and R8 options. Locking systems are available utilizing 4-40 threaded jackscrew systems, polarized or non-polarized, or with a quick-release vibration lock system for rear panel mounted connectors.

Combo-Dual Port series connectors comply with the dimensional requirements of IEC 60807-2 and DSCC 85039.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94, blue color, and composite.
Contacts:	Precision machined copper alloy.
Contact Plating:	
SIGNAL:	Gold flash over nickel plate. Other finishes available upon request.
POWER:	Gold flash over nickel. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.
Mounting Spacers and Brackets:	Nylon; polyester; copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Cross Bar:	Nylon, UL 94V-0, black color.
Push-On Fasteners:	Beryllium copper, tin plated.

Jackscrew Systems:

Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.

Vibration Lock Systems:

Lock tabs, steel with nickel plate.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Signal Contacts:

Size 20 contacts, male – 0.040 inch [1.02mm] mating diameter. Female contact – rugged open entry. PosiBand closed entry female options are also available.

Contact Retention

In Insulator:

9 lbs. [40N]

Contact Terminations:

Printed board mount with right angle (90°) terminations supported by alignment bar. Termination diameter 0.028 inch [0.71mm].

Power Contacts:

Size 8 contact, male – 0.142 inch [3.61mm] mating diameter.

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . .

MECHANICAL CHARACTERISTICS, continued:

Contact Retention	
In Insulator:	22 lbs. [98N]
Contact Terminations:	Printed board mount with right angle (90°) terminations of 0.078 inch [1.98mm] diameter.
Shells:	Male connector shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Mounting Bracket	
Riveted to Connector:	Riveted fasteners with 0.120 inch [3.05mm] diameter clearance hole, with 4-40 threads or 4-40 threads with nylon lock insert.
Mounting To	
Printed Board:	Rapid installation push-on fasteners.
Locking Systems:	Jackscrews and vibration locking system for either front or rear panel mounted connectors.
Mechanical Operations:	500 operations minimum per IEC 60512- 5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

Electrical characteristics for 0.078 inch diameter terminations,
see page 4.

CONNECTOR

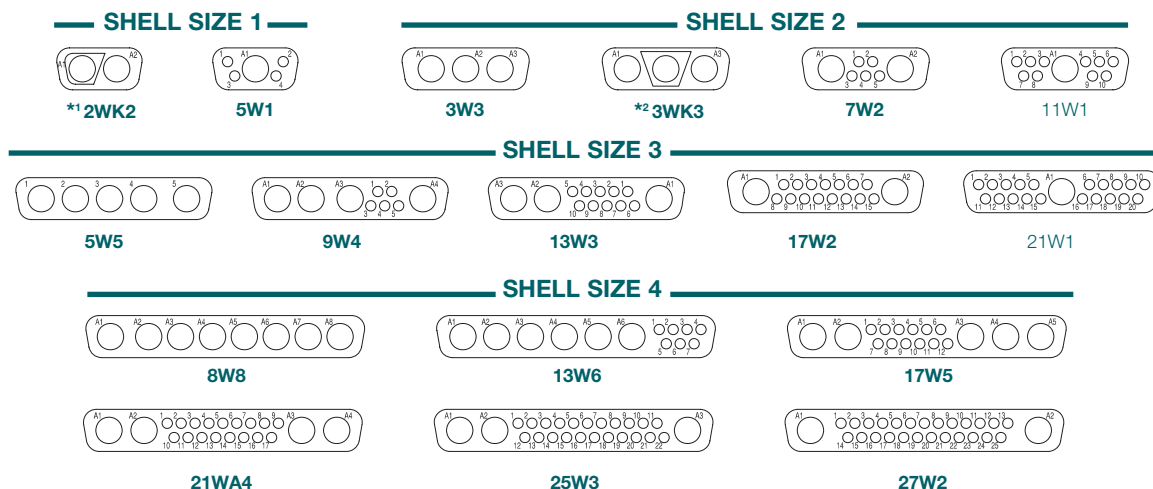
Insulation Resistance:	5 G ohms.
Clearance and Creepage	
Distance (minimum):	0.039 inch [1.0mm]
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



Notes:

- *1 2WK2 connectors have 1 male and 1 female contacts. Female connector should be loaded with female contact in A2 position.
- *2 3WK3 male variant contains 2 male contacts and 1 female contact. Female variant contains 2 female contacts and 1 male contact



Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
VERTICALLY STACKED STANDARD DENSITY PCB MOUNT

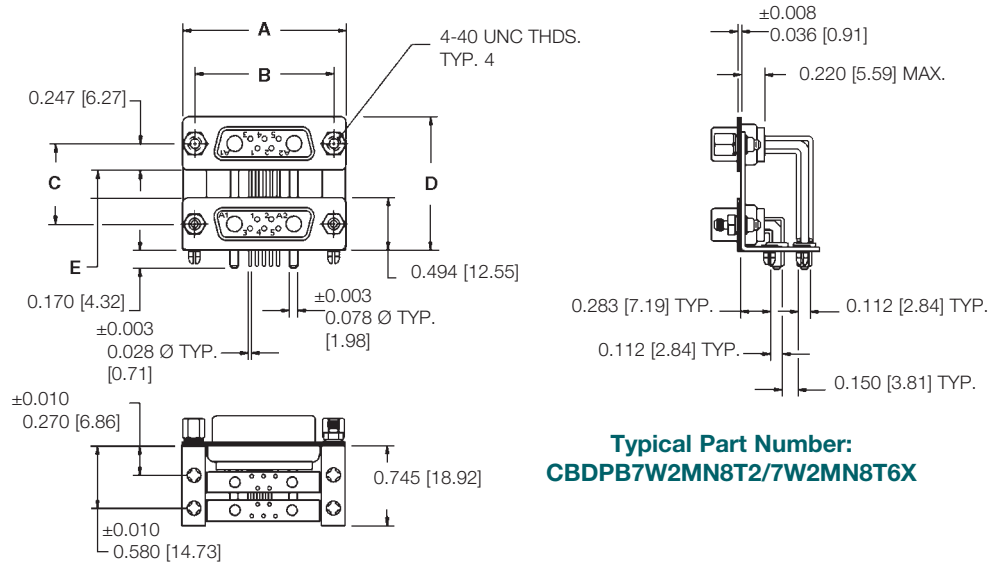
Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
4 ROW CONNECTOR UNIT, 0.283 [7.19] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2

NOTE:

30 ampere 0.125 [3.18] Ø power contacts may be ordered at special request for a limited number of CBDP variants. Contact technical sales for details.



Typical Part Number:
CBDPB7W2MN8T2/7W2MN8T6X

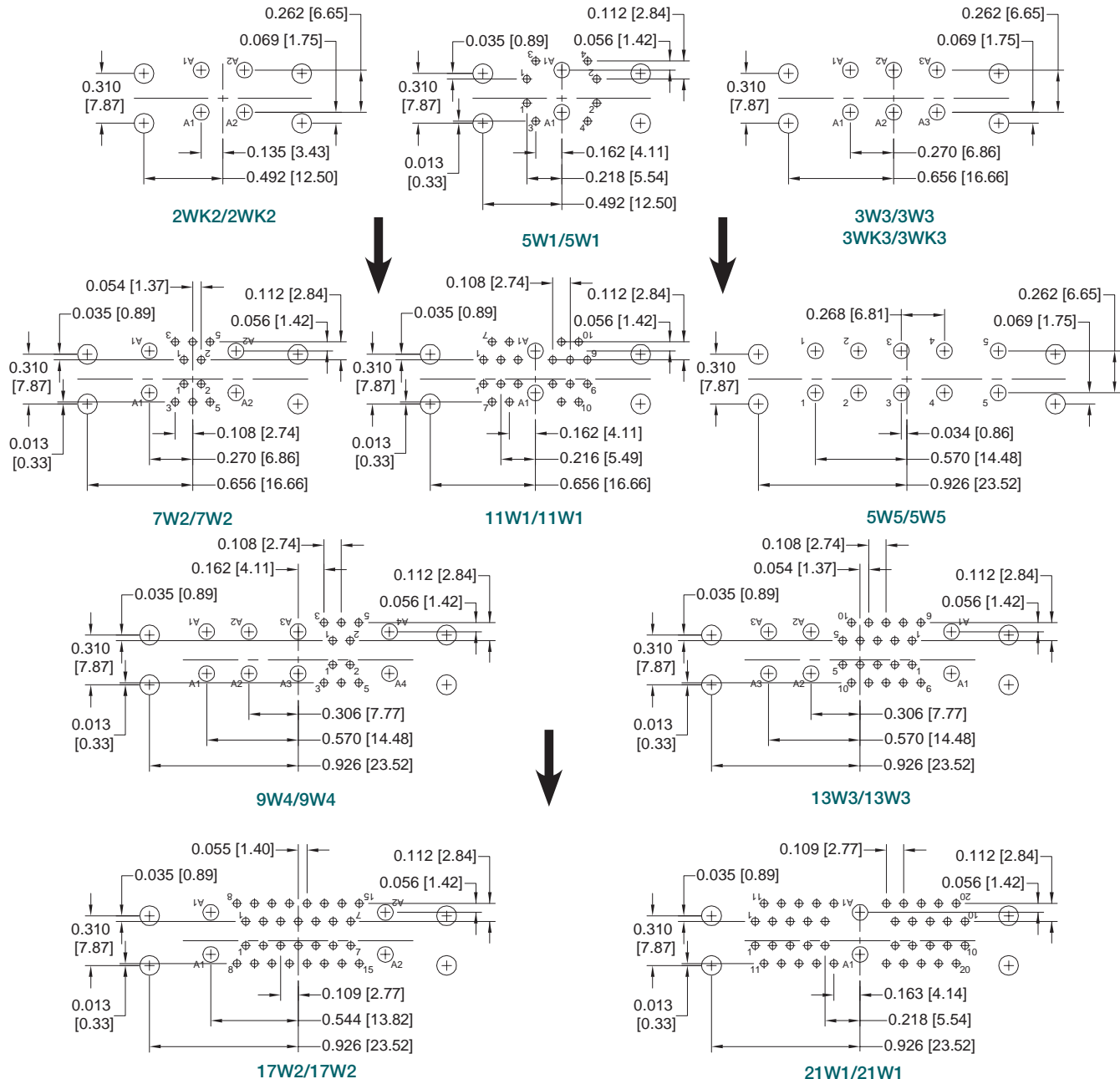
CONNECTOR DESIGNATION	C	D	E
CBDPB	0.750 [19.05]	1.244 [31.60]	0.256 [6.50]
CBDPC	0.900 [22.86]	1.394 [35.41]	0.406 [10.31]

CONNECTOR VARIANT	A	B
SHELL SIZE 1	1.213 [30.81]	0.984 [24.99]
SHELL SIZE 2	1.541 [39.14]	1.312 [33.32]
SHELL SIZE 3	2.088 [53.04]	1.852 [47.04]
SHELL SIZE 4	2.729 [69.32]	2.500 [63.50]

Note: Printed board power contacts (size 8) may be replaced with a size 8 removable power, shielded, air or high voltage contact having solder or crimp terminations.

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN

HOLE IDENTIFICATION SHOWN IS FOR FEMALE CONNECTOR OVER MALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

Mounting holes must move 0.020 [0.51] ±0.010 opposite direction of arrow for use of unriveted mounting bracket with connectors.



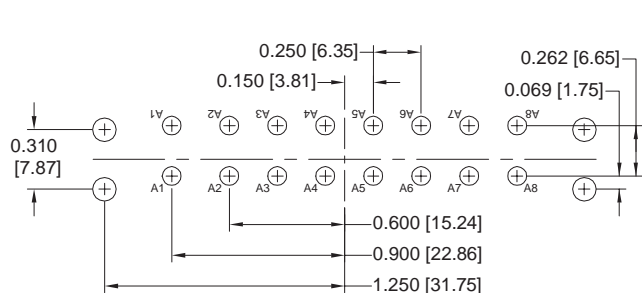
Positronic
connectpositronic.com

PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
VERTICALLY STACKED STANDARD DENSITY PCB MOUNT

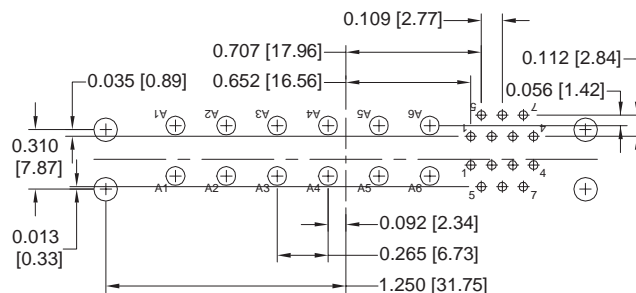
Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN

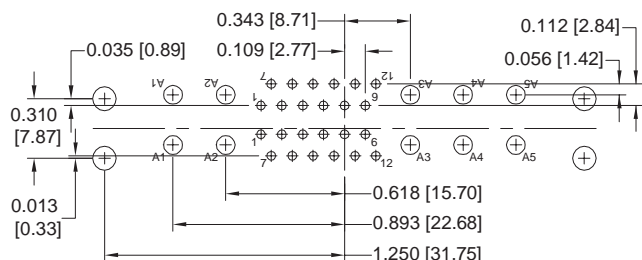
HOLE IDENTIFICATION SHOWN IS FOR FEMALE CONNECTOR OVER MALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



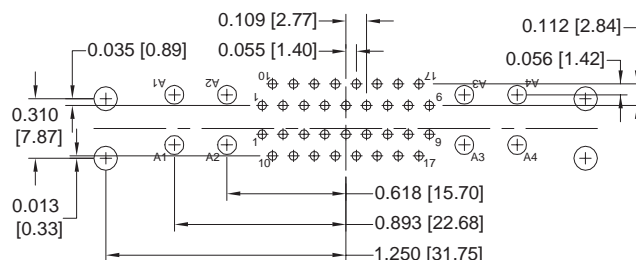
8W8/8W8



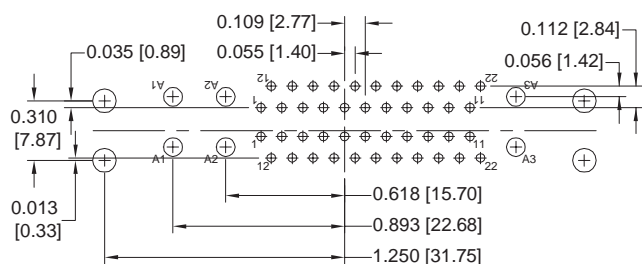
13W6/13W6



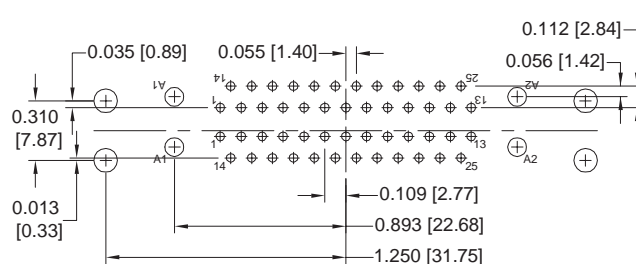
17W5/17W5



21WA4/21WA4



25W3/25W3



27W2/27W2

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

Mounting holes must move 0.020 [0.51] ±0.010 opposite direction of arrow for use of unriveted mounting bracket with connectors.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	CBDPB	9W4	F	N7T	9W4	F	N7T	0	/AA	-14

UPPER CONNECTOR

STEP 1 - BASIC SERIES

- *1 CBDPB Series
- *1 CBDPC Series

STEP 2 - CONNECTOR VARIANTS

Shell Size 1
2WK2, 5W1

Shell Size 2
3W3, 3WK3, 7W2, 11W1

Shell Size 3
5W5, 9W4, 13W3, 17W2, 21W1

Shell Size 4
8W8, 13W6, 17W5, 21WA4, 25W3, 27W2

STEP 3 - CONNECTOR GENDER

- F - Female - Professional Level -
Open Entry Signal Contacts
- M - Male
- S - Female - Industrial / Military Level -
PosiBand Closed Entry Signal Contacts
Military gold plating is optional.

STEP 4 - LOCKING, POLARIZING, MOUNTING AND PUSH-ON FASTENER SYSTEMS

- 0 - None
- R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread, Fixed Female Jackscrews and Cross Bar
- R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar
- R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar
- R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar
- N2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread, Fixed Female Jackscrews with Cross Bar and Push-On Fastener
- N6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar and Push-on Fastener
- N7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar and Push-on Fastener
- N8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar and Push-on Fastener
- V3 - Lock Tab.
- V5 - Lock Tab, connector rear panel mounted.
- T - Fixed Female Jackscrews
- T2 - Fixed Female Jackscrews
- T6 - Fixed Male and Female Polarized Jackscrews

LOWER CONNECTOR

OPTIONS ARE THE SAME AS FOR UPPER CONNECTOR STEPS 2, 3, AND 4

STEP 10 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBDPB9W4FN7T/9W4FN7T0

STEP 8 - SHELL OPTIONS

- 0 - Zinc Plated, with Chromate Seal.
- *2 S - Stainless Steel, passivated.
- X - Tin Plated.
- Z - Tin Plated and Dimpled (male connectors only)

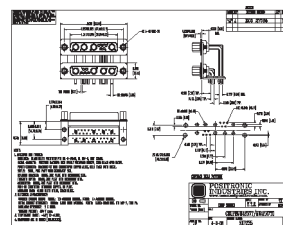
NOTE

- *1 Contacts can be supplied with Military contact plating, see page 81.
- *2 For stainless steel dimpled male versions, contact Technical Sales.

For crimping information and crimp tools, see Application Tools section, page 82.

NOTE: Size 8 removable power contacts with solder or crimp terminations with power ratings of 10, 20 and 40 amperes may be ordered in lieu of the right angle (90°) board mounted power contact. Removable size 8 shielded, air and high voltage contacts may also be ordered separately in lieu of the power contact. See pages 68-80 for contact part numbers.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model



Positronic
connectpositronic.com

MicroTCA POWER INPUT CONNECTORS

Combo-D
D-Sub

Size 20
Signal Contacts

Size 8
Power Contacts

Compliant to MTCA.0 R1.0 for
48 volt and 24 volt systems and
MTCA.1 R1.0 for 12 volt systems

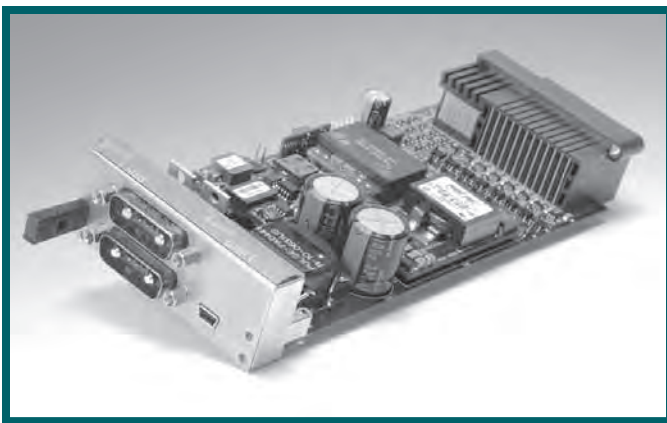


Positronic Industries is known throughout the PCI Industrial Computer Manufactures Group (PICMG) community as a value supplier of AdvancedTCA Zone 1 and Compact PCI power connectors, as well as a wide variety of other power distribution interconnects.

Positronic has been privileged to participate in PICMG specification work, including MicroTCA. Positronic is a proud supplier of power input connectors for use in MicroTCA power modules.

QB series offers board mount connectors for power modules, and cable connectors for bringing power to modules. QB series meet requirements of the MicroTCA Specification for 48V, 24V and 12V systems.

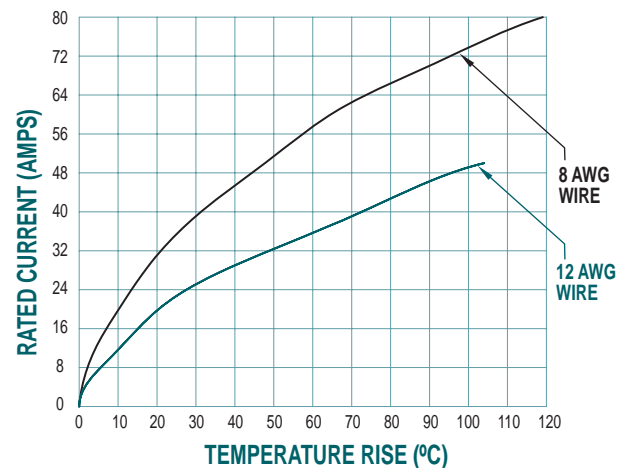
To learn more about PICMG or to get specifications, visit www.picmg.org.



MTCA power module shown above is compliments of Actel Corp. (www.actel.com) and Signal Stream Technologies, LLC. (www.signalstreamtechnologies.com).

TEMPERATURE RISE CURVE

7W2 VARIANT



Test conducted in accordance with UL1977. All power contacts under load.

8 AWG: Curve developed using QB7W2MR7T2/7W2MR7T20 and QB7W2S00000 connectors with FC4008D-1817.0 contacts terminated to 8 AWG wire.

12 AWG: Curve developed using QB7W2MR7T2/7W2MR7T20 and QB7W2S00000 connectors with FC4012D-1817.0 contacts terminated to 12 AWG wire.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94V-0, blue color.
Contacts:	Precision machined copper alloy.
Contact Plating:	
SIGNAL:	Gold flash over nickel plate and 0.000050 [1.27μ] gold over nickel plate. Other finishes available upon request.
POWER:	Gold flash over nickel. Other finishes available upon request.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.
Brackets:	Copper alloy or steel with zinc plate and chromate seal or tin plate; phosphor bronze with tin plate; stainless steel, passivated.
Push-On Fasteners:	Beryllium copper with tin plate.
Jackscrew Systems:	Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.
Hoods:	Glass filled polyester, UL 94V-0, blue color.

MECHANICAL CHARACTERISTICS:

Signal Contacts, Fixed:	Size 20 contacts, male - 0.040 inch [1.02mm] mating diameter. Female contacts are PosiBand closed entry design.
Power Contacts, Fixed:	Size 8 contacts, male - 0.142 inch [3.61mm] mating diameter. Female contacts are closed entry "Large Surface Area" design.
Contact Retention in Insulator:	Signal: 9 lbs [40N]. Power: 22 lbs [98N].
Locking Systems:	Jackscrews.
Mechanical Operations:	200 operations, minimum.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

Contact Current Rating - Tested per UL 1977:

QB7W2 MTCA.0 48V:	70 amperes nominal. <i>See Temperature Rise Curve on page 49 for details.</i>
QBH9W4 MTCA.0 24V:	85 amperes nominal. MTCA.0 R1.0 specification requires each power contact in the 24V input connector to carry 49 amps minimum at a 30°C temperature rise prior to derating. The QB9W4 connector meets this requirement.
QBH5W5 / QBH15W4 MTCA.1 12V:	75 amperes nominal. MTCA.1 R1.0 specification requires each power contact in the 12V input connector to carry 50 amps minimum at a 30°C temperature rise prior to derating. The QBH5W5 and QBH15W4 connectors meets this requirement.

Initial Contact Resistance:	0.0005 ohms max. per IEC 60512-2, Test 2b.
Proof Voltage:	1000 V r.m.s.

CONNECTOR

Insulation Resistance:	5 G ohms.
Working Voltage:	300 V r.m.s.

CLEARANCE AND CREEPAGE DISTANCE:

Between Power Contacts:	0.06 inch [1.5 mm], minimum
Between Signal Contacts:	0.02 inch [0.4 mm], minimum
Between Power and Signal Contacts:	0.06 inch [1.5 mm], minimum
Between Power Contacts and Shelf GND:	0.06 inch [1.5 mm], minimum
Between Signal Contacts and Shelf GND:	0.06 inch [1.5 mm], minimum

AIR COOLED RUGGEDIZED MicroTCA® SYSTEMS

12 VOLT INPUT POWER CONNECTORS PER MTCA.1, R1.0



5W5
Five (5) Size 8 Contacts



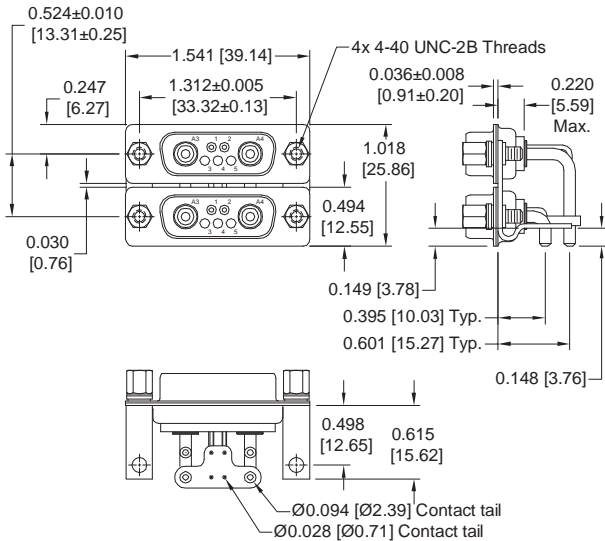
15W4
Four (4) Size 8 and selectively loaded
with seven (7) Size 22 contacts

Consult Technical Sales for more information about Positronic connector
compliant to the latest MicroTCA® specification, MTCA.1, R1.0.



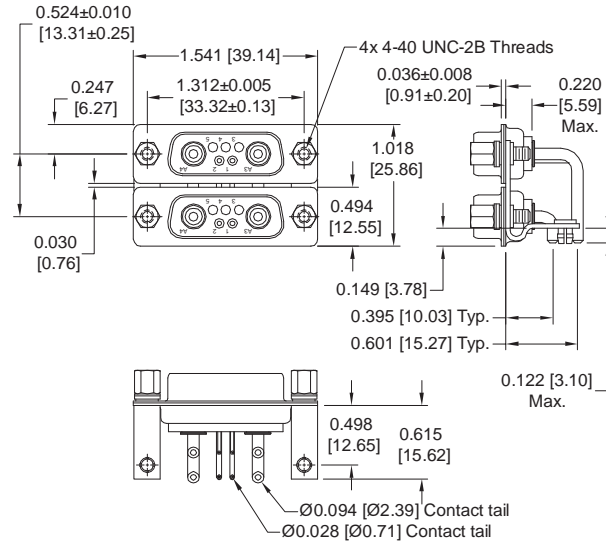
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR - 48 VOLT

CONTACT POSITIONS A1 AND A2 ARE FIRST TO MATE. CONTACT POSITIONS 1 AND 2 ARE LAST TO MATE.



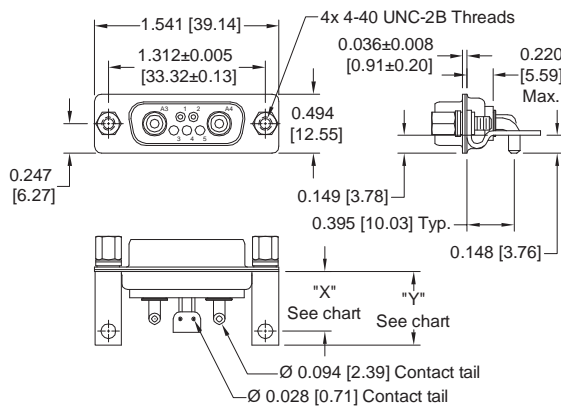
DUAL PORT

Typical part number:
QB7W2MR7T2/7W2MR7T20/AA



INVERTED DUAL PORT

Typical part number:
QB7W2MN7T2/7W2MN7T20/AA-1845.0



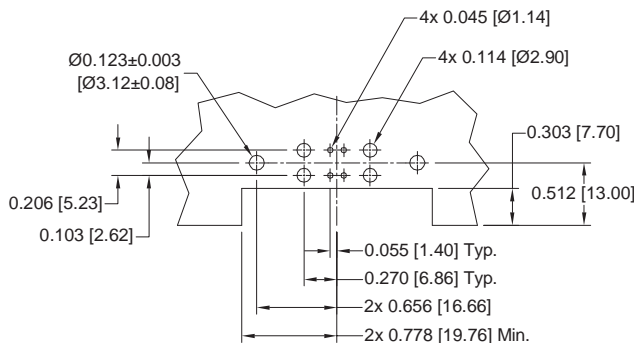
UNI PORT

The Dual Port and Uni Port connectors can also be supplied with standard D-subminiature mounting brackets, see page 53.

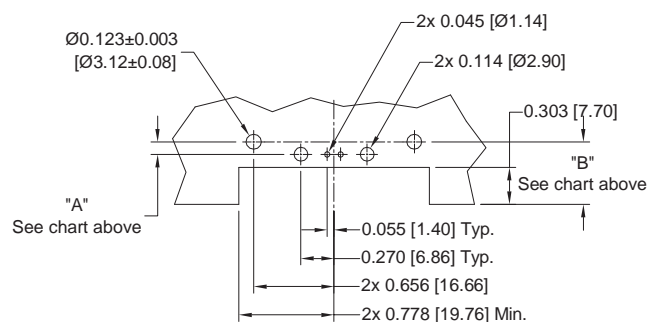
UNI PORT TYPICAL PART NUMBERS CODE 56

TYPICAL PART NUMBER	X	Y	A	B
QB7W2M56R70T20	0.498 [12.65]	0.615 [15.62]	0.103 [2.62]	0.512 [13.00]
QB7W2M56R70T20-1865.0	0.395 [10.03]	0.512 [13.00]	0.000 [0.00]	0.409 [10.39]

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN - 48 VOLT



DUAL PORT

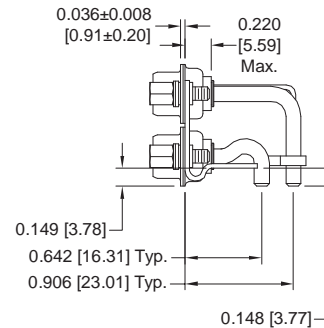
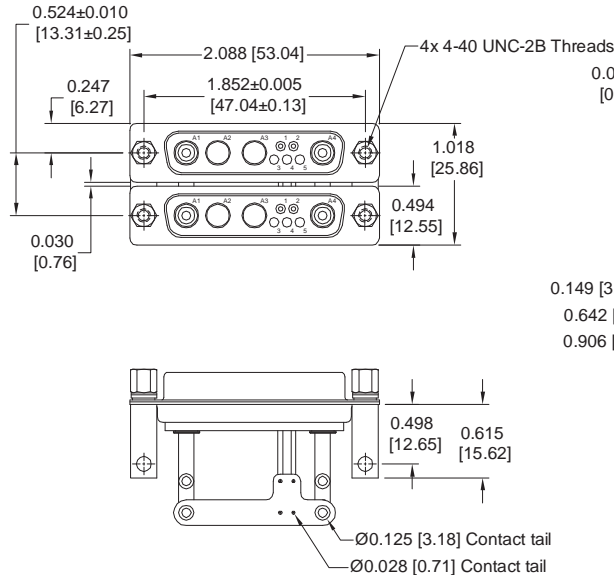


UNI PORT

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

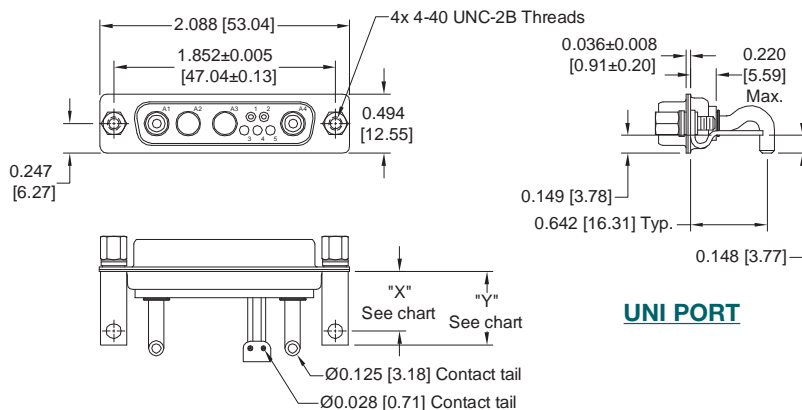
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR - 24 VOLT

CONTACT POSITIONS A1 AND A4 ARE FIRST TO MATE. CONTACT POSITIONS 1 AND 2 ARE LAST TO MATE.



DUAL PORT

Typical part number:
QBH9W4MR7T2/9W4MR7T20/AA



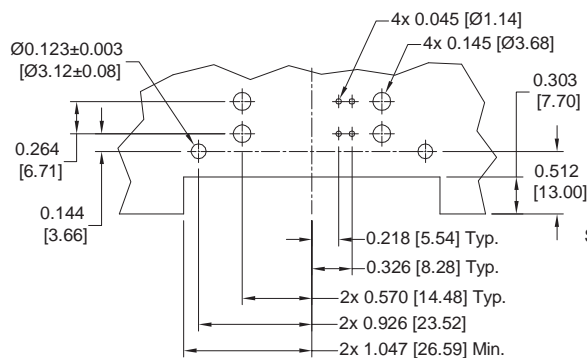
UNI PORT

The Dual Port and Uni Port connectors can also be supplied with standard D-subminiature mounting brackets, see page 53.

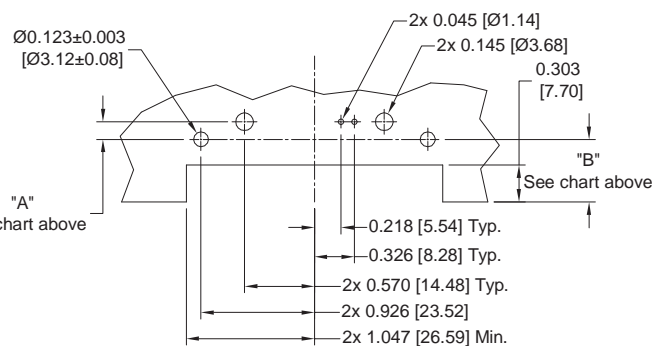
UNI PORT TYPICAL PART NUMBERS CODE 57

TYPICAL PART NUMBER	X	Y	A	B
QBH9W4M57R70T20/AA	0.498 [12.65]	0.615 [15.62]	0.144 [3.66]	0.512 [13.00]
QBH9W4M57R70T20/AA-1865.0	0.395 [10.03]	0.512 [13.00]	0.247 [6.27]	0.409 [10.39]

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN - 24 VOLT



DUAL PORT



UNI PORT

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 52



Positronic
connectpositronic.com

MicroTCA POWER INPUT CONNECTORS

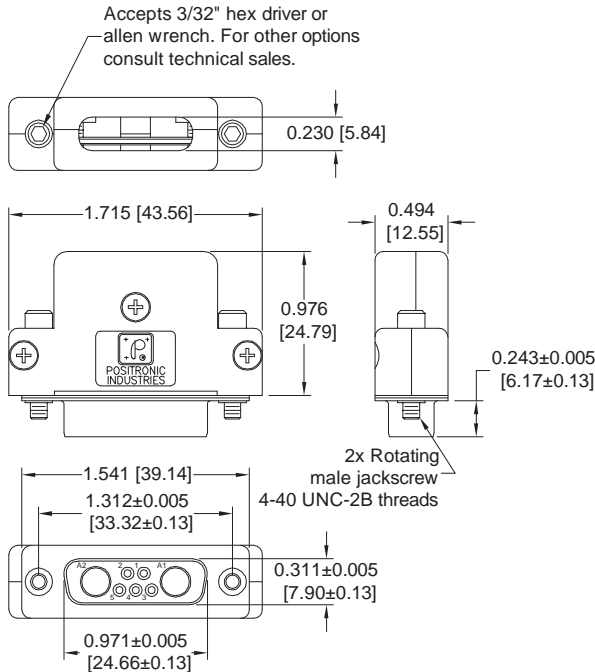
Combo-D
D-Sub

CABLE CONNECTOR

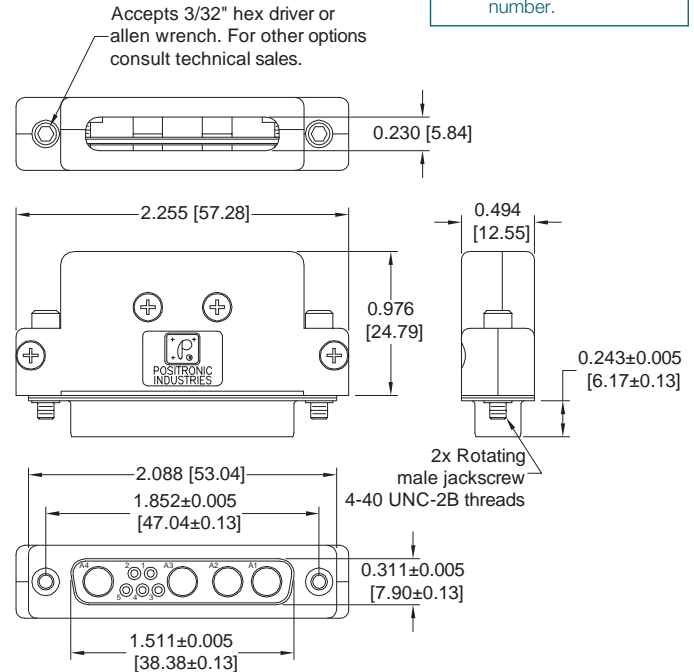
*1 CONTACTS ARE NOT SUPPLIED IN CONNECTOR AND NEED TO BE ORDERED SEPARATELY
SEE PAGE 54 FOR CONTACT PART NUMBERS

FEMALE CONTACTS ARE "TOUCH-SAFE" PER IEC 60950-1, FIGURE 2A.

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.



Typical part number: QB7W2S00QH0/AA

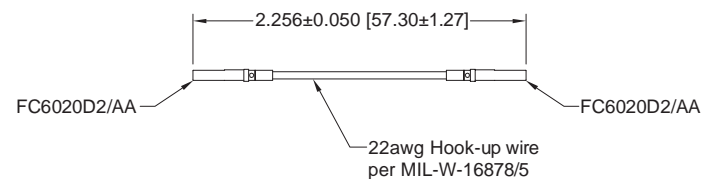


Typical part number: QB9W4S00QH0/AA

ELECTRICAL BRIDGE

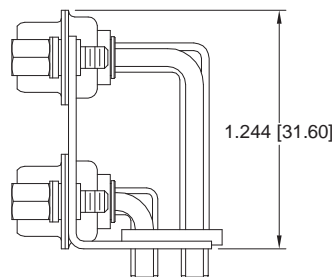
MicroTCA applications may require contact positions 1 and 2 be electrically bridged.

Order part number **CC2805/AA-V01**

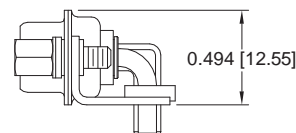


STANDARD D-SUBMINIATURE MOUNTING BRACKET

OPTIONAL MOUNTING BRACKET FOR DUAL PORT AND UNI PORT CONNECTORS



For more information on Dual Port connectors, see CDBP series on page 43.



For more information on Uni Port connectors, see CBD series on page 3.

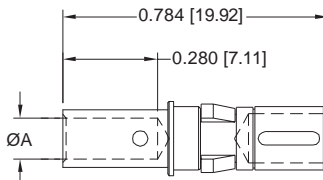
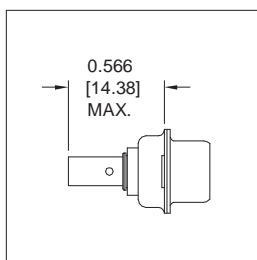
REMOVABLE CRIMP POWER CONTACTS

CODE 11 AND 12

*1 CONTACTS ARE NOT SUPPLIED IN CONNECTOR AND NEED TO BE ORDERED SEPARATELY

*1 FEMALE CONTACT
"CLOSED ENTRY" DESIGN, L.S.A.

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.



PART NUMBER	WIRE SIZE AWG [mm ²]	ØA
FC4012D/AA-1817.0	12 [4.0]	0.101 [2.57]
FC4008D/AA-1817.0	8 [10.0]	0.181 [4.60]

MATERIAL: Copper alloy.

PLATING: (choose contact plating based on individual application requirements)

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. Example: FC4012D/AA-14-1817.0.
0.000050 inch [1.27 µ] gold over nickel by adding "-15" suffix onto part number. Example: FC4008D/AA-15-1817.0

*1 **NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For crimping information and crimp tools, see Application Tools section, page 82.

REMOVABLE CRIMP CONTACTS

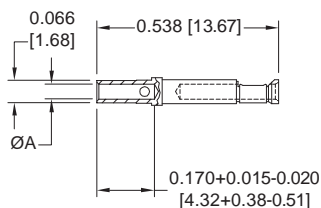
CODE 0, 11 AND 12

*1 CONTACTS ARE NOT SUPPLIED IN CONNECTOR AND NEED TO BE ORDERED SEPARATELY

CLOSED CRIMP BARREL

FEMALE CONTACT
"CLOSED ENTRY" DESIGN

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.



PART NUMBER	WIRE SIZE AWG [mm ²]	AØ
FC6020D2/AA	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]

MATERIAL: Copper alloy.

PLATING: (choose contact plating based on individual application requirements)

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. Example: FC6020D/AA-14.
0.000050 inch [1.27 µ] gold over nickel by adding "-15" suffix onto part number. Example: Example: FC6020D/AA-15.

For crimping information and crimp tools, see Application Tools section, page 82.



Positronic
connectpositronic.com

MicroTCA POWER INPUT CONNECTORS

Combo-D
D-Sub

MALE ORDERING INFORMATION - CODE NUMBERING SYSTEMS

SPECIFY COMPLETE CONNECTOR BY SELECTING AN OPTION FROM STEP 1 THROUGH 9

DUAL PORT CONNECTORS

STEP	1	2	3	4	5	6	7	8	9	10	
EXAMPLE	QB	7W2	M	R7T2	7W2	M	R7T2	0	/AA	-14	
UPPER CONNECTOR											
STEP 1 - BASIC SERIES QB Series (7W2 variant) QBH Series (5W5, 9W4 and 15W4 variant)											
STEP 2 - CONNECTOR VARIANTS 5W5*2, 7W2, 9W4, 15W4*2											
STEP 3 - CONNECTOR GENDER M - Male											
STEP 4 - LOCKING, POLARIZING, MOUNTING AND PUSH-ON FASTENER SYSTEMS 0 - None R6 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar R7 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 4-40 threads with cross bar R8 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 4-40 locknut with cross bar N6 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar and push-on fastener N7 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 4-40 threads with cross bar and push-on fastener N8 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 4-40 locknut with cross bar and push-on fastener T2 - Fixed Female Jackscrews											
					LOWER CONNECTOR OPTIONS ARE THE SAME AS FOR UPPER CONNECTOR STEPS 2, 3, AND 4					STEP 10 - SPECIAL OPTIONS FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.	
										STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant NOTE: This step should be included to create a standard part number. Example: QB7W2MR7T2/7W2MR7T20/AA	
					STEP 8 - SHELL OPTIONS 0 - Zinc Plated, with Chromate Seal. *1 S - Stainless Steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only).						

NOTE: *1 For stainless steel dimpled male versions, contact Technical Sales.
 *2 For technical, dimensional and PCB layout information on 5W5 and 15W4 variants, contact Technical Sales.

For crimping information and crimp tools, see Application Tools section, page 82.

MALE ORDERING INFORMATION - CODE NUMBERING SYSTEMS

SPECIFY COMPLETE CONNECTOR BY SELECTING AN OPTION FROM STEP 1 THROUGH 9

UNI PORT CONNECTORS

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	QB	7W2	M	56	R7	0	T2	0	/AA	-14
STEP 1 - BASIC SERIES QB Series (7W2 variant) QBH Series (5W5, 9W4 and 15W4 variant)										
STEP 2 - CONNECTOR VARIANTS 5W5*2, 7W2, 9W4, 15W4*2										
STEP 3 - CONNECTOR GENDER M - Male										
STEP 4 - CONTACT TERMINATION 56 - Solder, Right Angle (90°) Printed Board Mount with Signal and 0.094 [2.39] Ø Power Contacts, 0.395 [10.03] Signal Contact Extension. Available for 7W2 variant. 57 - Solder, Right Angle (90°) Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.642 [16.29] Signal Contact Extension. Available for 5W5, 9W4 and 15W4 variants.										
STEP 5 - MOUNTING STYLE R6 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar R7 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 4-40 threads with cross bar R8 - Bracket, Mounting, right angle (90°) Metal, Swaged to connector with 4-40 locknut with cross bar										
NOTE: *1 For stainless steel dimpled male versions, contact Technical Sales. *2 For technical, dimensional and PCB layout information on 5W5 and 15W4 variants, contact Technical Sales.										
STEP 10 - SPECIAL OPTIONS FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.										
STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS Compliant Note: This step should be included to create a standard part number. Example: QB7W2M56R70T20/AA										
STEP 8 - SHELL OPTIONS 0 - Zinc Plated, with Chromate Seal. *1 S - Stainless Steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only).										
STEP 7 - LOCKING AND POLARIZING SYSTEMS T2 - Fixed Female Jackscrews.										
STEP 6 - HOODS AND PUSH-ON FASTENERS 0 - None N - Push-on Fastener, for Right Angle (90°) Mounting Brackets										

FEMALE ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

CABLE CONNECTORS

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	QB	7W2	S	0	0	Q	H	0	/AA	-14

STEP 1 - BASIC SERIES
QB Series

STEP 2 - CONNECTOR VARIANTS
7W2
9W4

STEP 3 - CONNECTOR GENDER
S - Female PosiBand Closed Entry Signal Contacts
Open Entry Signal Contacts are available and can be ordered separately, see page 73.

STEP 4 - CONTACT TERMINATION
0 - Connector ordered without contacts. Order signal and power contacts separately. See page 54 for contact part numbers.
1 - Signal contacts, 20 AWG-24 AWG [0.5mm²-0.25mm²].
11 - Signal contacts, 20 AWG-24 AWG [0.5mm²-0.25mm²] with FC4012D-1817.0 power contacts.
12 - Signal contacts, 20 AWG-24 AWG [0.5mm²-0.25mm²] with FC4008D-1817.0 power contacts.

STEP 5 - MOUNTING STYLE
0 - None

STEP 6 - HOODS
Q - Hood, Top Opening, Plastic

STEP 7 - LOCKING AND POLARIZING SYSTEMS
H - Rotating male jackscrew with internal hex for 3/32 hex drives.

STEP 8 - SHELL OPTIONS
0 - Zinc Plated, with Chromate Seal.
S - Stainless Steel, passivated.
X - Tin Plated.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS
/AA - RoHS Compliant

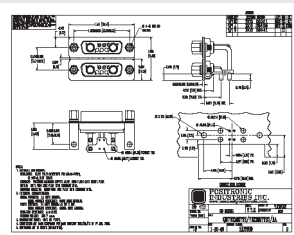
Note: This step should be included to create a standard part number.
Example: QB7W2S00QH0/AA

STEP 10 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.

For crimping information and crimp tools, see Application Tools section, page 82.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model

Contact Technical Sales for ordering information for cable versions of the 5W5 and 15W4 variants.



Positronic
connectpositronic.com

COMBO-D CONNECTOR SAVERS GENDER CHANGERS

Combo-D
D-Sub

Professional Quality Connectors
ACBDP Series
Size 20 "Open Entry" or
PosiBand® "Closed Entry"
Contact Design

Industrial /Military Quality Connectors
- ACBMP Series
Size 20 PosiBand®
"Closed Entry" Contact Design
Connector Saver



ACBDP and ACBMP series connectors are suitable for use in any applications requiring high performance characteristic. The normal density ACBDP and ACBMP series are available in standard Combo-D connector variants.

ACBDP and ACBMP series connectors utilize precision machined contacts for strength and durability. The ACBDP female contact features a rugged "Open Entry" design or PosiBand "Closed Entry" design for even higher reliability. ACBMP connectors features PosiBand "Closed Entry" contacts and military contact plating.

ACBDP and ACBMP series connectors can be mated to a connector which would normally experience high numbers of mating cycles. The ACBDP/ACBMP connector can be easily replaced, "Saving" a connector which is not easily replaced.

These connectors can also be used as a "gender changer". Connector Savers are also available in standard and high density D-subminiature versions, please consult our Professional, Industrial and Military Performance D-subminiature Connectors catalog for more information.

For high density 8W2, 19W1 and 45W2 adapter variants contact Technical Sales.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled polyester per ASTM D 5927 UL 94V-0, blue color.
SIGNAL CONTACTS:	
ACBDP Series:	Precision machined high tensile copper alloy open entry design.
ACBMP Series:	Precision machined copper alloy PosiBand closed entry design.
POWER CONTACTS:	Precision machined copper alloy closed entry design.
Contact Plating:	
ACBDP Series:	Gold flash over nickel plate.
ACBMP Series:	0.000050 [1.27μ] gold over nickel plate.
Shells:	Steel with tin plate; zinc plate with chromate seal; stainless steel passivated. Other materials and finishes available upon request.

Jackscrew Systems: Brass or steel with zinc plate and chromate seal or clear zinc plate or tin plate; stainless steel, passivated.

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

FIXED CONTACTS:

SIGNAL CONTACTS:	Size 20 contacts, male - 0.040 inch [1.02 mm] diameter. ACBDP series has female open entry contact or PosiBand closed entry contacts optional, see page 69 for details. ACBMP series offer female PosiBand closed entry contacts.
POWER CONTACTS:	Size 8 contacts, male - 0.142 inch [3.61 mm] diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member.

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . .

MECHANICAL CHARACTERISTICS, continued:

Connector Saver:	Male to female or male to male.
Contact Retention:	
Signal:	9 lbs. [40 N].
Power:	22 lbs. [98 N].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.
Mechanical Operations:	
ACBDP Series:	500 operations, minimum, per IEC 60512-5.
ACBMP Series:	1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes, nominal.
Initial Contact Resistance:	0.008 ohms, maximum.
Proof Voltage:	1,000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

Contact Current Rating:	70 amperes, per UL 1977. See Temperature Rise Curves on pages 1-2.
Initial Contact Resistance:	0.0005 ohms, maximum
Proof Voltage:	1,000 V r.m.s.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
--------------------	------------------

ACBDP/ACBMP SERIES SIZE 20 AND SIZE 8 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

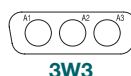
CONNECTOR SAVERS

SHELL SIZE 1

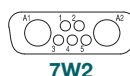


5W1

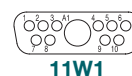
SHELL SIZE 2



3W3

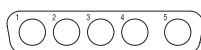


7W2

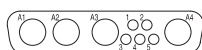


11W1

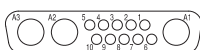
SHELL SIZE 3



5W5



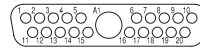
9W4



13W3

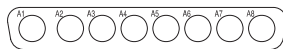


17W2

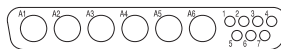


21W1

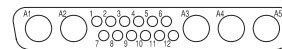
SHELL SIZE 4



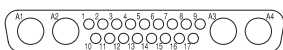
8W8



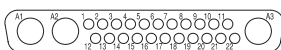
13W6



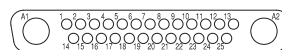
17W5



21WA4

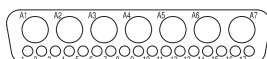


25W3

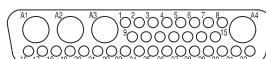


27W2

SHELL SIZE 5



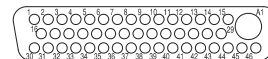
24W7



36W4

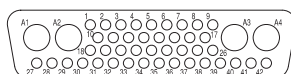


43W2



47W1

SHELL SIZE 6



46W4

Note: For high density 8W2, 19W1 and 45W2 variants contact Technical Sales for availability.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

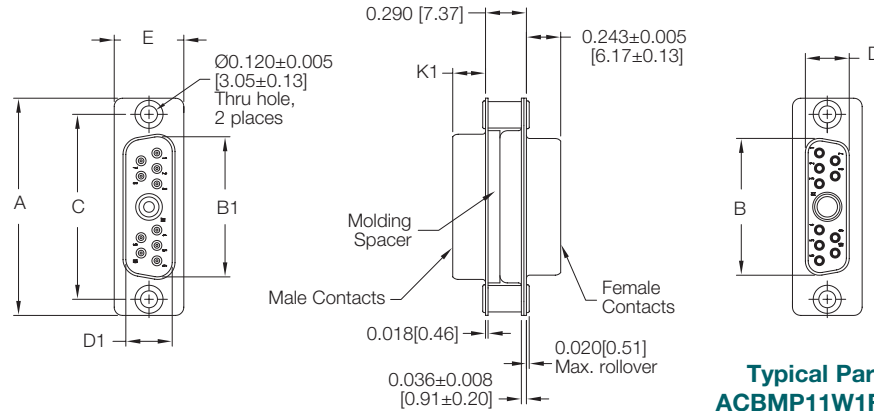
COMBO-D CONNECTOR SAVERS GENDER CHANGERS

Combo-D
D-Sub

STANDARD SHELL ASSEMBLY DIMENSIONS SIZE 20 AND SIZE 8 CONTACTS CODE 0 AND S

NOTE:

Code S = Swaged
spacer with 4-40
UNC-2B threads.

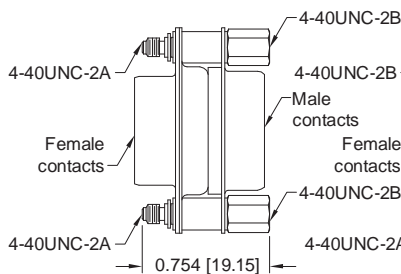


CONNECTOR SIZE	A ±0.015	B ±0.005	B1 ±0.005	C ±0.005	D ±0.005	D1 ±0.005	E ±0.015	K1 ±0.005
SHELL SIZE 1	1.213 [30.81]	0.643 [16.33]	0.666 [16.92]	0.984 [24.99]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
SHELL SIZE 2	1.541 [39.14]	0.971 [24.66]	0.994 [25.25]	1.312 [33.32]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
SHELL SIZE 3			1.534 [38.96]	1.852 [47.04]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
SHELL SIZE 4	2.729 [69.32]	2.159 [54.84]	2.182 [55.42]	2.500 [63.50]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
SHELL SIZE 5	2.635 [66.93]	2.064 [52.43]	2.079 [52.81]	2.406 [61.11]	0.423 [10.74]	0.441 [11.20]	0.605 [15.37]	0.230 [5.84]
SHELL SIZE 6	2.729 [69.32]	2.189 [55.60]	2.212 [56.18]	2.500 [63.50]	0.485 [12.32]	0.503 [12.78]	0.668 [16.97]	0.230 [5.84]

JACKSCREW SYSTEMS CODE E, E6, T AND T6

ROTATING MALE AND FEMALE JACKSCREWS

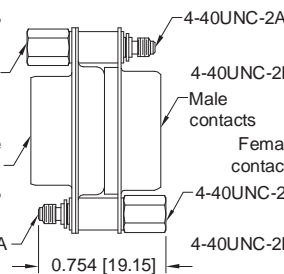
E



Example Part Number:
ACBDP5W1FEX5W1M0X

ROTATING MALE AND FEMALE POLARIZED JACKSCREWS

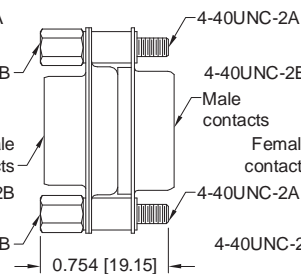
E6



Example Part Number:
ACBDP5W1FE6X5W1M0X

FIXED MALE AND FEMALE JACKSCREWS

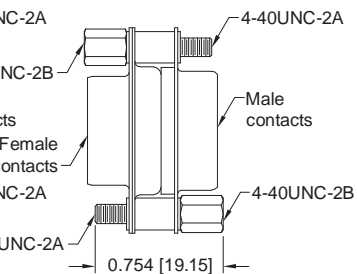
T



Example Part Number:
ACBDP5W1FTX5W1M0X

FIXED MALE AND FEMALE POLARIZED JACKSCREWS

T6



Example Part Number:
ACBDP5W1FT6X5W1M0X



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	ACBDP	11W1	F	S	X	11W1	M	S	X	/AA	-14

STEP 1 - BASIC SERIES

ACBDP – Professional / Industrial Quality, see Step 3.

ACBMP – Military conformance with “closed entry” female signal contacts plated 0.000050 [1.27µ] gold over nickel plate. Choose “S” or “M” in Step 3.

STEP 2 - CONNECTOR VARIANT

Shell Size 1
5W1

Shell Size 2
3W3, 7W2, 11W1

Shell Size 3
5W5, 9W4, 13W3, 17W2, 21W1

Shell Size 4
8W8, 13W6, 17W5, 21WA4, 25W3, 27W2

Shell Size 5
24W7, 36W4, 43W2, 47W1

Shell Size 6
46W4

Note: For high density 8W2, 19W1 and 45W2 variants contact Technical Sales for availability.

STEP 3 - 1ST CONNECTOR GENDER

F - Female - Professional Level - Open Entry Signal Contacts

*M - Male

S - Female - Industrial / Military Level - PosiBand Closed Entry Signal Contacts. Military gold plating is optional.

***2 STEP 4 - 1ST CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05µ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 8)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 8)

*3 T - Fixed male and female jackscrews (Select 0 in Step 8)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 8)

STEP 5 - 1ST CONNECTOR SHELL OPTION

0 – Zinc Plated, with Chromate Seal.

*S – Stainless Steel, passivated.

X – Tin Plated.

Z – Tin Plated and Dimpled (male connectors only).

STEP 6 - 2ND CONNECTOR VARIANT

Select same variant as chosen in STEP 2.

STEP 7 - 2ND CONNECTOR GENDER

M - Male

***2 STEP 8 - 2ND CONNECTOR MATING STYLE**

0 - Swaged spacer 0.120 [3.05µ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews (Select 0 in Step 4)

*3 E6 - Rotating male and female polarized jackscrew (Select 0 in Step 4)

*3 T - Fixed male and female jackscrews (Select 0 in Step 4)

*3 T6 - Fixed male and female polarized jackscrew (Select 0 in Step 4)

STEP 9 - 2ND CONNECTOR SHELL OPTION

0 – Zinc Plated, with Chromate Seal.

*S – Stainless Steel, passivated.

X – Tin Plated.

Z – Tin Plated and Dimpled (male connectors only).

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: ACBDP11W1FSX11W1MSX

STEP 11 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.

NOTES

*1 Male option in Step 3 available only on connector variants 5W1, 3W3, 7W2, 11W1, 17W2, 21W1, 21WA4, 27W2, 24W7, 46W4.

*2 Connector mating style for both connectors must be the same if 0 or S is used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must be 0.

*3 For hardware information, see page 59.

*4 For stainless steel dimpled male versions, contact Technical Sales.

*5 Connector variant for both connectors must be the same.



Positronic
connectpositronic.com

UNIQUE FEATURES

Combo-D
D-Sub



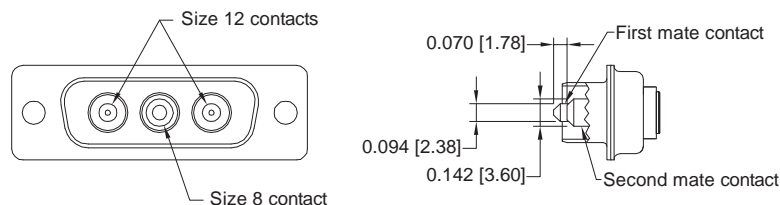
Positronic[®]
global connector solutions

Positronic Industries is **known** around the world **for offering** our customers **flexibility** when choosing connectors.

In addition to allowing **customers** to **create** part numbers for **particular applications**, Positronic offers a **wide variety** of features and accessories within our products.

Positronic is also **eager** to modify existing products **to meet unique customer requirements**. If you do not find what you need with this catalog, please **contact us** for assistance.

SEQUENTIAL MATING CONTACTS



Note: A third level can be accomplished with signal contacts where applicable.

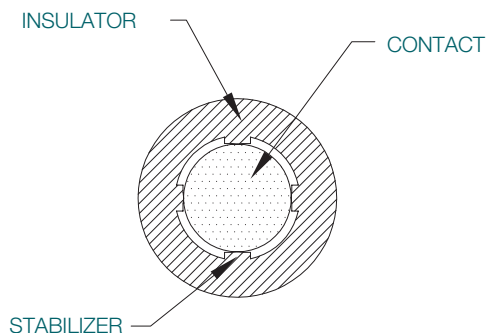
Three levels of sequential mating are possible:

- First mate accomplished by a size 12 power contact. Male contact diameter is 0.094 inch.
- Second mate accomplished by a size 8 power contact. Male contact diameter is 0.142 inch.
- Third mate accomplished by size 20 signal contacts, as applicable.

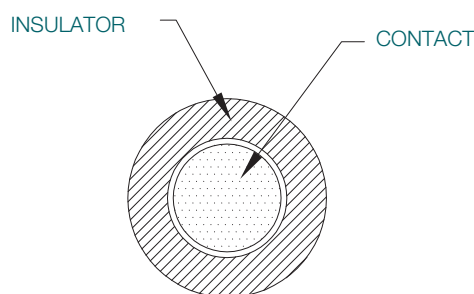
CONTACT TECHNICAL SALES FOR MORE INFORMATION!

SIZE 8 CONTACT STABILIZATION FEATURE

MINIMIZES FLOAT IN SIZE 8 CONTACT POSITIONS



WITH STABILIZER



WITHOUT STABILIZER

CBD size 8 male contacts are removed toward the rear after utilizing front release tooling. Space must be provided between the contact and the connector molding so the tooling can slide over the mating portion of the contact. This fact allows the contact to float.

In some applications this float creates problems in alignment during mating. Many male contact CBD variants offer an integral stabilizing feature to minimize problems created by float in size 8 contacts. An alternate tool is used to remove the contact if necessary. Tool number is 4311-0-1-0.

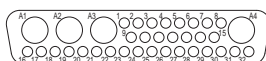
The stabilization feature is currently available for the following male contact variants:



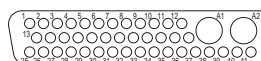
CBD/CBM3W3M



CBD/CBM8W8M



CBC36W4M



CBC43W2M

Add MOS -1570.4 to end of part number. Example: CBD3W3M00000-1570.4

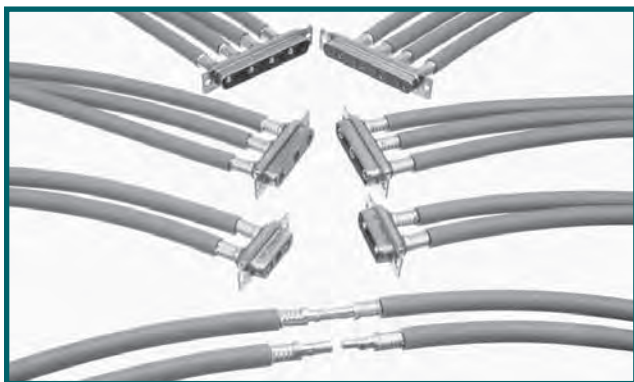


Positronic
connectpositronic.com

UNIQUE FEATURES

Combo-D
D-Sub

COMBO-D CONNECTORS WITH *1 100 AMP HIGH CURRENT REMOVABLE CRIMP POWER CONTACT



HIGH CONDUCTIVITY SIZE 8 CONTACTS
WHICH CAN BE TERMINATED TO 6 AWG
WIRE ALLOW VERY HIGH CURRENTS
TO BE CARRIED THROUGH COMBO-D
TYPE CONNECTORS.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Contacts:	High conductivity copper alloy.
Plating:	
Standard Finish:	Gold flash over nickel plate.
Optional Finishes:	0.000030 [0.76 μ] gold over nickel by adding "-14" suffix onto part number. Example: FC4006D-14 0.000050 inch [1.27 μ] gold over nickel by adding "-15" suffix onto part number. Example: MC4006D-14

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
--------------------	------------------

ELECTRICAL CHARACTERISTICS:

POWER CONTACTS

Contact Current Rating:	See Temperature Rise Curve on page 64.
Initial Contact Resistance:	0.0003 ohms max. per IEC 60512-2, Test 2b.
Proof Voltage:	1900 V r.m.s.
Working Voltage:	450 V r.m.s.

MECHANICAL CHARACTERISTICS:

Size 8 Removable Contacts:	Rear insertion, front release.
Durability:	500 cycles minimum.
Vibration:	20g from 10 Hz to 500 Hz.
Shock:	30g-11ms.

*1 per UL 1977 Testing

100 AMP HIGH CURRENT REMOVABLE CRIMP POWER CONTACT

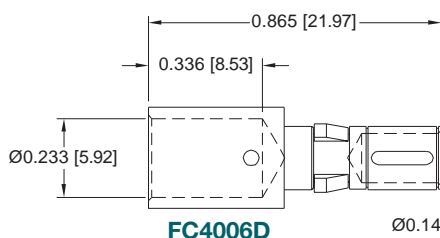
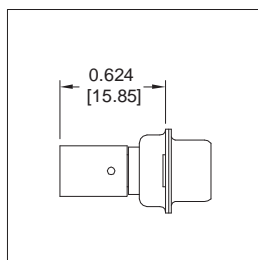
CONTACTS USED WITH 6 AWG WIRE
6 AWG [16.0mm²] max.

*1 CONTACTS ORDERED SEPARATELY
SIZE 8

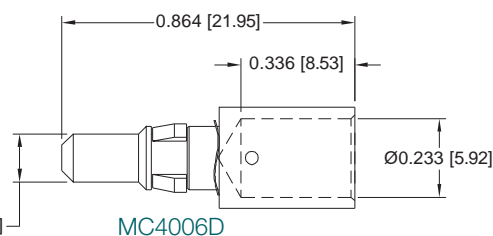
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

*2 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



****NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

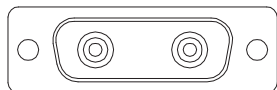
MATERIAL: High conductivity copper alloy.

PLATING:

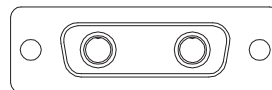
STANDARD FINISH: Gold flash over nickel plate.
OPTIONAL FINISHES: 0.000030 [0.76 μ] gold over nickel by adding "-14" suffix onto part number. Example: FC4006D-14
0.000050 inch [1.27 μ] gold over nickel by adding "-15" suffix onto part number. Example: MC4006D-15.

SELECTIVELY LOADED COMBO-D CONNECTORS FOR USE WITH 100 AMP* HIGH CURRENT REMOVABLE CRIMP POWER CONTACT

COMBO-D CONNECTORS WITH TWO CONTACT POSITIONS

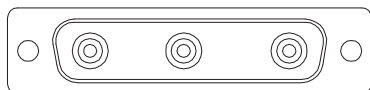


CBD3W3M00000-1841.0

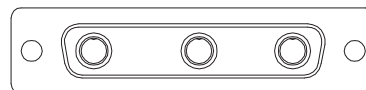


CBD3W3F00000-1841.0

COMBO-D CONNECTORS WITH THREE CONTACT POSITIONS

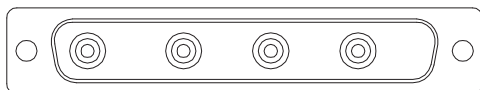


CBD5W5M00000-1841.1

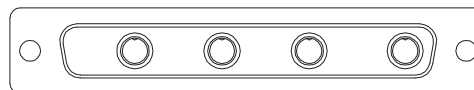


CBD5W5F00000-1841.1

COMBO-D CONNECTORS WITH FOUR CONTACT POSITIONS

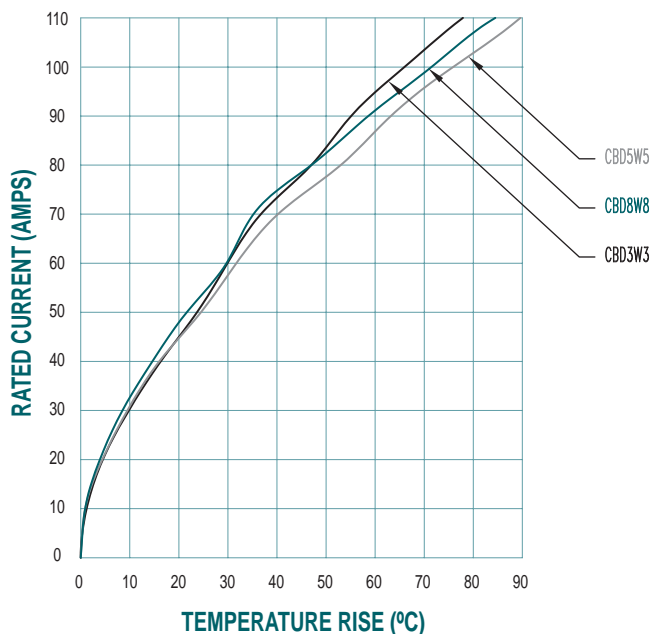


CBD8W8M00000-1841.2



CBD8W8F00000-1841.2

TEMPERATURE RISE CURVE

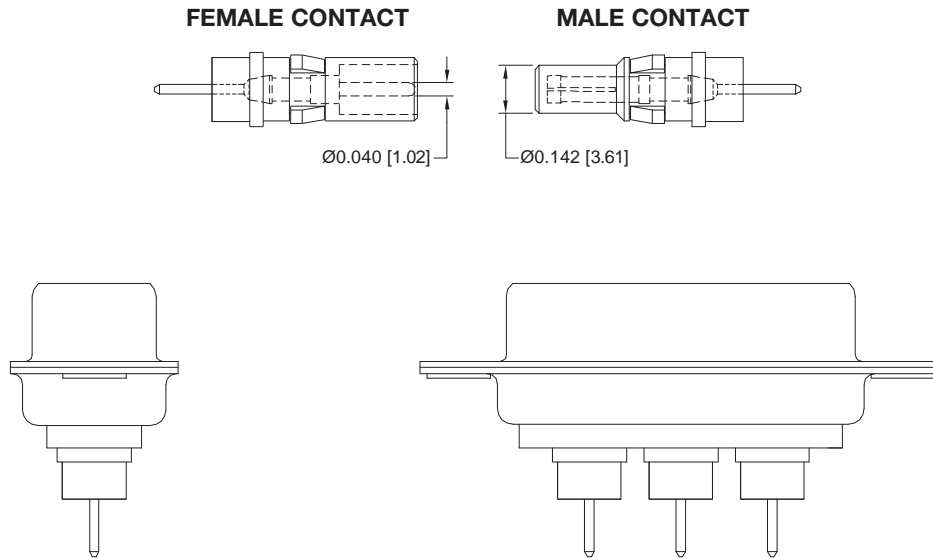


Test conducted in accordance with UL1977.
All power contacts under load.

Curves were developed using CBD3W3, 5W5, and 8W8 connectors with MC/FC4006D contacts terminated with 6 AWG wire.

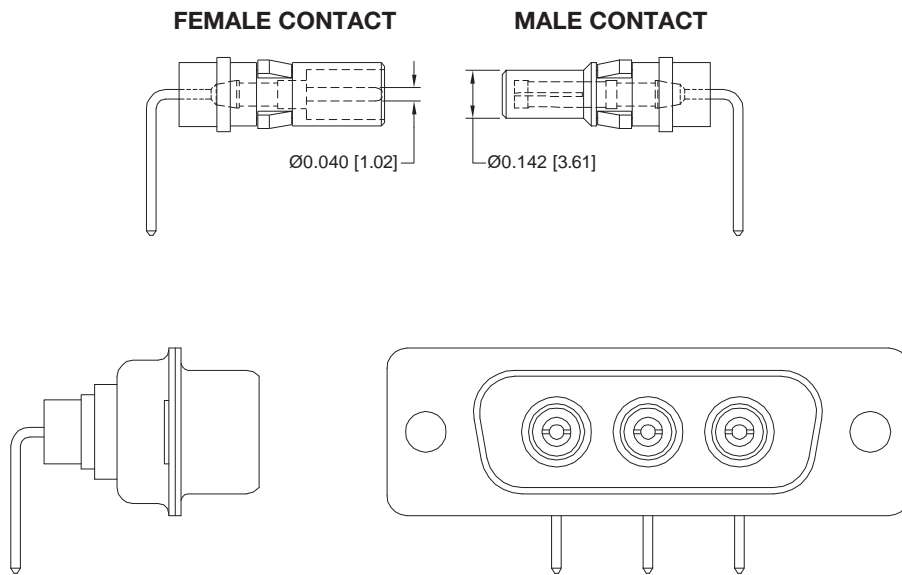


**STRAIGHT PRINTED BOARD MOUNT HIGH VOLTAGE CONTACT
SIZE 8**



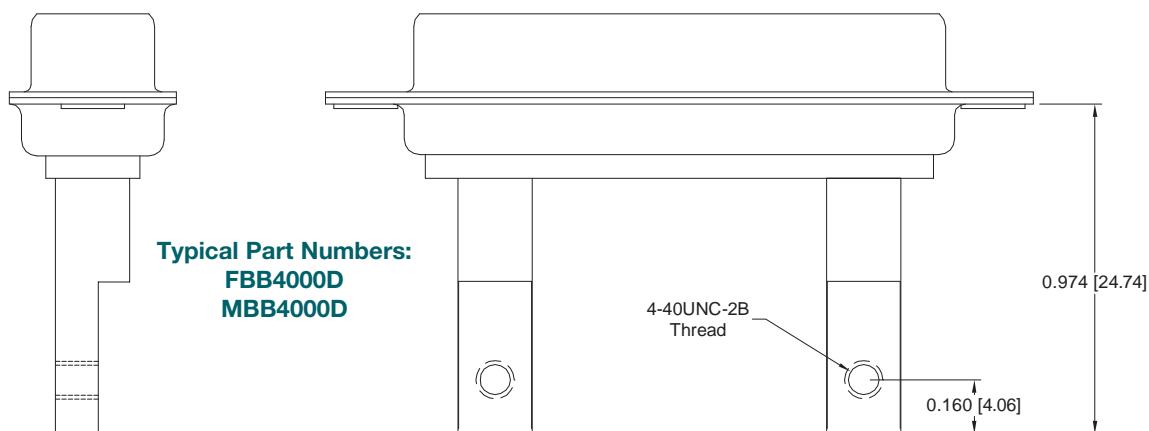
CONTACT TECHNICAL SALES FOR MORE INFORMATION!

**RIGHT ANGLE (90°) PRINTED BOARD MOUNT HIGH VOLTAGE CONTACT
SIZE 8**



CONTACT TECHNICAL SALES FOR MORE INFORMATION!

BUS BAR CONTACT SIZE 8 POWER CONTACT

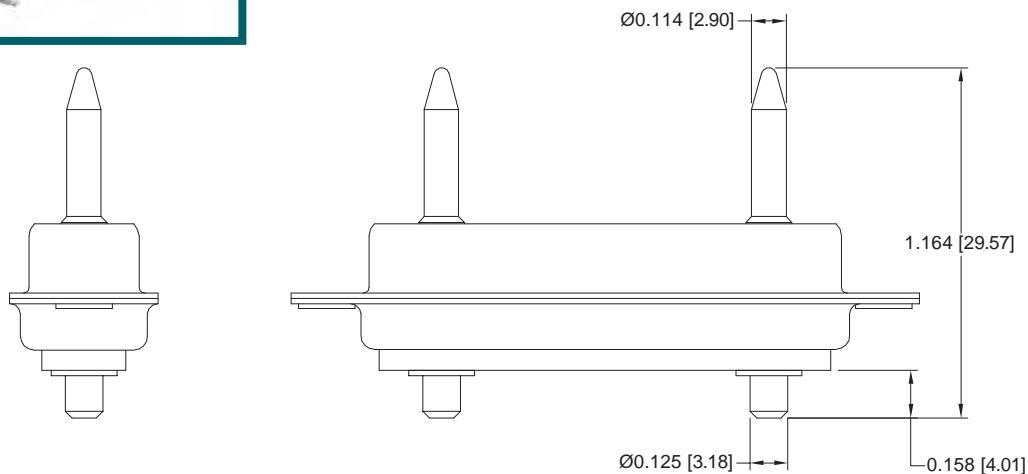


Power contacts can be offered with terminations suitable for use with bus bars.

CONTACT TECHNICAL SALES FOR MORE INFORMATION!



INTEGRAL BLIND MATE GUIDE SIZE 8



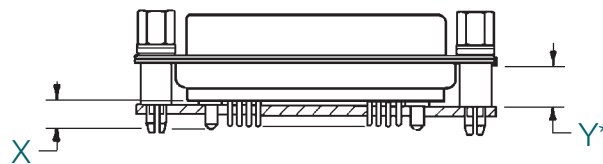
CONTACT TECHNICAL SALES FOR MORE INFORMATION!



CUSTOMER SPECIFIED CONTACT TERMINATION LENGTH

Positronic can supply CB series connectors with customer specified termination lengths. We have a wide variety of options available.

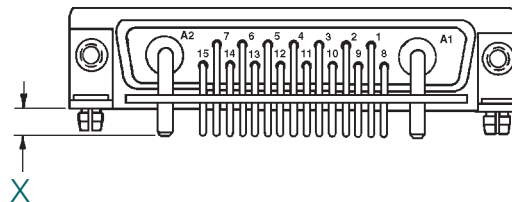
STRAIGHT PRINTED BOARD MOUNT



***Note:**

PCB spacer height can be adjusted according to contact termination length

RIGHT ANGLE (90°) PRINTED BOARD MOUNT



X and Y contact termination lengths can be custom designed to fit your application requirements.

CONTACT TECHNICAL SALES FOR MORE INFORMATION!

Connectors Designed To Customer Specifications

Positronic Combo-D connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.



REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

SIZE 22 REMOVABLE CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy with gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of insulator, release from rear face of insulator. Size 22 contacts, 0.030 inch [0.76 mm] mating diameter male contacts. Female PosiBand closed entry contact design. Terminations for 20, 22, 24, 26, 28, and 30 AWG. Closed barrel crimp.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes nominal.
Initial Contact Resistance: 0.010 ohms maximum.

THERMOCOUPLE CONTACTS:

Straight and right angle (90°) PCB mount contacts are available, contact Technical Sales for details.

Size 22 crimp contacts are available, see page 71 for details.

SIZE 20 REMOVABLE CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy with gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of insulator, release from rear face of insulator. Size 20 contacts, 0.040 inch [1.02 mm] mating diameter male contacts. Female PosiBand closed entry or rugged open entry contact design.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes nominal.
Initial Contact Resistance: 0.008 ohms max. per IEC 60512-2, test 2b.

THERMOCOUPLE CONTACTS:

Straight and right angle (90°) PCB mount contacts are available, contact Technical Sales for details.

Size 20 crimp contacts are available, see page 74 for details.

SIZE 16 REMOVABLE CONTACT

MATERIALS AND FINISHES:

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

HIGH CONDUCTIVITY: High conductivity copper alloy, gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

MECHANICAL CHARACTERISTICS:

STANDARD AND

HIGH CONDUCTIVITY: Insert contact to rear face of insulator, release from front face of insulator. Size 16 contacts, 0.0625 inch [1.588mm] mating

diameter male contacts. Female PosiBand closed entry contact design. Terminations for 12, 14, 16, 18, 20, 22, 24, 26, and 28 AWG.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating - Tested per UL 1977:

Standard Contact Material: 28 amperes.

High Conductivity Contact Material: 40 amperes.

See Temperature Rise Curves on page 2 for details.

Initial Contact Resistance:

Standard Contact Material: 0.0016 ohms max. Per IEC 60512-2, Test 2b.

High Conductivity

Contact Material: 0.001 ohms max. Per IEC 60512-2, Test 2b.

SIZE 8 REMOVABLE CONTACT

MATERIALS AND FINISHES:

STANDARD:

Precision machined copper alloy with gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

HIGH CONDUCTIVITY:

High conductivity copper alloy, gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

HIGH VOLTAGE:

Insulator Material:

PTFE teflon

Contacts:

Precision machined copper alloy with 0.000030 inch [0.76μ] gold over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

SHIELDED:

Dielectric Material:

PTFE teflon

Inner Contacts:

Precision machined copper alloy with 0.000030 inch [0.76μ] gold over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

Outer Contacts:

Precision machined copper alloy with gold flash over nickel. Other finishes are available, see pages 69 and 81 for optional finishes.

AIR LINE COUPLER:

Stainless steel, see page 80.

MECHANICAL CHARACTERISTICS:

STANDARD AND

HIGH CONDUCTIVITY:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts, 0.142 inch [3.61 mm] mating diameter male contacts, closed entry female contacts.

HIGH VOLTAGE:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. Straight and right angle (90°) terminations. 0.041 inch [1.04 mm] minimum hole diameter.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz.

Shock:

30g-11ms.

... continued on next page

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

continued from previous page . . .

MECHANICAL CHARACTERISTICS, continued:

SHIELDED: Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. See page 78 table of cable sizes for contact termination dimensions.

Durability: 500 cycles minimum.
Vibration: 20g from 10 Hz to 500 Hz.
Shock: 30g-11ms.

AIR LINE COUPLER: Insert contact to rear face of insulator, release from front face of insulator.

ELECTRICAL CHARACTERISTICS:

POWER CONTACTS:

For electrical characteristics, see page 4.

HIGH VOLTAGE:

Flash over Voltage: 3600 V r.m.s.
Proof Voltage: 2700 V r.m.s.
Initial Contact Resistance: 0.008 ohms maximum.

SHIELDED:

Initial Contact Resistance: 0.008 ohms maximum.
Nominal Impedance: 50 ohms.
Insertion Loss: -0.46 dB at 1 GHz

VSWR:

-1.5 dB at 2 GHz
1.15 average at 1 GHz
1.56 average at 2 GHz

Above values measured using frequency domain techniques.

Proof Voltage:

1000 V r.m.s.

OPTIONAL PLATING FINISHES

-14 0.000030 [0.76 μ] gold over nickel by adding "-14" suffix onto part number. Example: FC120N4-14.

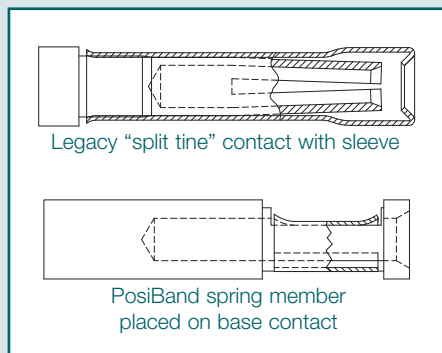
-15 0.000050 inch [1.27 μ] gold over nickel by adding "-15". Example: FC120N4-15.

RoHS OPTIONS:

/AA

Environmental Compliance Option: RoHS compliant can be achieved by adding "/AA" suffix onto part number. Examples: FC120N4/AA or for optional finishes use FC120N4/AA-14.

What makes Positronic's PosiBand® contact interface significant?



- ✓ Higher reliability in harsh environments and repeated mating cycles.
- ✓ PosiBand crimp contacts do not need to be annealed. Split tine D-subminiature contacts are commonly annealed at the crimp barrel, with the possibility of reliability problems at the contact interface if the annealing is performed incorrectly.
- ✓ Electrical and mechanical function of the contact interface are separated since the PosiBand contact is a two-piece design. Contact normal force is provided by the "Posiband spring member", which allows higher mechanical reliability. The

electrical continuity path is supported through the base contact, which allows a greater number of electrical paths on a "micro" level when compared to split tine contact design.

- ✓ Higher reliability at prices comparable to the "split tine" design.
- ✓ PosiBand is protected by US Patent 7,115,002.

For a detailed white paper visit: www.connectpositronic.com/posiband

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.

REMOVABLE CRIMP SIGNAL CONTACT

FOR USE WITH CBCD SERIES CONNECTORS

SIZE 22

QUALIFIED TO AS39029

*MILITARY SPECIFICATION CONTACTS

STANDARD FINISH:
per AS39029 specifications

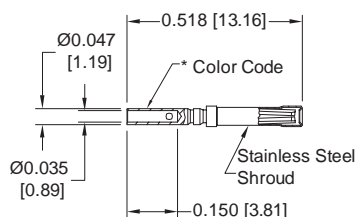
COLOR CODE:

MALE CONTACT:
ORANGE/BLUE/BLACK

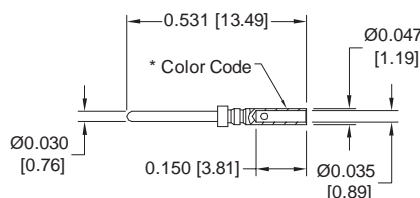
FEMALE CONTACT:
ORANGE/GREEN/YELLOW

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]
*M39029/57-354	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]
Positronic is qualified to supply the legacy design, as well as, the PosiBand design. If the requirement is for the PosiBand design exclusively, notify sales at time of quotation for order placement when requesting M39029 contacts.	

MALE PART NUMBER	WIRE SIZE AWG [mm ²]
*M39029/58-360	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]

REMOVABLE CRIMP SIGNAL CONTACT

FOR USE WITH CBCD SERIES CONNECTORS

SIZE 22



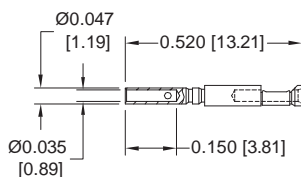
Authentic Positronic®
PosiBand®

These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

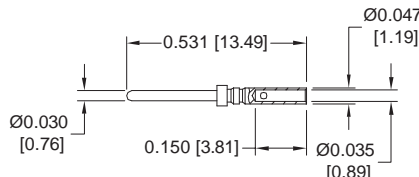
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]
FC8022D2	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]

MALE PART NUMBER	WIRE SIZE AWG [mm ²]
MC8022D	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



Positronic
connectpositronic.com

REMOVABLE CONTACTS

Combo-D
D-Sub

CRIMP SIGNAL CONTACT FOR USE WITH CBCD SERIES CONNECTORS CONTACTS USED WITH 20 AWG WIRE

SIZE 22



Authentic Positronic®
PosiBand®

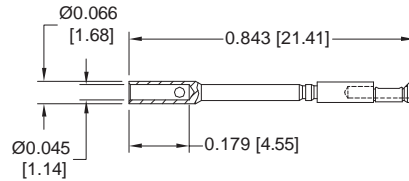
These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.

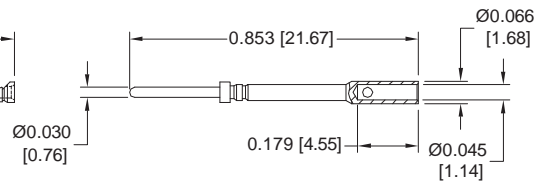
The crimp area of these contacts is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. These contact cannot be removed from connector after installation. Not suitable for fully loaded connector.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



Crimp area extends above connector molding.

FEMALE PART NUMBER	WIRE SIZE AWG [mm²]
FC8020D2	20 [0.5] max

MALE PART NUMBER	WIRE SIZE AWG [mm²]
MC8020D	20 [0.5] max

REMOVABLE THERMOCOUPLE SIGNAL CRIMP SIGNAL CONTACT

FOR USE WITH CBCD SERIES CONNECTORS

SIZE 22



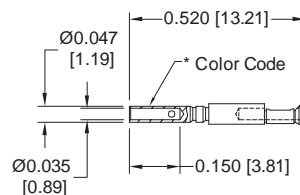
Authentic Positronic®
PosiBand®

These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

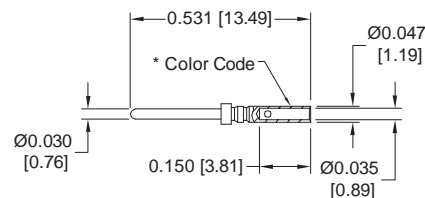
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE*	WIRE SIZE AWG [mm²]
K	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	ALUMEL (-)	FC8022D2AL	MC8022DAL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
T	COPPER (+) with gold flash	FC8022D2CU	MC8022DCU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with PCB solder termination, please contact Technical Sales.

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.

MILITARY LEVEL REMOVABLE CRIMP SIGNAL CONTACT

FOR USE WITH CBC SERIES CONNECTORS

SIZE 20

QUALIFIED TO AS39029

*MILITARY SPECIFICATION CONTACTS

STANDARD FINISH:

0.000050 inch [1.27μ] gold over nickel

COLOR CODE:

MALE CONTACT:

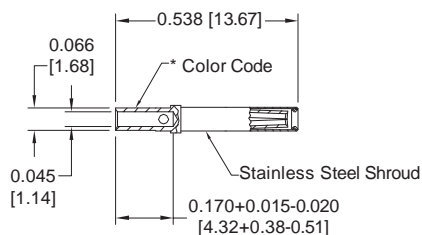
ORANGE/BLUE/WHITE

FEMALE CONTACT:

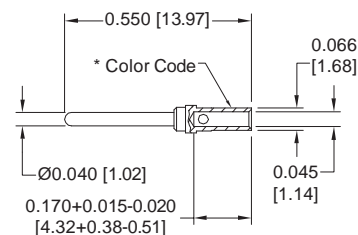
ORANGE/BLUE/GRAY

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]
*M39029/63-368	20 / 22 / 24 [0.5/0.3/0.25]

Positronic is qualified to supply the legacy design, as well as, the PosiBand design. If the requirement is for the PosiBand design exclusively, notify sales at time of quotation for order placement when requesting M39029 contacts.

MALE PART NUMBER	WIRE SIZE AWG [mm ²]
*M39029/64-369	20 / 22 / 24 [0.5/0.3/0.25]

INDUSTRIAL / MILITARY LEVEL REMOVABLE CRIMP SIGNAL CONTACT

FOR USE WITH CBC SERIES CONNECTORS

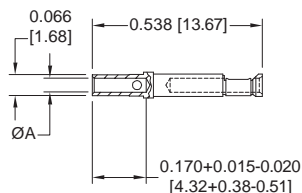
SIZE 20



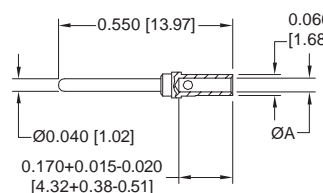
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]	ØA
FC6020D2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
FC6026D2	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

MALE PART NUMBER	WIRE SIZE AWG [mm ²]	ØA
MC6020D	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
MC6026D	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



Positronic
connectpositronic.com

REMOVABLE CONTACTS

Combo-D
D-Sub

INDUSTRIAL / MILITARY LEVEL CRIMP SIGNAL CONTACT

FOR USE WITH CBC SERIES CONNECTORS

CONTACTS USED WITH 18 AWG WIRE

SIZE 20



Authentic Positronic®
PosiBand®

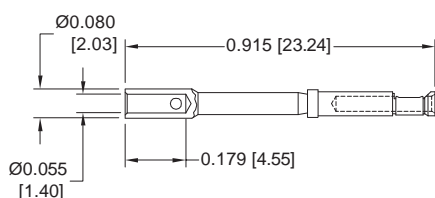
These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.

The crimp area of these contacts is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. These contact cannot be removed from connector after installation. Not suitable for fully loaded connector.

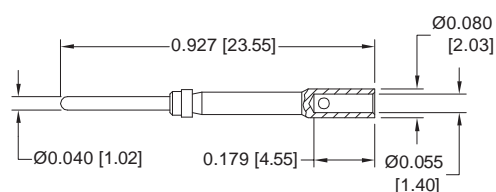
FEMALE CONTACT

"CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG [mm²]
FC6018D2	18 [1.0] max

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG [mm²]
MC6018D	18 [1.0] max

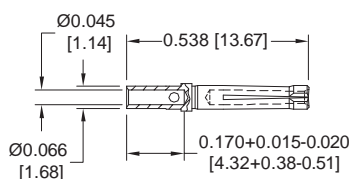
PROFESSIONAL LEVEL REMOVABLE CRIMP SIGNAL CONTACT

FOR USE WITH CBC AND QB SERIES CONNECTORS

SIZE 20

FEMALE CONTACT

"RUGGED OPEN ENTRY" DESIGN



Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE PART NUMBER	WIRE SIZE AWG [mm²]
FC6520D	20 / 22 / 24 [0.5/0.3/0.25]

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.

REMOVABLE THERMOCOUPLE CRIMP CONTACT

FOR USE WITH CBC SERIES CONNECTORS

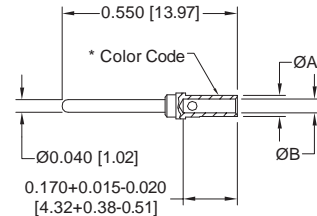
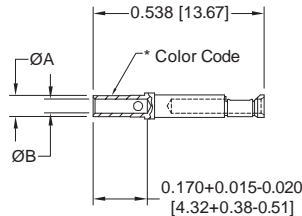
SIZE 20

FEMALE CONTACT

"CLOSED ENTRY" DESIGN

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]	ØA	ØB
K	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CH	MC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	ALUMEL (-)	FC6020D2AL ^{††}	MC6020DAL [†]	GREEN	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2AL	MC6026DAL		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
T	COPPER (+) with gold flash	FC6020D2CU ^{††}	MC6020DCU [†]	RED	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CU	MC6026DCU		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	CONSTANTAN (-)	FC6020D2CO ^{††}	MC6020DCO [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CO	MC6026DCO		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
E	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CH	MC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]
	CONSTANTAN (-)	FC6020D2CO ^{††}	MC6020DCO [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
		FC6026D2CO	MC6026DCO		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.048 [1.23]	0.027 [0.69]

For more information on the availability of Type J thermocouple contacts, and information about thermocouple contacts with PCB solder termination, please contact Technical Sales.

Chromel[®] and Alumel[®] are registered trademarks of Hoskins Manufacturing Company.

[†]Dimensionally equivalent to M39029/64-369

^{††}Dimensionally equivalent to M39029/63-368

REMOVABLE CRIMP POWER CONTACT

FOR USE WITH CBCD SERIES CONNECTORS

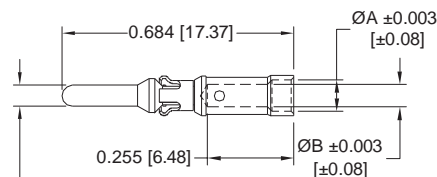
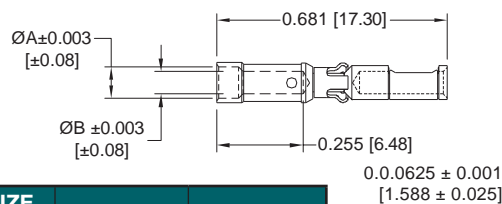
SIZE 16

*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.

MALE CONTACT

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.



FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]	ØA	ØB
FC112N4S	12 / [4.0]	N/A	0.098 [2.49]
FC112N4	12 / [4.0]	N/A	0.098 [2.49]
FC114N4	14-16 [2.5-1.5]	0.105 [2.67]	0.081 [2.06]
FC116N4	16-18 [1.5-1.0]	0.093 [2.36]	0.067 [1.70]
FC120N4	20-22-24 [0.5-0.3-0.25]	0.068 [1.73]	0.045 [1.14]

"S" in part number indicates high conductivity copper alloy material.

MALE PART NUMBER	WIRE SIZE AWG [mm ²]	ØA	ØB
MC112NS-133.0	12 / [4.0]	N/A	0.098 [2.49]
MC112N-133.0	12 / [4.0]	N/A	0.098 [2.49]
MC114N-133.0	14-16 [2.5-1.5]	0.105 [2.67]	0.081 [2.06]
MC116N-133.0	16-18 [1.5-1.0]	0.093 [2.36]	0.067 [1.70]
MC120N-133.0	20-22-24 [0.5-0.3-0.25]	0.068 [1.73]	0.045 [1.14]

***1 NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



Positronic
connectpositronic.com

REMOVABLE CONTACTS

Combo-D
D-Sub

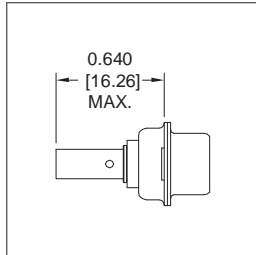
REMOVABLE CRIMP POWER CONTACT

FOR USE WITH CBD, CBC, CBCD AND CBDD SERIES CONNECTORS

SIZE 8

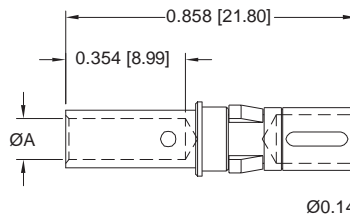
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

For contact current rating, see page 4.

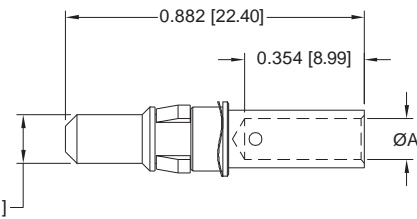


*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]	Ø A
FC4008DS	8 [10.0]	0.181 [4.60]
FC4008D	8 [10.0]	0.181 [4.60]
FC4010D	10 [5.3]	0.122 [3.10]
FC4012D	12 [4.0]	0.101 [2.57]
FC4016D	16 [1.5]	0.067 [1.70]

"S" in part number indicates high conductivity copper alloy material.

MALE PART NUMBER	WIRE SIZE AWG [mm ²]	Ø A
MC4008DS	8 [10.0]	0.181 [4.60]
MC4008D	8 [10.0]	0.181 [4.60]
MC4010D	10 [5.3]	0.122 [3.10]
MC4012D	12 [4.0]	0.101 [2.57]
MC4016D	16 [1.5]	0.067 [1.70]

****NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

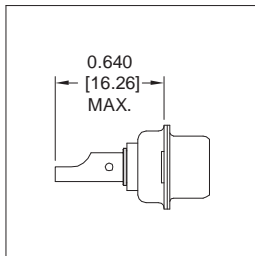
REMOVABLE SOLDER CUP POWER CONTACT

FOR USE WITH CBD, CBC, CBCD AND CBDD SERIES CONNECTORS

SIZE 8

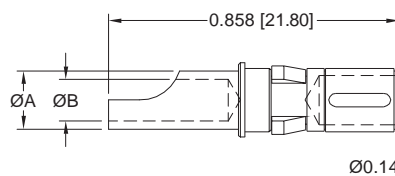
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

For contact current rating, see page 4.

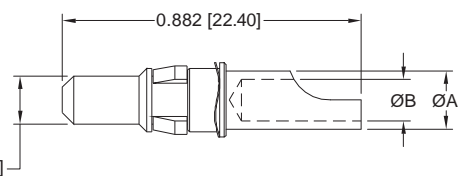


*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG [mm ²]	Ø A	Ø B
FS4008D	8 [10.0]	0.219 [5.56]	0.188 [4.78]
FS4012D	12 [4.0]	0.143 [3.63]	0.112 [2.84]
FS4016D	16 [1.5]	0.100 [2.54]	0.069 [1.75]

MALE PART NUMBER	WIRE SIZE AWG [mm ²]	Ø A	Ø B
MS4008D	8 [10.0]	0.219 [5.56]	0.188 [4.78]
MS4012D	12 [4.0]	0.143 [3.63]	0.112 [2.84]
MS4016D	16 [1.5]	0.100 [2.54]	0.069 [1.75]

****NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.

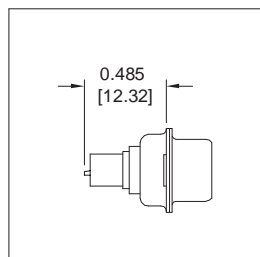
REMOVABLE HIGH VOLTAGE POWER CONTACT

FOR USE WITH CBD, CBC, CBCD AND CBDD SERIES CONNECTORS

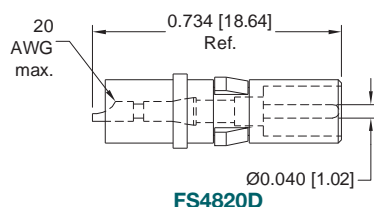
SIZE 8

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

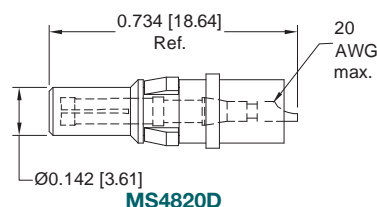
STRAIGHT SOLDER WIRE TERMINATION



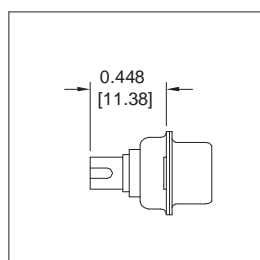
FEMALE CONTACT



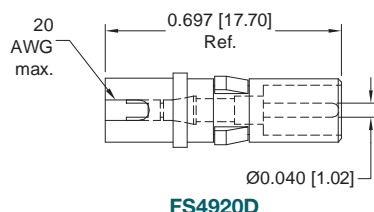
MALE CONTACT



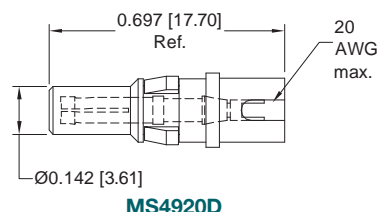
RIGHT ANGLE (90°) SOLDER WIRE TERMINATION



FEMALE CONTACT



MALE CONTACT



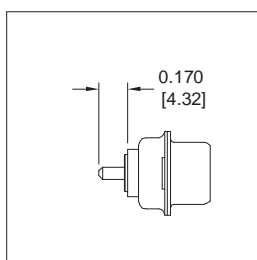
STRAIGHT PRINTED BOARD MOUNT POWER CONTACT

FOR USE WITH CBD AND CBDD SERIES CONNECTORS

SIZE 8

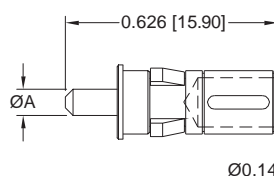
Positronic **recommends** printed circuit board termination **contacts be supplied installed** in the connector. **Contact technical sales** for part number information.

For contact current rating, see page 4.

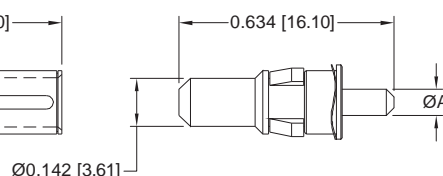


*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	Ø A	CONTACT CODE
FDS4314D	0.078 [1.98]	35
FDS4312D	0.094 [2.39]	36
FDS4310D	0.125 [3.18]	37

MALE PART NUMBER	Ø A	CONTACT CODE
MDS4314D	0.078 [1.98]	35
MDS4312D	0.094 [2.39]	36
MDS4310D	0.125 [3.18]	37

****NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



Positronic
connectpositronic.com

REMOVABLE CONTACTS

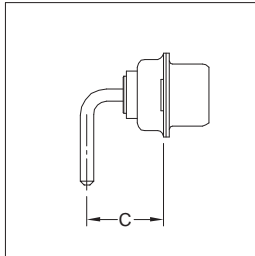
Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT POWER CONTACT FOR USE WITH CBD AND CBDD SERIES CONNECTORS

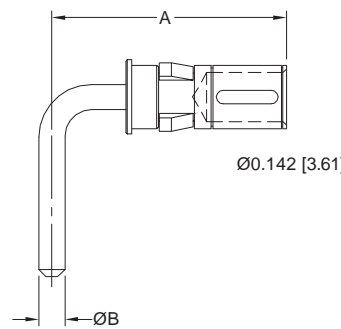
SIZE 8

Positronic **recommends** printed circuit board termination **contacts be supplied installed** in the connector. **Contact technical sales** for part number information.

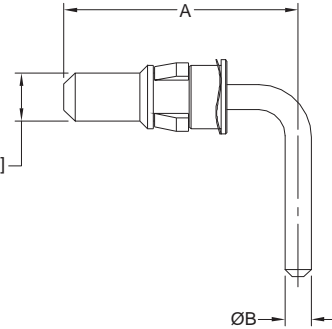
For contact current rating, see page 4.



***1 FEMALE CONTACT**
“CLOSED ENTRY” DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	A REF.	Ø B	C	SHELL SIZE	CONTACT CODE
FRT4314D	0.580 [14.73]	0.078 [1.98]	0.339 [8.61]	1, 2, 3 & 4	55
FRT4414D	0.692 [17.58]	0.078 [1.98]	0.451 [11.46]	5	55
FRT4714D	0.661 [16.79]	0.078 [1.98]	0.420 [10.67]	1, 2, 3 & 4	75
FRT4814D	0.773 [19.63]	0.078 [1.98]	0.520 [13.21]	5	75
FRT4310D	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	1, 2, 3 & 4	57
FRT4410D	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	5	57

MALE PART NUMBER	A REF.	Ø B	C	SHELL SIZE	CONTACT CODE
MRT4314D	0.580 [14.73]	0.078 [1.98]	0.339 [8.61]	1, 2, 3 & 4	55
MRT4414D	0.692 [17.58]	0.078 [1.98]	0.451 [11.46]	5	55
MRT4714D	0.661 [16.79]	0.078 [1.98]	0.420 [10.67]	1, 2, 3 & 4	75
MRT4814D	0.773 [19.63]	0.078 [1.98]	0.520 [13.21]	5	75
MRT4310D	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	1, 2, 3 & 4	57
MRT4410D	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	5	57

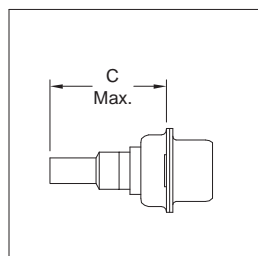
***1 NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.

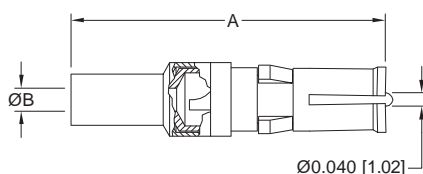
REMOVABLE SHIELDED CONTACT
FOR USE WITH CBD, CBC, CBCD AND CBDD SERIES CONNECTORS
SIZE 8

Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

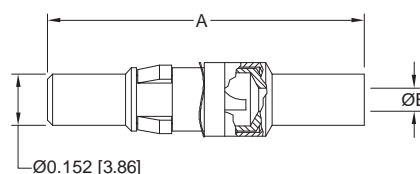
STRAIGHT SOLDER/CRIMP CONTACTS



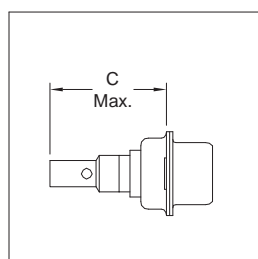
FEMALE CONTACT



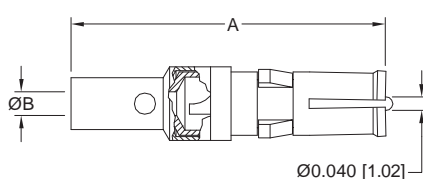
MALE CONTACT



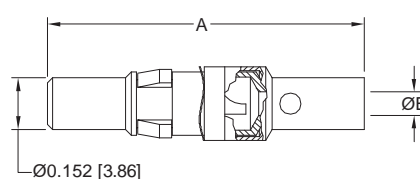
STRAIGHT SOLDER/SOLDER CONTACTS



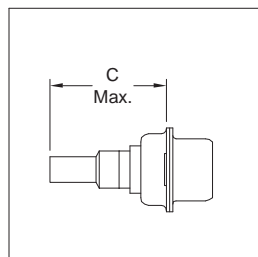
FEMALE CONTACT



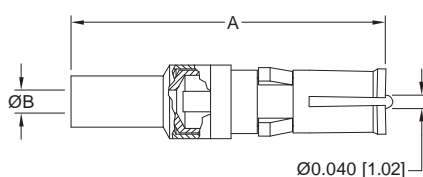
MALE CONTACT



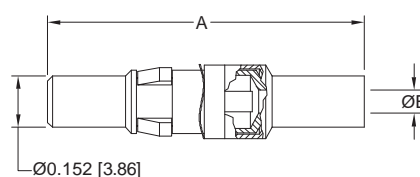
STRAIGHT CRIMP/CRIMP CONTACTS



FEMALE CONTACT



MALE CONTACT



TYPE OF CONTACT	FEMALE PART NUMBER	MALE PART NUMBER	A	Ø B	C MAX.	RG CABLE NUMBER
SOLDER/CRIMP	FC4101D	MC4101D	0.929 [23.60]	0.040 [1.02]	0.739 [18.77]	178 B/U 196 B/U
SOLDER/CRIMP	FC4102D	MC4102D	0.929 [23.60]	0.067 [1.70]	0.739 [18.77]	179 B/U 316 /U
SOLDER/CRIMP	FC4103D	MC4103D	1.037 [26.34]	0.108 [2.74]	0.847 [21.51]	180 B/U
SOLDER/CRIMP	FC4104D	MC4104D	1.037 [26.34]	0.120 [3.05]	0.847 [21.51]	58 B/U
SOLDER/SOLDER	FS4101D	MS4101D	0.929 [23.60]	0.040 [1.02]	0.739 [18.77]	178 B/U 196 B/U
SOLDER/SOLDER	FS4102D	MS4102D	0.929 [23.60]	0.067 [1.70]	0.739 [18.77]	179 B/U 316 /U
SOLDER/SOLDER	FS4103D	MS4103D	1.037 [26.34]	0.108 [2.74]	0.847 [21.51]	180 B/U
SOLDER/SOLDER	FS4104D	MS4104D	1.037 [26.34]	0.120 [3.05]	0.847 [21.51]	58 B/U
CRIMP/CRIMP	FCC4101D	MCC4101D	0.929 [23.60]	0.040 [1.02]	0.739 [18.77]	178 B/U 196 B/U
CRIMP/CRIMP	FCC4102D	MCC4102D	0.929 [23.60]	0.067 [1.70]	0.739 [18.77]	179 B/U 316 /U
CRIMP/CRIMP	FCC4103D	MCC4103D	1.037 [26.34]	0.108 [2.74]	0.847 [21.51]	180 B/U
CRIMP/CRIMP	FCC4104D	MCC4104D	1.037 [26.34]	0.120 [3.05]	0.847 [21.51]	58 B/U



SHIELDED CONTACTS

Two-step crimping action for signal and shielding conductors.

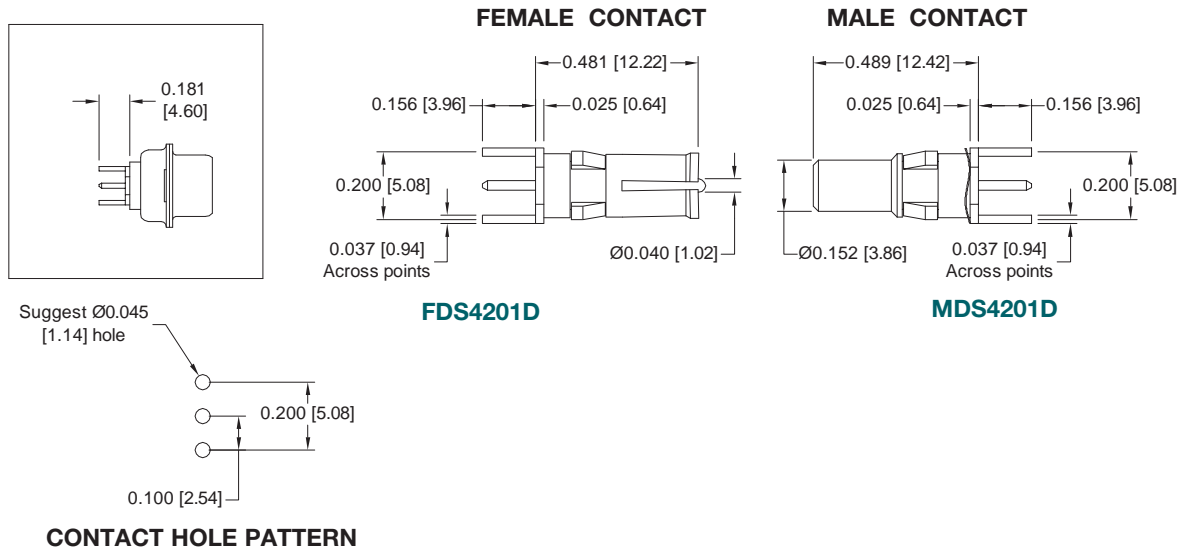
For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



STRAIGHT PRINTED BOARD MOUNTED SHIELDED CONTACT FOR USE WITH CBD AND CBDD SERIES CONNECTORS

SIZE 8

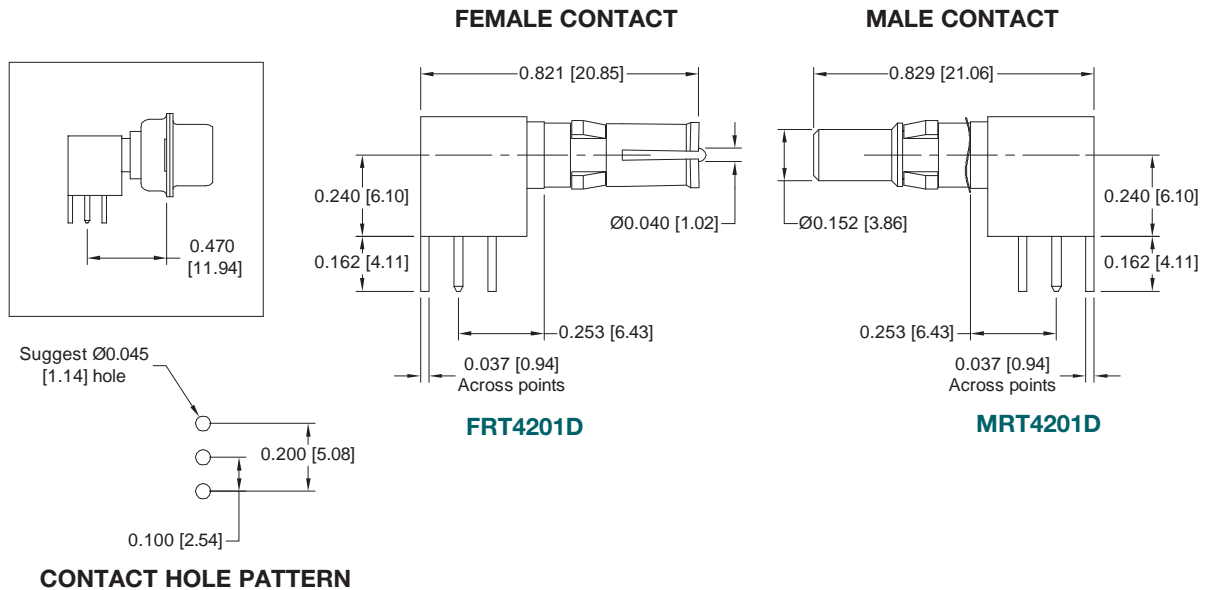
Positronic **recommends** printed circuit board termination **contacts be supplied installed** in the connector. **Contact technical sales** for part number information.



RIGHT ANGLE (90°) PRINTED BOARD MOUNT SHIELDED CONTACT FOR USE WITH CBD AND CBDD SERIES CONNECTORS

SIZE 8

Positronic **recommends** printed circuit board termination **contacts be supplied installed** in the connector. **Contact technical sales** for part number information.



For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.

REMOVABLE AIR LINE COUPLERS

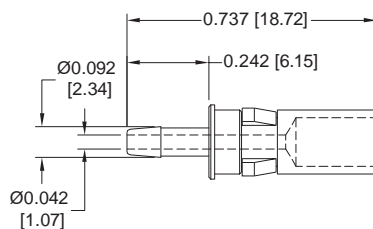
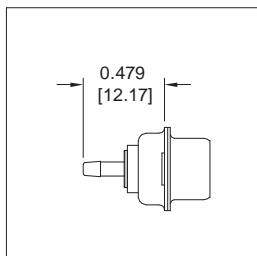
FOR USE WITH CBD, CBC, CBCD AND CBDD SERIES CONNECTORS

SIZE 8

**AIR LINE COUPLER CONTACTS
REQUIRE JACKSCREWS TO
COUPLE MATING CONNECTORS**

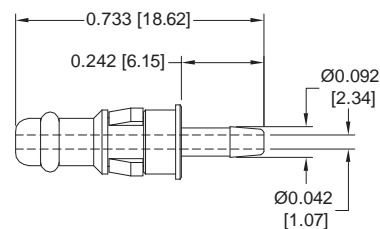
Note: Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

FEMALE CONTACT



FA4063S

MALE CONTACT



MA4063S



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Contacts: Stainless steel

MECHANICAL CHARACTERISTICS:

**Size 8 Removable
Contacts:**

Rear insertion, front release.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

CONTACT TECHNICAL SALES FOR MORE INFORMATION!

For information regarding crimp tool and crimping tool techniques, see Application Tools section, page 82.



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



MODIFICATION (MOS) SUFFIXES

Specify complete connector by selecting a base part number from the desired series [Ordering Information Page](#). Once base part number is selected, add desired modifications (MOS) number below to the end of the part number.

Example part number: CBD17W2F55R7NT2X/AA-14-1062.1 *(Ordering information pages can be found at the end of each series)*

SERIES	CONNECTOR VARIANT	GENDER	TERMINATION TYPE AVAILABLE	MODIFICATIONS OF STANDARD (MOS) SUFFIXES	DESCRIPTION OF MODIFICATION
CBD	3W3	F / M	0	-1841.0	Allows for molding to have positions A1 and A3 tooled only. Position A2 not molded but numbering will remain.
CBD	5W5	F / M	0	-1841.1	Allows for molding to have positions 1, 3 and 5 tooled only. Positions 2 and 4 not molded but numbering will remain.
CBD	8W8	F / M	0	-1841.2	Allows for molding to have positions A1,A3,A5 and A7 tooled only. Positions A2,A4,A6 and A8 not molded but numbering will remain.
 CBD, CBM	3W3, 8W8	M	0	-1570.4	Integral stabilizing feature used to minimize size 8 contacts from floating in the molding. Use tool number 4311-0-1-0 to remove contact if necessary.
 CBC	36W4, 43W2				
CBD, CBC, CBDD, CBHD, CBCD, CBDP*, ACBDP, ACBMP	ALL	F / M	ALL	-14	Allows connector with signal contacts installed, for signal contacts only to be plated 0.000030 [0.76 µ] gold over nickel.
CBD, CBC, CBDD, CBHD, CBCD, ACBDP, ACBMP	ALL	F / M	ALL	-14-1062.1	Allows connector with signal and power contacts installed, for both signal and power contacts to be plated 0.00030 [0.76 µ] gold over nickel
CBD, CBC, CBDD, CBHD, CBCD, CBDP*, ACBDP, ACBMP	ALL	F / M	ALL	-15	Allows connector with signal contacts installed, for signal contacts only to be plated 0.000050 inch [1.27µ] gold over nickel.
CBD, CBC, CBDD, CBHD, CBCD, ACBDP, ACBMP	ALL	F / M	ALL	-15-1062.0	Allows connector with signal and power contacts installed, for both signal and power contacts to be plated 0.000050 inch [1.27µ] gold over nickel.
CBD, CBM, CBC, CBDD, CBHD, CBCD	ALL	F / M	ALL	-1062.0	Allows connector with power contacts installed, for the power contacts only to be plated 0.000050 inch [1.27µ] gold over nickel.
CBD, CBM, CBC, CBDD, CBHD, CBCD	ALL	F / M	ALL	-1062.1	Allows connector with power contacts installed, for the power contacts only to be plated 0.00030 [0.76 µ] gold over nickel.
CBD, CBM, CBC, CBDD, CBHD, CBCD	ALL	F / M	ALL	-759.0	Allows connectors to be supplied with blind mate guides, lockwashers and hexnuts installed. For connectors with a 4-40 threaded mounting style install blind mate guides only. For connectors with a R3/R6 mounting style install special blind mate guides with lockwashers and hexnuts. See D-subminiature Accessories catalog for more details.
CBD, CBM, CBC, CBDD, CBHD, CBCD	ALL	F / M	ALL	-759.1	Allows connector, with any contacts to include blind mate mounting plate. See D-subminiature Accessories catalog for more details.
QB	FOR CONTACTS	F	FC40**D CONTACTS	-1817.0	Allows for contacts to have a crimp barrel with a length of 0.310 [7.87].
QB	7W2, 9W4	M	56, 57	-1865.0	Connector with standard right angle (90°) brackets replaced with 4535-78-0 right angle (90°) brackets.
QB	7W2	M	N/A	-1845.0	Allows for a connector to be supplied with inverted bend. Contact tail length below bracket of 0.122 [3.10] max. Alignment bar not required.

MANY OTHER SPECIAL OPTIONS ARE AVAILABLE REFER TO D-SUBMINIATURE ACCESSORIES CATALOG, CONSULT TECHNICAL SALES OR VISIT OUR WEBSITE AT WWW.CONNECTPOSITRONIC.COM

APPLICATION TOOLS SECTION

*CBD / CBM / CBC / CBCD / QB connectors are offered with **removable crimp contacts**. Positronic recognizes the **importance of supplying application tooling** to support our customers' use of our products.*

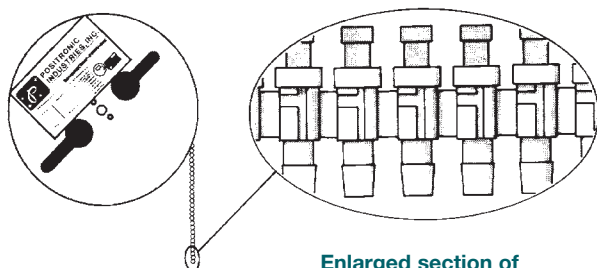
*Information on application tooling is **available** on our web site at*

www.connectpositronic.com/design-tools/tooling

*There you will find **downloadable PDF** cross reference charts for removable and compliant press-fit contacts. These charts will **supply part numbers** for insertion, removal and crimping tools, along with **information regarding use** of tools and techniques.*



CONTACT REELS FOR AUTOMATIC PNEUMATIC CRIMP TOOLS



Enlarged section of
plastic contact carriers

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9550-0-0-0 and 9550-1-0-0; packaged in reels holding 1,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9550-0-2-0. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC8022DR for a male contact and FC112N4R for female contact.



Positronic
connectpositronic.com

APPLICATION TOOLS

Combo-D
D-Sub

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Contact Size	Positronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil. Equiv	Positioner	Mfg. Cross	Mil. Equiv	Insertion Tool	Mfg. Cross	Mil. Equiv	Removal Tool	Mfg. Cross	Mil. Equiv	Automatic Crimp Tool *1 See Note
8	FA4063S											4311-0-0-0	P+		
8	FC4008D	9504-19-0-0	9504-1-0-0	HX4	M22520/5-01	9504-19-1-0	Y324		N/A			4311-0-0-0	P+		9555-0-2-0
8	FC4008D-1817.0	9504-19-0-0	9504-1-0-0	HX4	M22520/5-01	9504-19-1-0	Y324		N/A			4311-0-0-0	P+		9555-0-2-0
8	FC4008DS	9504-19-0-0	9504-1-0-0	HX4	M22520/5-01	9504-19-1-0	Y324		N/A			4311-0-0-0	P+		9555-0-2-0
8	FC4011D	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+		9555-0-2-0
8	FC4012D-1817.0	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+		9555-0-2-0
8	FC4101D	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+		
8	FC4102D	9504-13-0-0	9504-1-0-0	HX4	M22520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+		
8	FC4103D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
8	FCC4103D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
8	FCC4104D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
8	FDS4101D											4311-0-0-0	P+		
8	FRT4201D											4311-0-0-0	P+		
8	FRT411D											4311-0-0-0	P+		
8	FS4008D											4311-0-0-0	P+		
8	FS4011D											4311-0-0-0	P+		
8	FS4101D											4311-0-0-0	P+		
8	FS420D											4311-0-0-0	P+		
8	MA4063S											4311-0-0-0	P+		
8	MC4008D	9504-19-0-0	9504-1-0-0	HX4	M22520/5-01	9504-19-1-0	Y324		N/A			4311-0-0-0	P+		9555-0-2-0
8	MC4008DS	9504-19-0-0	9504-1-0-0	HX4	M22520/5-01	9504-19-1-0	Y324		N/A			4311-0-0-0	P+		9555-0-2-0
8	MC4011D	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+		9555-0-2-0
8	MC4101D	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+		
8	MC4101D	9504-14-0-0	9504-1-0-0	HX4	M22520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+		
8	MC4102D	9504-13-0-0	9504-1-0-0	HX4	M22520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
8	MC4103D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
8	MC4104D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
8	MDS4201D											4311-0-0-0	P+		
8	MDS411D											4311-0-0-0	P+		
8	MS4008D											4311-0-0-0	P+		
8	MS4011D											4311-0-0-0	P+		
8	MS4101D											4311-0-0-0	P+		
8	MS420D											4311-0-0-0	P+		

*1 for complete listing of contact part numbers, see removable contact section pages 68-80.

*1 All male and female crimp contacts can be ordered on reels in quantities of 1,000 and 2,000 by adding letter "R" after the contact part number, see page 82 for more information.

83 DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Contact Size	Positronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv	Insertion Tool	Mfg. Cross	Mil Equiv	Removal Tool	Mfg. Cross	Mil Equiv	Automatic Crimp Tool ^{*1} See Note
22	FC8020D2		9507-0-0-0	AFM8	M22520/2-01	9502-29-0-0	K1665								
22	FC8022D2		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41	M22520/2-06	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	9550-1+0-0
22	FC8022D2** Thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K-41	M22520/2-06	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	9550-1+0-0
22	MC8020D		9507-0-0-0	AFM8	M22520/2-01	9502-29-0-0	K1665		M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	9550-1+0-0
22	MC8022D		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42	M22520/2-09	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	9550-1+0-0
22	MC8022D** Thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K-42	M22520/2-09	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	9550-1+0-0
22	M39029/57-354		9507-0-0-0	AFM8	M22520/2-01	9502-3-0-0	K41	M22520/2-06	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	
22	M39029/58-360		9507-0-0-0	AFM8	M22520/2-01	9502-4-0-0	K42	M22520/2-09	M81969/1-04	91067-1	M81969/1-04	M81969/1-04	91067-1	M81969/1-04	
20	FC6018D2		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	
20	FC6020D2		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	FC6020D2** Thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	FC6026D2		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	FC6026D2** Thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	FC6520D		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	M39029/6-36*		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	
20	MC6018D		9507-0-0-0	AFM8	M22520/2-01	9502-11-0-0	K774		M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	MC6020D		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	MC6020D** Thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	MC6026D		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
20	MC6026D** Thermocouple		9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	M81969/1-02	91067-2	M81969/1-02	M81969/1-02	91067-2	M81969/1-02	9550-1+0-0
16	FC11*N4		9501-0-0-0	AF8	M22520/1-01	T.B.D.	T.B.D.		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	FTG 2103	M81969/20-01	
16	FC112N4S		9509-4-0-0	GS222		9509-5-0-0	TP1366		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	FTG 2103	M81969/20-01	
16	FC120N4		9501-0-0-0	AF8	M22520/1-01	T.B.D.	T.B.D.		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	FTG 2103	M81969/20-01	
16	MC11*N-133.0		9501-0-0-0	AF8	M22520/1-01	9502-17-0-0	TP1110		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	FTG 2103	M81969/20-01	9550-0-0-0
16	MC112NS-133.0		9509-4-0-0	GS222		9509-5-0-0	TP1366		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	FTG 2103	M81969/20-01	
16	MC120N-133.0		9501-0-0-0	AF8	M22520/1-01	9502-17-0-0	TP1110		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	FTG 2103	M81969/20-01	9550-0-0-0

* for complete listing of contact part numbers, see removable contact section pages 68-80.

*1 All male and female crimp contacts can be ordered on reels in quantities of 1,000 and 2,000 by adding letter "R" after the contact part number, see page 82 for more information.



SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

Traditionally, tin-lead has been a popular plating for printed circuit board (PCB) holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA & BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE

BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	22 OMEGA	$\phi 0.0453 \pm 0.0010$ [$\phi 1.150 \pm 0.025$]	0.0006 [15 μ] minimum solder over 0.0010 [25 μ] min. copper	$\phi 0.0394 \pm 0.0035 - 0.0024$ [$\phi 1.000 \pm 0.090 - 0.060$]
	20 OMEGA	$\phi 0.0453 \pm 0.0010$ [$\phi 1.150 \pm 0.025$]		$\phi 0.0394 \pm 0.0035 - 0.0024$ [$\phi 1.000 \pm 0.090 - 0.060$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]

RoHS PCB PLATING OPTIONS

COPPER PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
IMMERSION TIN PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000033 \pm 0.000006 [0.85 \pm 0.15 μ] immersion tin over 0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
IMMERSION SILVER PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000013 \pm 0.000007 [0.34 \pm 0.17 μ] immersion silver over 0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000002 [0.05 μ] min. immersion gold over 0.000177 \pm 0.000059 [4.5 \pm 1.5 μ] electroless nickel per IPC-4552 over 0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]		$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]

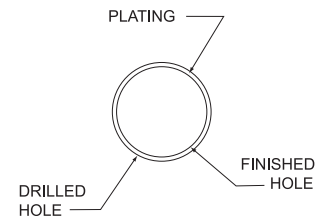
"Omega" Termination

utilized on signal contacts



"Bi-Spring" Termination

utilized on signal contacts



COMPLIANT PRESS-FIT TERMINATION CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

COMPLIANT PRESS-FIT USER INFORMATION

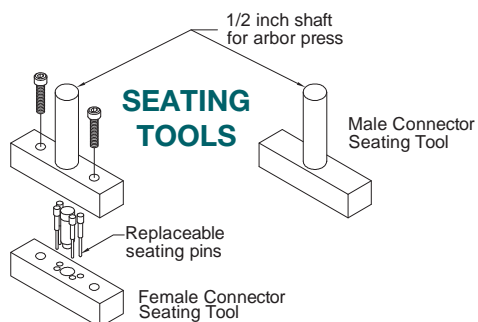
When properly used, Positronic Industries Bi-Spring Power or Omega Signal Press-Fit terminations provide reliable service even under severe conditions.

Connectors utilizing this leading technology press-fit contact are easy to install:

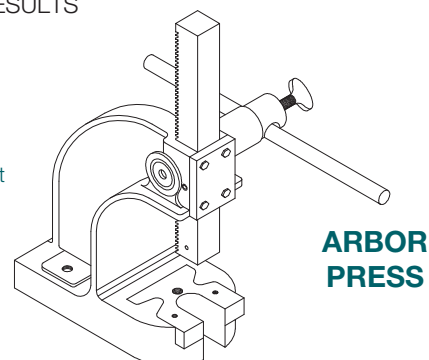
1. Inexpensive installation tooling is available from Positronic, to choose the proper installation tool refer to page 86 for part number ordering information.
2. Insert the connector into the P.C. board or backplane and seat connector fully.
3. Secure the connector to the P.C. board or backplane using two self-tapping screws. The screws should be 4-40 threads supplied by customer.

COMPLIANT PRESS-FIT CONNECTOR INSTALLATION TOOLS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS



Positronic offers expert assistance in adapting application tooling to your manufacturing environment. Contact our application tooling specialist for assistance.



POSITRONIC RECOMMENDED TOOLS FOR COMPLIANT PRESS-FIT CONNECTORS AND CONTACTS

SHELL SIZE	CONNECTOR VARIANT	CONNECTOR SEATING TOOL WITH ARBOR PRESS SHAFT		ARBOR PRESS FOR SEATING TOOLS	REPLACEMENT PINS FOR CONNECTOR SEATING TOOL
		FEMALE P / N	MALE P / N		
1	2WK2	9512-44-0-41	9512-44-0-41	Use p / n 9530-1-0 1 ton capacity 4 inch throat	For 8W2 Size 22 Female contacts use pin p / n 855-751-0-41
	5W1	9512-18-0-41	9512-1-0-41		
	8W2	9512-41-0-41	9512-40-0-41		
2	3W3	9512-19-0-41	9512-2-0-41		For 19W1 Size 22 Female contacts use pin p / n 855-347-29-41
	3WK3	9512-39-0-41	9512-38-0-41		
	7W2	9512-20-0-41	9512-2-0-41		
	11W1	9512-21-0-41	9512-2-0-41		
	19W1	9512-42-0-41	9512-2-0-41		
3	5W5	9512-22-0-41	9512-3-0-41		For Size 20 Female contacts use pin p / n 855-347-18-41
	9W4	9512-23-0-41	9512-3-0-41		
	13W3	9512-24-0-41	9512-3-0-41		
	17W2	9512-25-0-41	9512-3-0-41		
	21W1	9512-26-0-41	9512-3-0-41		
4	8W8	9512-27-0-41	9512-4-0-41		For Size 16 Female contacts use pin p / n 855-347-28-41
	13W6	9512-28-0-41	9512-4-0-41		
	17W5	9512-29-0-41	9512-4-0-41		
	21WA4	9512-30-0-41	9512-4-0-41		
	25W3	9512-31-0-41	9512-4-0-41		
	27W2	9512-32-0-41	9512-4-0-41		
5	24W7	9512-33-0-41	9512-5-0-41		For Size 8 Female contacts use pin p / n 855-347-19-41
	36W4	9512-34-0-41	9512-5-0-41		
	43W2	9512-35-0-41	9512-5-0-41		
	47W1	9512-36-0-41	9512-5-0-41		
6	46W4	9512-37-0-41	9512-16-0-41		Male contacts don't use replaceable pins



Positronic® offers a variety of QPL connector products

D-SUBMINIATURE CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/1	HDC
MIL-DTL-24308/2	RD, DD
MIL-DTL-24308/3	HDC
MIL-DTL-24308/4	RD, DD
MIL-DTL-24308/5	HDC
MIL-DTL-24308/6	RD, DD
MIL-DTL-24308/7	HDC
MIL-DTL-24308/8	RD, DD
MIL-DTL-24308/23	HDC, DD

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/24	HDC, DD
MIL-DTL-24308/25	HDC, RD, DD
MIL-DTL-24308/26	HDC, RD, DD
GSFC S-311-P4	SND, SDD, SCBC, SCBM
GSFC S-311-P10	SND, SCBM
SAE AS39029/57	DD
SAE AS39029/58	DD
SAE AS39029/63	RD
SAE AS39029/64	RD

RECTANGULAR CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/3	GMCT
MIL-DTL-28748/4	GMCT
MIL-DTL-28748/5	GM
MIL-DTL-28748/6	GM
MIL-DTL-28748/7	SGM

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/8	SGM
MIL-C-28748/13	SGMC
MIL-C-28748/14	SGMC
SAE AS39029/34	SGMC, GMCT
SAE AS39029/35	SGMC, GMCT

For a complete QPL listing available to download in PDF format, visit the desired connector family home page and click on link "Qualified Product Listing (PDF)" on our website at:

www.connectpositronic.com

or enter the URL link below to download the QPL PDF file immediately!

www.connectpositronic.com/qpl/catalog

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
Current Ratings: To 200 amperes per contact
Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in
Configurations: Multiple variants in both standard and high densities, seven connector housing sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in
Configurations: Multiple variants in both standard and high densities, thirty package sizes
Qualifications: MIL-DTL-28748, AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder
Configurations: Multiple variants in four package sizes
Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cablizing" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare wire harness connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-subminiature and circular configurations above
Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



Positronic®
global connector solutions

Divisional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/sales

HIGH PERFORMANCE



POSITRONIC

GLOBAL *Connector* SOLUTIONS



LOOK
FOR OUR
NEW PRODUCTS!

Goddard Space Flight Center S-311-P-4
Goddard Space Flight Center S-311-P-10
MIL-DTL-24308 Class M



Catalog C-005 Rev. **B1**

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG® and VITA.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, C.UL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 369,000.

Support

- **Quality Systems:** Select locations qualified to ISO9001:2000, ISO14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic®, Positronic Industries, Inc.®, P+ logo, Positronic Global Connector Solutions®, Connector Excellence® and their logo designs are registered trademarks of Positronic Industries, Inc.



Positronic Industries
connectpositronic.com

CONNECTOR DESCRIPTIONS

High
Performance
D-sub



SND STANDARD DENSITY D-SUBMINIATURE CONNECTORS

Removable or fixed size 20 contacts. Crimp, solder cup, straight and right angle (90°) printed board mount contact terminations. Five connector variants, 9 through 50 contacts. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and MIL-DLT-24308 Class M.



SDD HIGH DENSITY D-SUBMINIATURE CONNECTORS

Removable or fixed size 22 contacts. Crimp, solder, straight and right angle (90°) printed board contact terminations. Six connector variants, 15 through 104 contacts. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4 and MIL-DLT-24308 Class M.



SCBM STANDARD DENSITY COMBINATION D-SUBMINIATURE CONNECTORS

Fixed size 20 signal contacts. Size 8 power, shielded and high voltage contacts. Crimp, solder cup, straight and right angle (90°) printed board mount contact terminations. Twenty-two connector variants, 2WK2 through 46W4, using shell sizes 1 through 6. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and DSCC specification 85039.



SCBC STANDARD DENSITY COMBINATION D-SUBMINIATURE CONNECTORS WITH REMOVABLE CRIMP CONTACTS

Removable size 20 signal contacts. Size 8 power, shielded, and high voltage removable contacts. Crimp and solder terminations. Sixteen connector variants, shell sizes 1 through 6. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and DSCC specification 85039.

continued on next page . . .



Positronic Industries
connectpositronic.com

CONNECTOR DESCRIPTIONS

High
Performance
D-sub

continued from previous page . . .



SCBDD HIGH DENSITY COMBINATION D-SUBMINIATURE CONNECTORS

Fixed size 22 signal and size 16 power contacts. Size 8 power, shielded, and high voltage contacts. Crimp, solder cup, straight and right angle (90°) printed board terminations. Four connector variants, shell sizes 1 through 4. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and DSCC specification 85039.



SCBCD HIGH DENSITY COMBINATION D-SUBMINIATURE CONNECTORS WITH REMOVABLE CRIMP CONTACTS

Removable size 22 signal and size 16 power contacts. Size 8 power, shielded, and high voltage removable contacts. Crimp and solder terminations. Three connector variants, shell sizes 1, 2 and 4. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and DSCC specification 85039.



SAD, SADD, SACBMP CONNECTOR SAVER / GENDER CHANGER

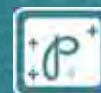
Standard density, high density and combination connector savers and gender changers for use with SND, SDD, SCBM and SCBC connectors. Conforming to applicable material, dimensional and performance requirements of GSFC S-311-P4, GSFC S-311-P10 and DSCC specification 85039.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



Authentic POSITRONIC®
PosiBand®

These contacts utilize authentic Positronic® PosiBand® technology.



GENERAL INFORMATION

What makes Positronic's new "PosiBand®" contact interface a significant improvement?	1
The PosiBand® contact system has many advantages over the legacy split tine design	2
Temperature Rise Curves	2-4

SND SERIES

Technical Characteristics	5-6
Contact Variants	6
Standard Connector Housing (Shells) Assembly and Recommended Mating Dimensions	7
Solder Cup Termination and Straight Solder Printed Board Mount Termination	8
Right Angle (90°) Printed Board Mount Termination	9
Right Angle (90°) and Straight Solder Printed Board Contact Hole Pattern	10
Removable Contact Ordering Assistance Chart	11
Ordering Information	12

SDD SERIES

Technical Characteristics	13-14
Contact Variants	14
Standard Connector Housing (Shells) Assembly and Recommended Mating Dimensions	15
Straight Solder Printed Board Mount Termination and Right Angle (90°) Printed Board Mount Termination	16
Right Angle (90°) and Straight Solder Printed Board Contact Hole Pattern	17
Removable Contact Ordering Assistance Chart	18
Ordering Information	19

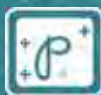
SCBM SERIES

Technical Characteristics	20-21
Contact Variants	22
Standard Connector Housing (Shells) Assembly and Recommended Mating Dimensions	23
Solder Cup Termination and Straight Solder Printed Board Mount Termination	24
Right Angle (90°) Printed Board Mount Termination	25-26
Metric System Right Angle (90°) Printed Board Mount Termination	27
Right Angle (90°) and Straight Solder Printed Board Contact Hole Pattern	28-31
Straight Solder and Right Angle (90°) Printed Board Termination with Shielded Contacts	32
Straight Solder Printed Board Mount and Right Angle (90°) Contact Hole Pattern for Shielded Contacts	33-36
Removable Contact Ordering Assistance Chart	37
Ordering Information	38

SCBC SERIES

Technical Characteristics	39-40
Contact Variants	41
Standard Connector Housing (Shells) Assembly and Recommended Mating Dimensions	42
Removable Contact Ordering Assistance Chart	43
Ordering Information	44

continued on next page . . .



S C B D D S E R I E S

Technical Characteristics	45-46
Standard Connector Housing (Shells) Assembly and Recommended Mating Dimensions	47
Contact Variants and Solder Cup Termination.....	48
Straight Solder Printed Board Mount Termination	49
Right Angle (90°) Printed Board Mount Termination	49-50
Straight Solder and Right Angle (90°) Printed Board Termination with Shielded Contacts	51
Printed Board Mount and Right Angle (90°) Contact Hole Pattern for Shielded Contacts	52-53
Ordering Information for 8W2 Connector Variants (Size 16 Contacts).....	54
Removable Contact Ordering Assistance Chart	55
Ordering Information for 19W1, 15W4 and 45W2 Connector Variants (Size 8 Contacts).....	56

S C B C D S E R I E S

Technical Characteristics	57-58
Contact Variants	58
Standard Connector Housing (Shells) Assembly and Recommended Mating Dimensions	59
Removable Contact Ordering Assistance Chart	60
Ordering Information	61

S A D C O N N E C T O R S A V E R

Technical Characteristics	62
Contact Variants and Standard Connector Housing (Shells) Assembly Dimensions	63
Jackscrew Systems	64
Ordering Information	65

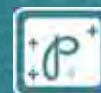
S A D D C O N N E C T O R S A V E R

Technical Characteristics	66
Contact Variants and Standard Connector Housing (Shells) Assembly Dimensions	67
Ordering Information	68

S A C B M P C O N N E C T O R S A V E R

Technical Characteristics	69-70
Contact Variants	70
Standard Connector Housing (Shells) Assembly Dimensions	71
Ordering Information	72

continued on next page . . .



U N I Q U E F E A T U R E S

Unique Features Introduction	73
Sequential Mating Contacts	73
Size 8 Contact Stabilization Feature	74
Selectively Loaded Connector	74
Customer Specified Contact Termination Length	75
Low Profile Insulator	75
Compliant Press-In Connector	76
Dual Port Connector	76

R E M O V A B L E C O N T A C T S

Technical Characteristics	77
Size 22 Removable Crimp and Closed Barrel Solder Contacts	78-79
Size 20 Removable Crimp and Closed Barrel Solder Contacts	79-80
Size 16 and Size 8 Removable Crimp Contacts	81
Size 8 Removable Solder Cup and Straight Solder Printed Board Mount Contacts	82
Size 8 Right Angle (90°) Printed Board Mount and Removable High Voltage Contacts	83
Size 8 Removable Shielded Contact	84
Size 8 Straight Solder and Right Angle (90°) Printed Board Mount Shielded Contact	85

A C C E S S O R I E S

Riveted on Right Angle (90°) Mounting Brackets and Push-On Fastener for Riveted on Right Angle (90°) Brackets	86
Right Angle (90°) Metal Mounting Brackets	87
Swaged Spacers, Swaged Locknut and Swaged Spacer with Push-On Fastener	88
Threaded Post, Cul-de-Sac Style Mounting Accessories, and In-Line Crimp Splice	89
Blind Mating System and Metal Cable Adapter (Hood)	90
Aluminum Cable Adapter (Hood)	91-92
EMI/RFI Protective Cover	93
Jackscrew Systems and Polarized Jackscrew Systems	94

S P E C I A L O P T I O N S

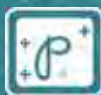
Modification (MOS) Suffixes	95
-----------------------------------	----

A P P L I C A T I O N T O O L S

Introduction	96
Contact Application Tools Cross Reference List	97

Q P L L I S T I N G

QPL Listing	98
-------------------	----



Positronic Industries
connectpositronic.com



GENERAL INFORMATION

High
Performance
D-sub

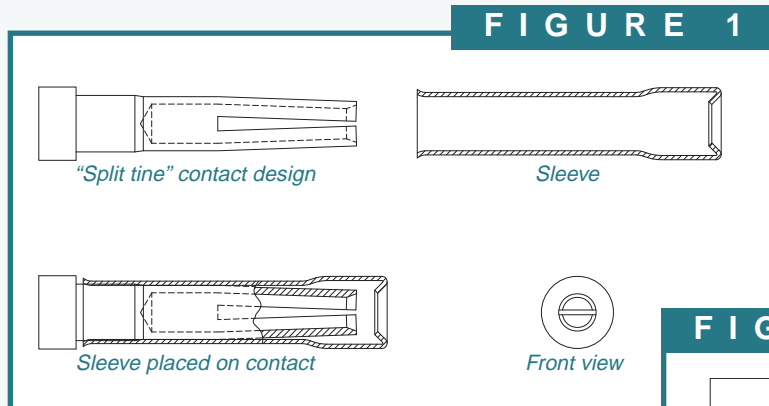


What Makes Positronic's New "PosiBand®" Contact

Interface a Significant Improvement?

High reliability connectors utilize female **closed entry contacts** that provide an unbroken ring of solid material at the face of the contact. The closed entry feature is **crucial in preventing damage** to female contacts used in harsh environments, repeated mating cycles, blind mate applications and applications requiring highest reliability.

FIGURE 1



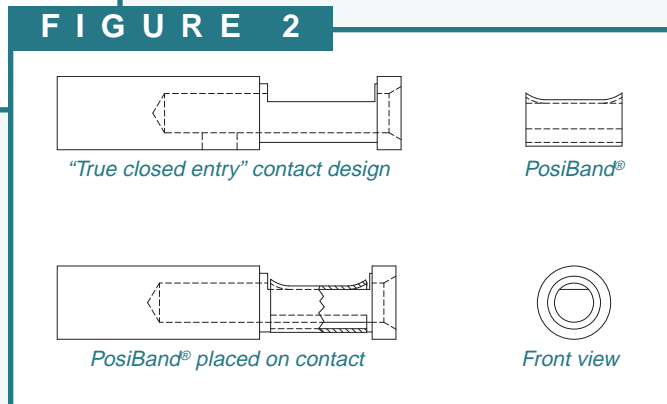
The most common **closed entry design** utilized by connector manufacturers is a split tine and sleeve concept. **See figure 1.** With this design, both the mechanical forces and

electrical interface are provided only at the tip of the female contact.

Positronic's new **PosiBand technology** takes a unique approach to closed entry female contacts.

PosiBand contacts utilize a two-piece contact design. **See figure 2.** Each piece serves a separate function, providing a more mechanically robust contact and more consistent electrical performance.

FIGURE 2



The main body of the **PosiBand** contact provides a true closed entry opening to enhance robustness. The **PosiBand** spring clip provides normal force on the male contact. Consistent electrical performance is supported through a larger area of contact interface between the male and female contact along the entire "floor" of the contact body. **PosiBand** contacts are QPL listed under **SAE AS39029** and qualified under **GSFC S-311-P4** to the higher 40 gram contact engagement test requirement.

continued on next page . . .



continued from previous page . . .

The PosiBand® contact system has many advantages over the legacy split time design.

- X** **PosiBand** is more robust than the split time contact, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- X** **PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- X** **PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- X** The **PosiBand's** contact body does not require annealing of the crimp barrels, as does the split time design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- X** **PosiBand** is qualified under **SAE AS39029** specification. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C** to the higher 40 gram contact engagement test requirement.

For more details about the **advantages of the PosiBand®** system, please view the detailed white paper at www.connectpositronic.com/content/37/ or visit our web site at www.connectpositronic.com.



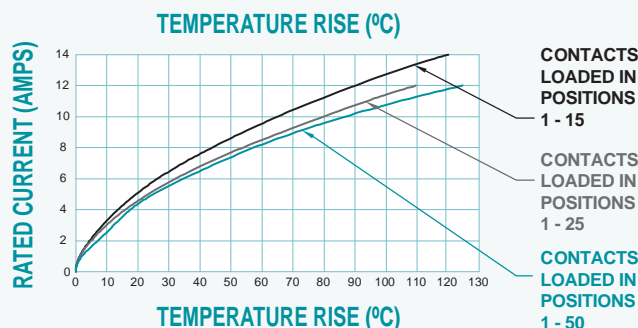
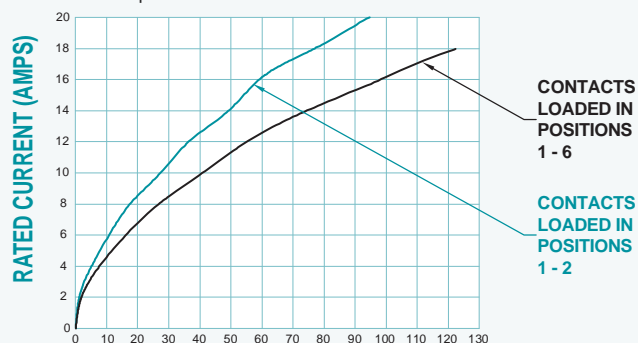
TEMPERATURE RISE CURVES

Test conducted in accordance with UL1977.

Size 20 PosiBand Contacts

Initial Contact Resistance: 0.004 ohms, maximum.

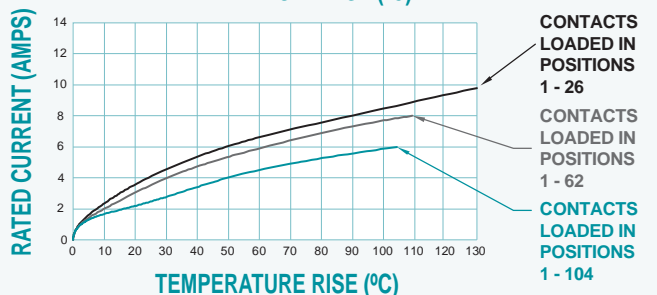
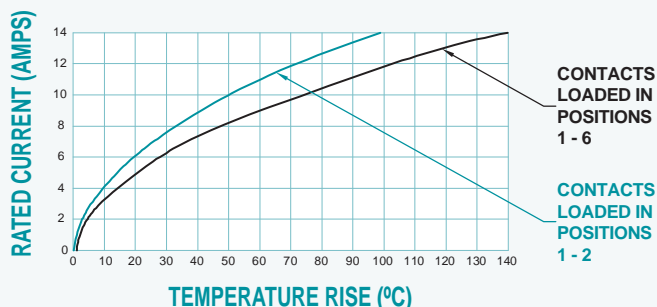
Curve developed using Standard Density D-subminiature connectors loaded with size 20 crimp contacts terminated to size 20 AWG wire.

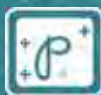


Size 22 PosiBand Contacts

Initial Contact Resistance: 0.005 ohms, maximum.

Curve developed using High Density D-subminiature connectors loaded with size 22 crimp contacts terminated to size 22 AWG wire.





Positronic Industries
connectpositronic.com



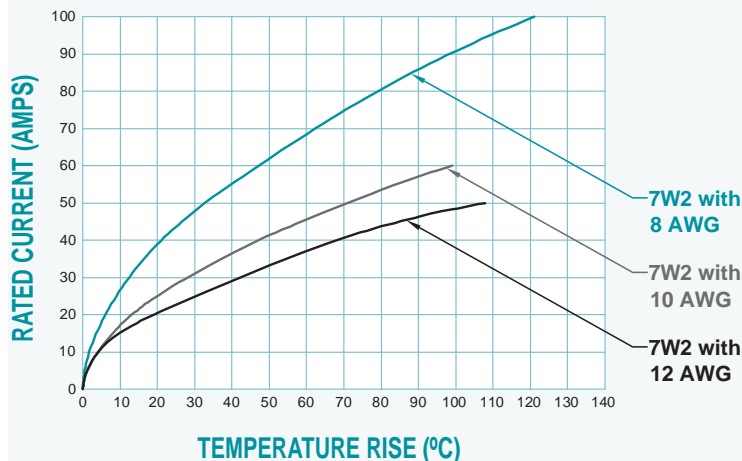
GENERAL INFORMATION

High
Performance
D-sub

TEMPERATURE RISE CURVES FOR SIZE 8, 10 AND 12 AWG WIRE

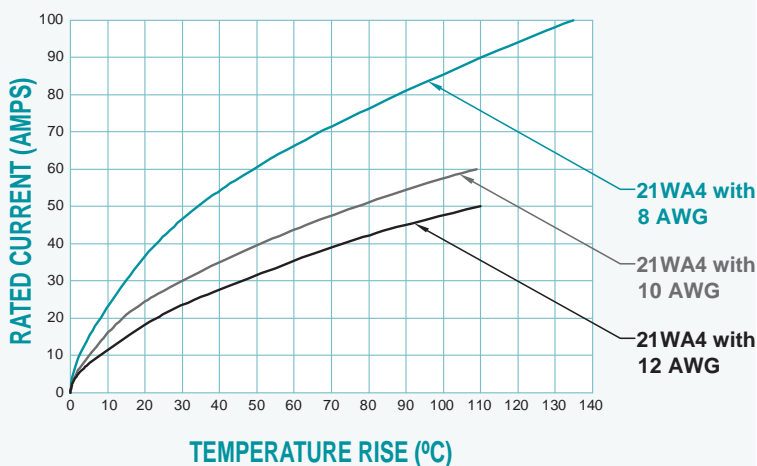
Test conducted in accordance with UL1977. All power contacts under load.

7W2



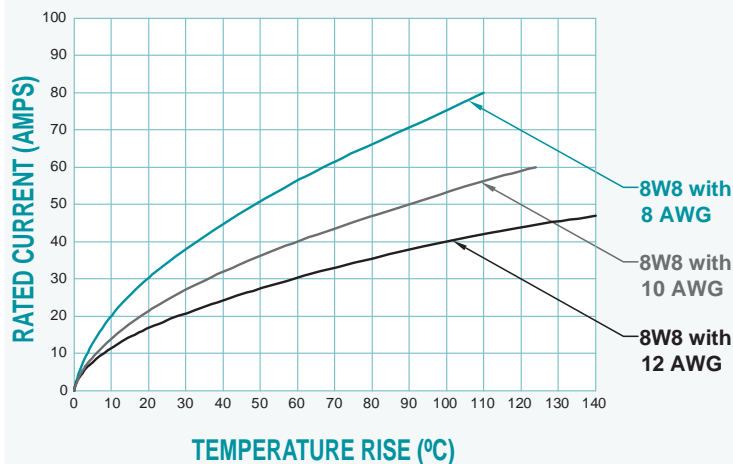
- 8 AWG:** Curve developed using a mated Combination-D 7W2F57 and Combination-D 7W2M loaded with size 8 crimp contacts terminated to 8 AWG wire.
- 10 AWG:** Curve developed using a mated Combination-D 7W2F3 and Combination-D 7W2M loaded with size 8 crimp contacts terminated to 10 AWG wire.
- 12AWG:** Curve developed using a mated Combination-D 7W2F55 and Combination-D 7W2M loaded with size 8 crimp contacts terminated to 12 AWG wire.

21WA4



- 8 AWG:** Curve developed using a mated Combination-D 21WA4F57 and Combination-D 21WA4M loaded with size 8 crimp contacts terminated to 8 AWG wire.
- 10 AWG:** Curve developed using a mated Combination-D 21WA4F36 and Combination-D 21WA4M loaded with size 8 crimp contacts terminated to 10 AWG wire.
- 12 AWG:** Curve developed using a mated Combination-D 21WA4F55 and Combination-D 21WA4M loaded with size 8 crimp contacts terminated to 12 AWG wire.

8W8



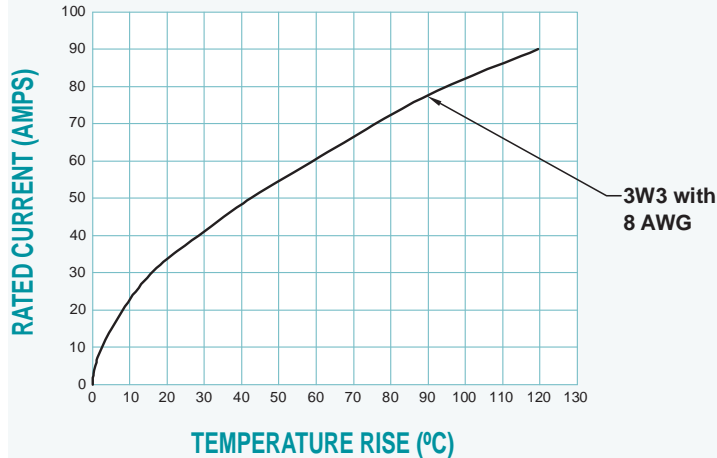
- 8 AWG:** Curve developed using a mated Combination-D 8W8F57 and Combination-D 8W8M loaded with size 8 crimp contacts terminated to 8 AWG wire.
- 10 AWG:** Curve developed using a mated Combination-D 8W8F36 and Combination-D 8W8M loaded with size 8 crimp contacts terminated to 10 AWG wire.
- 12AWG:** Curve developed using a mated Combination-D 8W8F55 and Combination-D 8W8M loaded with size 8 crimp contacts terminated to 12 AWG wire.



TEMPERATURE RISE CURVE FOR SIZE 8 AND 12 AWG WIRE

Test conducted in accordance with UL1977. All power contacts under load.

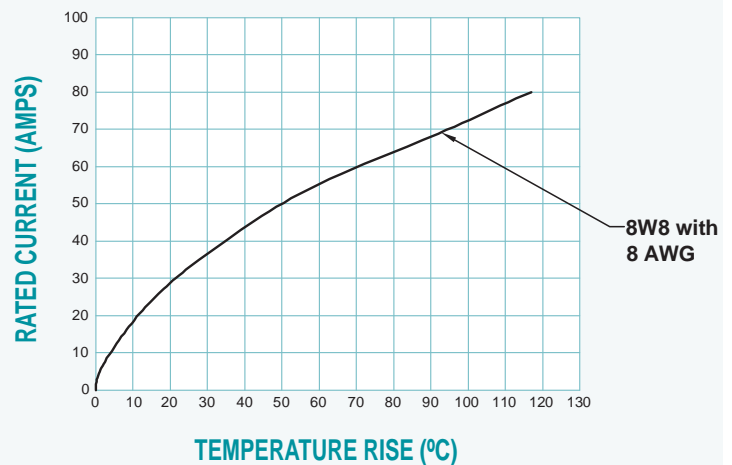
3W3



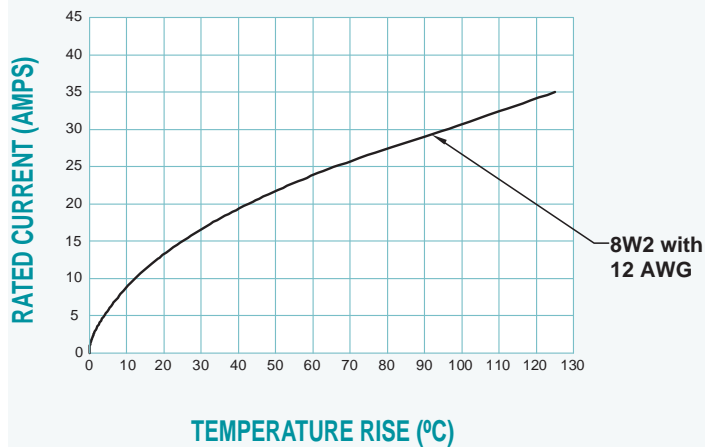
Curve developed using a mated Combination-D 3W3F loaded with size 8 crimp contacts and Combination-D 3W3M loaded with size 8 crimp contacts terminated to 8 AWG wire.

8W8

Curve developed using a mated Combination-D 8W8F loaded with size 8 crimp contacts and Combination-D 8W8M loaded with size 8 crimp contacts terminated to 8 AWG wire.



HIGH DENSITY 8W2



Curve developed using a mated Combination-D 8W2M loaded with size 8 crimp contacts and Combination-D 8W2S loaded with size 8 crimp contacts terminated to 12 AWG wire.



Positronic Industries
connectpositronic.com

SND SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 **fixed or removable** contacts.
- ✓ Female closed entry contacts utilize the "PosiBand®" system. *See page 1 for details.*
GSFC S-311-P-4/10 offers two contact engagement test options. Size 20 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Five connector variants include 9, 15, 25, 37, and 50 contacts.
- ✓ Terminations include cable or wire crimp and solder, straight and right angle PCB mount.
- ✓ Current ratings: signal level to 18 amperes.
See temperature rise curves on page 2 for details.
- ✓ A wide variety of options and accessories.
- ✓ Applicable variants are qualified to GSFC and military specifications. *See page 98 for details.*

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- MIL-DTL-24308 Class M

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled DAP per ASTM-D-5948, Type SDG-F, UL 94V-0, ASTM E-595, NASA-RP-1124, green color.
Contacts:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Connector Housing (Shells):	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Mounting Spacers and Brackets:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Push-On Fasteners:	Phosphor bronze or beryllium copper with 0.000050 inch [1.27 microns] gold over copper plate.
Jackscrew Systems:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Cable Adapter (Hood):

Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Contacts:

Size 20 Fixed:

Male contact 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; see page 1 for details.

Size 20 Removable:

Install contact to rear face of connector insert and remove from rear face of connector insert. Size 20 contact, male contact 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; see page 1 for details. For removable size 20 contacts, see pages 79 & 80.



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

MECHANICAL CHARACTERISTICS, continued:

Contact Retention in Connector Insert:	9 lbs. [40 N].
Resistance to Solder Iron Heat:	650°F [350°C] for 10 seconds duration per IEC 60512-6, solder cup contacts.
Contact Terminations:	Removable, closed barrel crimp - wire sizes 18 AWG [1.0 mm ²] through 30 AWG [0.05 mm ²]. Removable, closed barrel solder - wire size 20 AWG [0.5 mm ²] maximum; see page 80 for details. Fixed, solder cup - wire size 20 AWG [0.5 mm ²] maximum; see page 8 for details. Straight solder printed board mount - 0.028 inch [0.71 mm] termination diame- ter and 0.024 inch [0.61 mm] termination diameter. Right angle (90°) printed board mount - 0.028 inch [0.71 mm] termination diameter for Inch System footprint, and 0.024 inch. [0.64 mm] termination diameter for European Metric footprint.
Connector Housing (Shells):	Male connector housings may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally-shaped connector housings and polarized jackscrews.
Mounting to Angle Brackets:	Jackscrews and riveted fasteners with 0.120 inch [3.05 mm] clearance hole, and threaded riveted fasteners with 4-40 thread and polyester lock inserts.

Mounting to Printed Board:	Rapid installation push-on fasteners and mounting posts.
Locking Systems:	Jackscrews.
Mechanical Operations:	1,000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

18 amperes, 2 contacts energized.
14 amperes, 6 contacts energized.
11 amperes, 15 contacts energized.
10 amperes, 25 contacts energized.
9 amperes, 50 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance:	0.004 ohms, maximum.
Proof Voltage:	1,000 V r.m.s.
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

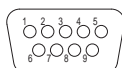
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days.

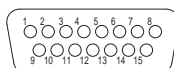
Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

CONTACT VARIANTS

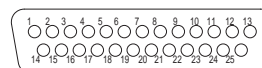
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



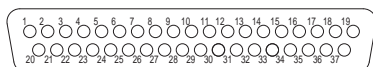
SND 9



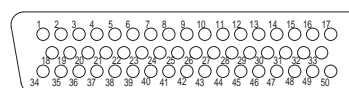
SND 15



SND 25



SND 37



SND 50

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.



Positronic Industries
connectpositronic.com

SND SERIES

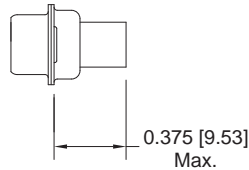
MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

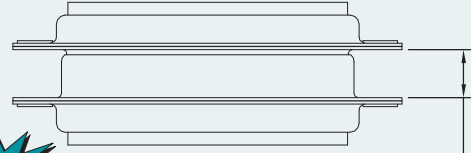
High
Performance
D-sub

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY

CRIMP REMOVABLE

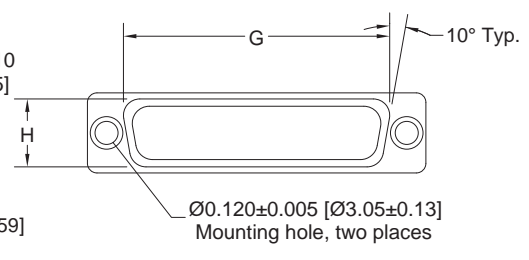
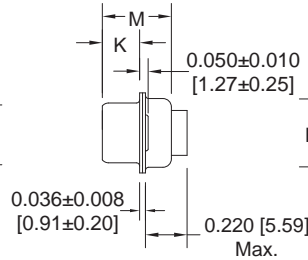
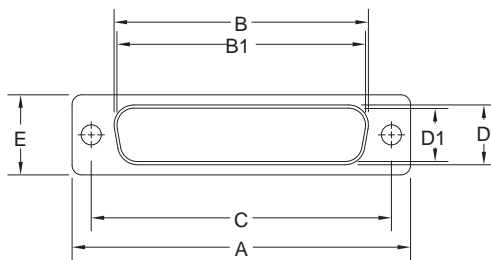


RECOMMENDED MATING DIMENSIONS

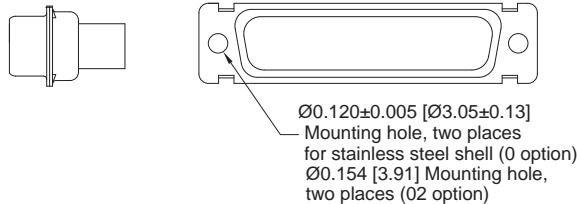


Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]

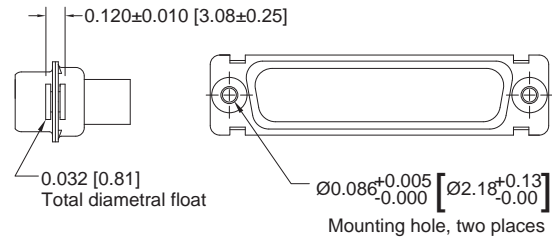
BOARD MOUNT



OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



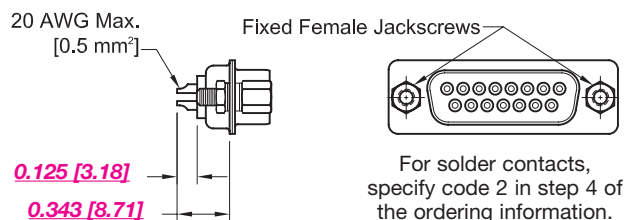
OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



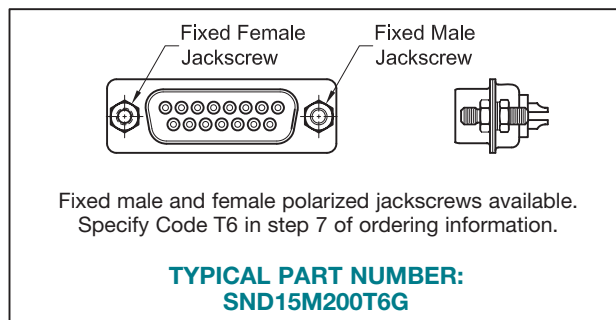
CONNECTOR VARIANT SIZES	GENDER	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
SND 9 (SHELL SIZE 1)	MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 15 (SHELL SIZE 2)	MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 25 (SHELL SIZE 3)	MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 37 (SHELL SIZE 4)	MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SND 50 (SHELL SIZE 5)	MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

SOLDER CUP TERMINATION CODE 2



**TYPICAL PART NUMBER:
SND15M200T2G**



SND15S5R70T2G
(shown left)

SND25M10H0G
(shown middle)

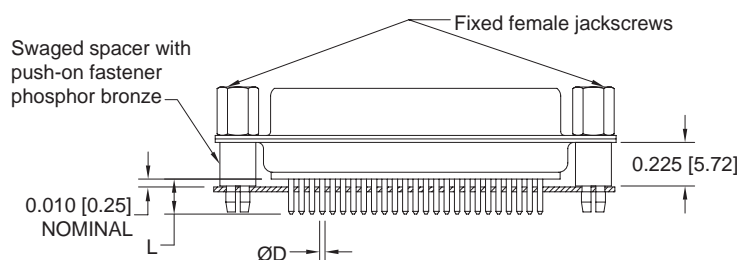
**SND9M000G with
MC6020M contacts**
(shown right)

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION CODE 3, 32 AND 36

*1 CODE NUMBER	L	ØD
3	0.170 [4.32]	0.028 [0.71]
32	0.375 [9.53]	0.028 [0.71]
36	0.236 [6.00]	0.024 [0.61]

NOTE:

*1 Contact termination code as specified
in Step 4 of ordering information.



**TYPICAL PART NUMBER:
SND25S3S60TG**



Positronic Industries
connectpositronic.com

SND SERIES

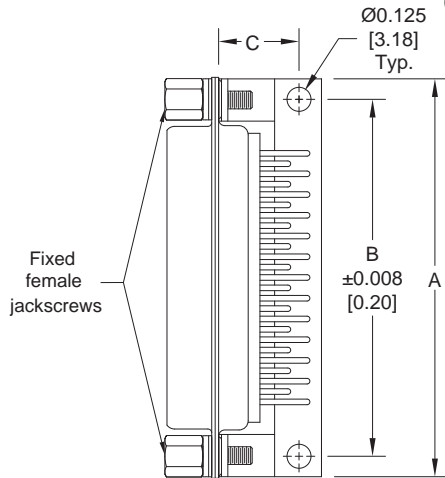
MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

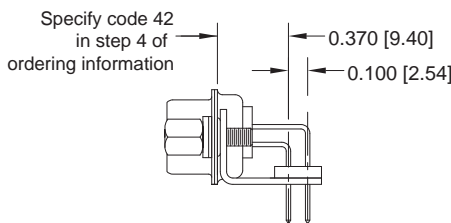
High
Performance
D-sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

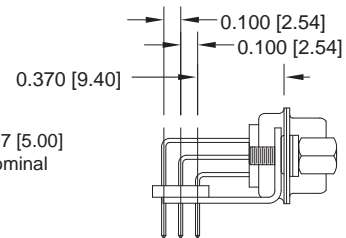
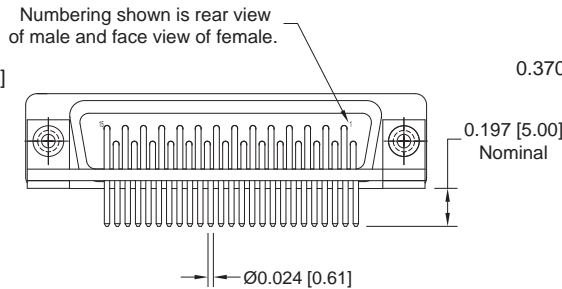
CODE 42, 0.370 [9.40] CONTACT EXTENSION



SND**42*** 0.370 [9.40] CONTACT EXTENSION			
PART NUMBER	A	B	C
SND9*42***	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]
SND15*42***	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]
SND25*42***	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]
SND37*42***	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]
SND50*42***	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]



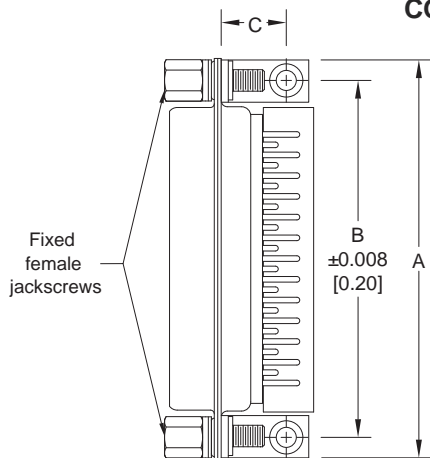
TYPICAL PART NUMBER:
SND25M42B30T2G



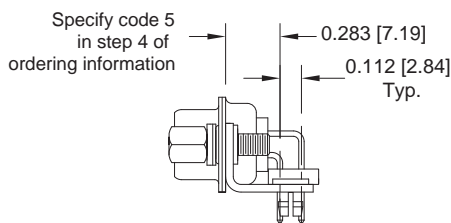
TYPICAL PART NUMBER:
SND50M42B30TG

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

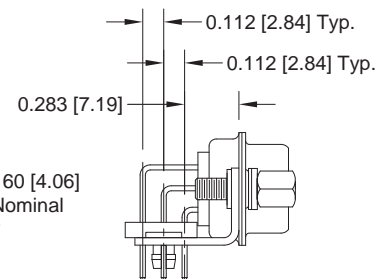
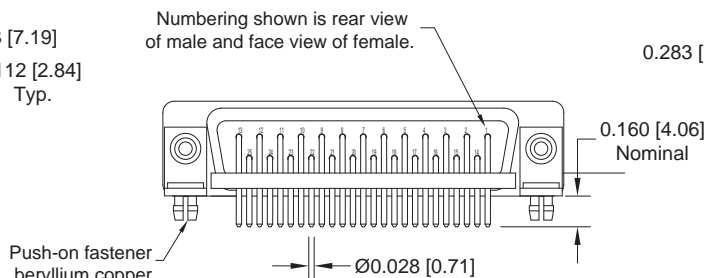
CODE 5, 0.283 [7.19] CONTACT EXTENSION



SND**5*** 0.283 [7.19] CONTACT EXTENSION			
PART NUMBER	A	B	C
SND9*5***	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]
SND15*5***	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]
SND25*5***	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]
SND37*5***	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]
SND50*5***	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]



TYPICAL PART NUMBER:
SND25M5R7NT2G

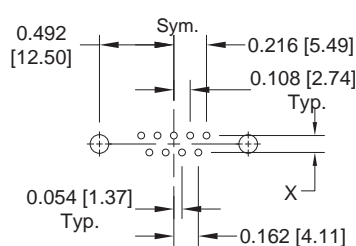


TYPICAL PART NUMBER:
SND50S5R7NTG

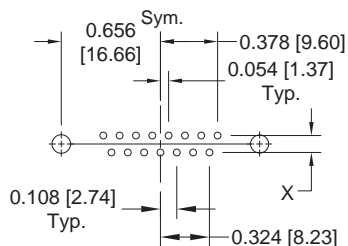


RIGHT ANGLE (90°) AND STRAIGHT SOLDER PRINTED BOARD CONTACT HOLE PATTERN

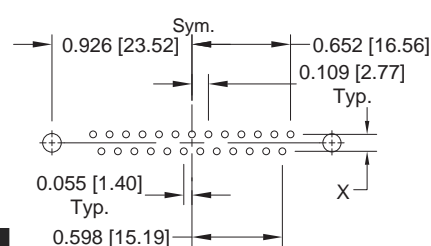
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



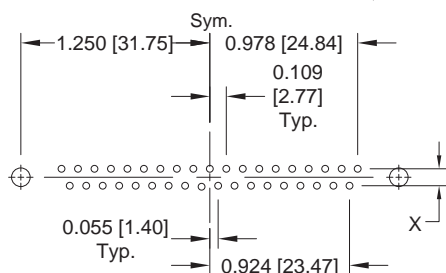
SND9



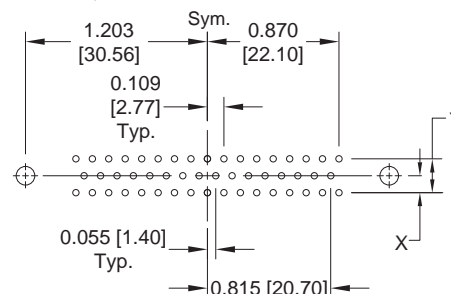
SND15



SND25



SND37



SND50

*1 CODE NUMBER	X	Y
3		
5	0.112 [2.84]	0.224 [5.69]
32		
36		
*2 42	0.100 [2.54]	0.200 [5.08]

NOTE:

*1 Contact termination code as specified in Step 4 of ordering information.

*2 Metric system, European contact hole pattern.

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.039 [0.99] Ø hole for 0.024 [0.61] Ø contact termination positions.

Suggest 0.045 [1.14] Ø hole for 0.028 [0.71] Ø contact termination positions.

Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



Positronic Industries
connectpositronic.com

SND SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY FIXED OR REMOVABLE CONTACTS

High
Performance
D-sub

REMOVABLE CONTACT ORDERING ASSISTANCE CHART



SND SERIES CRIMP AND SOLDER CONTACT TERMINATIONS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 79 for additional information	20	FC6020M2	MC6020M	20 / 22 / 24 [0.5 / 0.3 / 0.25]
			FC6026M2	MC6026M	26 / 28 / 30 [0.12 / 0.08 / 0.05]
	see page 80 for additional information		FC6018M2	MC6018M	18 [1.0] max.
SOLDER	see page 80 for additional information	20	FS6020M2	MS6020M	20 [0.5] max.

NOTE: For ordering crimp contacts on reels, add "R" to part number, see page 77 for details.
Examples: FC6020M2R or MC6020MR

The PosiBand® contact system has many advantages over the legacy split tine design.



- X** **PosiBand** is more robust than split tine, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- X** **PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- X** **PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- X** The **PosiBand's** main contact body does not require annealing of the crimp barrels, as does the split tine design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- X** **PosiBand** is qualified under **SAE AS39029** specification. **PosiBand** is also qualified under **GSFC S-311-P4** to the higher 40 gram contact engagement test requirement.



FC8022M2. Deconstructed contact shown for reference only.

For more information on PosiBand closed entry contacts, see page 1 & 2.

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 96.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SND	37	S	5	B3	0	T2	G	

STEP 1 - BASIC SERIES

SND series

STEP 2 - CONNECTOR VARIANTS

9, 15, 25, 37, 50

STEP 3 - CONNECTOR GENDER

M - Male
S - Female - PosiBand closed entry contacts,
see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE

- 0 - Contacts ordered separately, see contact chart on page 11 for details.
- 1 - Crimp, 20 AWG - 24 AWG [0.5 mm² - 0.25 mm²].
- 12 - Crimp, 26 AWG - 30 AWG [0.12 mm² - 0.05 mm²].
- 2 - Fixed, solder cup.
- 3 - Solder, straight printed board mount with 0.170 [4.32] tail length.
- 32 - Solder, straight printed board mount with 0.375 [9.52] tail length.
- 36 - Solder, straight printed board mount with 0.236 [5.99] tail length.
- 42 - Solder, metric system right angle (90°) printed board mount with 0.370 [9.40] contact extension.
- 5 - Solder, right angle (90°) printed board mount with 0.283 [7.19] contact extension.

*1 STEP 5 - MOUNTING STYLE

- 0 - Mounting hole, 0.120[3.05] Ø.
- 02 - Mounting hole, 0.154[3.91] Ø.
- C5 - Swaged spacer, cul-de-sac style, 4-40 threads, 0.350 [8.89] length. For use with cable connectors only.
- C7 - Bracket, mounting, right angle (90°) metal, swaged to connector with cul-de-sac spacer and 4-40 threads with cross bar.
- F - Float mounts, universal.
- P - Threaded post, brass, length varies according to contact termination code. See page 89.
- R2 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar.
- R6 - Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar.
- R7 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar.
- R8 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar.
- S - Swaged spacer, 4-40 threads, length varies according to contact termination code. See page 88.
- S2 - Swaged spacer, 4-40 threads, 0.125[3.18] length.
- S5 - Swaged locknut, 4-40 threads.
- S6 - Swaged spacer with push-on fastener, 4-40 threads, length varies according to contact termination code. See page 88.

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - CONNECTOR HOUSING (SHELLS) OPTIONS

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS

- 0 - None.
- T - Fixed female jackscrews.
- T2 - Fixed female jackscrews.
- T6 - Fixed male and female polarized jackscrews.
- E - Rotating male jackscrews.
- E2 - Rotating male screw locks.
- E3 - Rotating male with internal hex for 3/32 hex drives.
- E6 - Rotating male and female polarized jackscrews.

*1 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER

- 0 - None.
- H - Cable adapter, top opening, brass.
- AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.
- N - Push-on fastener for right angle (90°) mounting brackets.

NOTE:

*1 For additional information on accessories listed in Step 5, 6, and 7, see the Accessories section, pages 86-94.

*Do you need 2-D drawings
or 3-D models?
See page 18 for more information!*

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com

SDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY REMOVABLE OR PCB CONTACTS

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 22 **fixed or removable** contacts.
- ✓ Female closed entry contacts utilize the "PosiBand®" system. *See page 1 for details.*
GSFC S-311-P-4/08 offers two contact engagement test options. Size 22 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Six connector variants include 15, 26, 44, 62, 78, and 104 contacts.
- ✓ Terminations include cable or wire crimp and solder, straight and right angle PCB mount.
- ✓ Current ratings: signal level to 12 amperes.
See temperature rise curves on page 2 for details.
- ✓ A wide variety of options and accessories.
- ✓ Applicable variants are qualified to GSFC and military specifications. *See page 98 for details.*

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4
- MIL-DTL-24308 Class M

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled polyester per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124, blue color.
Contacts:	Precision machined high tensile copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Connector Housing (Shells):	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Mounting Spacers and Brackets:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Push-On Fasteners:	Phosphor bronze or beryllium copper with 0.000050 inch [1.27 microns] gold over copper plate.

Jackscrew Systems:

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Cable Adapter (Hood):

Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Contacts:

Size 22 Fixed:

Male contact 0.030 inch [0.76 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.*

Size 22 Removable:

Install contact to rear face of connector insert and remove from rear face of connector insert. Male contact - 0.030 inch [0.76 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details. For removable size 22 contacts, see page 78-79.*



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

MECHANICAL CHARACTERISTICS, continued:

Contact Retention in Connector Insert:	9 lbs. [40 N].
Contact Terminations:	Removable closed barrel crimp - wire sizes 20 AWG [0.5 mm ²] through 30 AWG [0.05 mm ²]. 0.020 inch [0.51 mm] diameter. Removable, closed barrel solder - wire size 22 AWG [0.3 mm ²] maximum; see page 79 for details. Straight solder printed board mount - 0.020 inch [0.51 mm] termination diameter. Right angle (90°) printed board mount - 0.020 inch [0.51 mm] termination diameter.
Connector Housing (Shells):	Male connector housings may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally-shaped connector housings and polarized jackscrews.
Mounting to Angle Brackets:	Jackscrews and riveted fasteners with 0.120 inch [3.05 mm] clearance hole, and threaded fasteners with 4-40 threads and polyester lock inserts.
Mounting to Printed Board:	Rapid installation push-on fasteners and mounting posts.
Locking Systems:	Jackscrews.
Mechanical Operations:	1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

12 amperes, 2 contacts energized.
10 amperes, 6 contacts energized.
7.5 amperes, 26 contacts energized.
6.5 amperes, 65 contacts energized.
5.0 amperes, 104 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance: 0.005 ohms, maximum.

Proof Voltage: 1,000 V r.m.s.

Insulation Resistance: 5 G ohms.

Clearance and Creepage

Distance: 0.042 inch [1.06 mm], minimum.

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

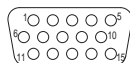
Temperature Range: -55°C to +125°C.

Damp Heat, Steady State: 21 days.

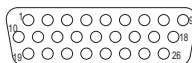
Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

CONTACT VARIANTS

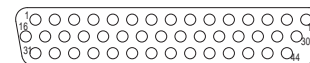
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



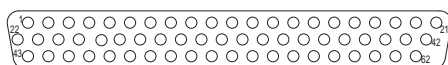
SDD 15



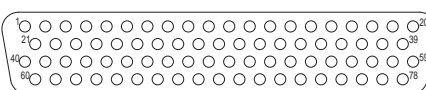
SDD 26



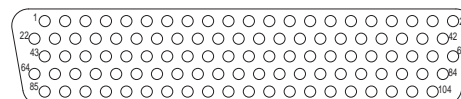
SDD 44



SDD 62



SDD 78



SDD 104

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.



Positronic Industries
connectpositronic.com

SDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY REMOVABLE OR PCB CONTACTS

High
Performance
D-sub

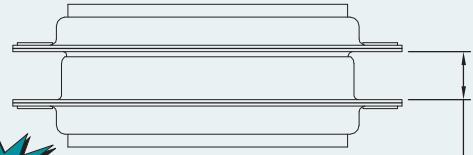
STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY



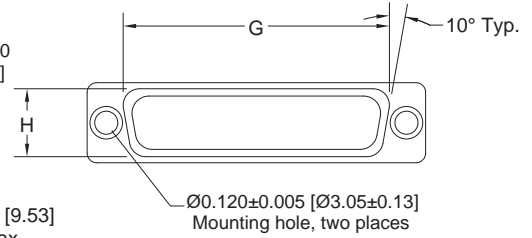
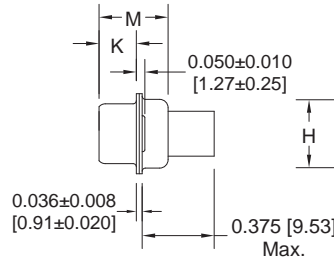
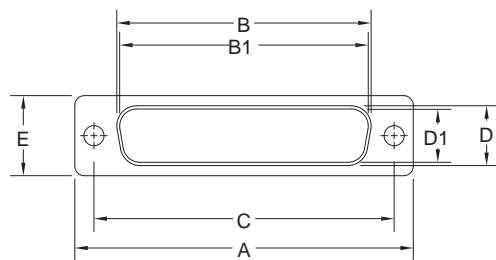
SDD78M0000D

SDD15S0000G

RECOMMENDED MATING DIMENSIONS

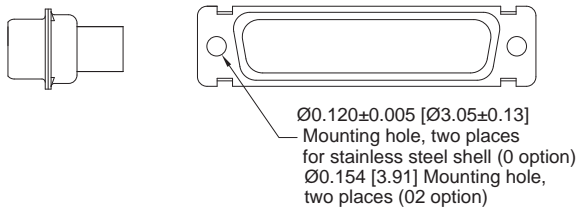


Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]

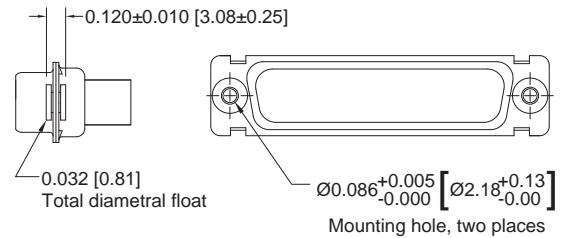


OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)

STANDARD FOR SIZE 104 CONNECTORS



OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	GENDER	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
SDD 15 (SHELL SIZE 1)	MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SDD 26 (SHELL SIZE 2)	MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SDD 44 (SHELL SIZE 3)	MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SDD 62 (SHELL SIZE 4)	MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
SDD 78 (SHELL SIZE 5)	MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
SDD 104 (SHELL SIZE 6)	MALE	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

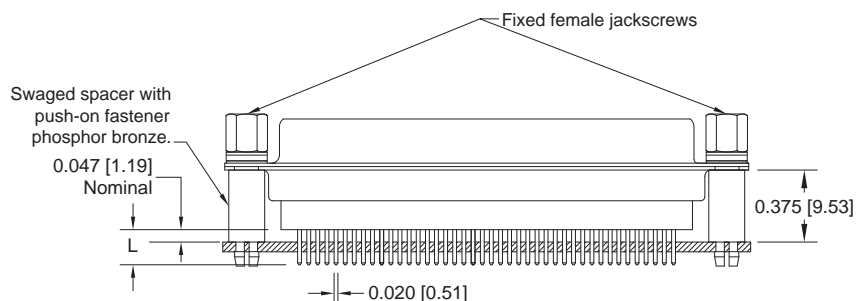


STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
CODE 3 AND 32

*1 CODE NUMBER	L
3	0.150 [3.81]
32	0.300 [7.62]

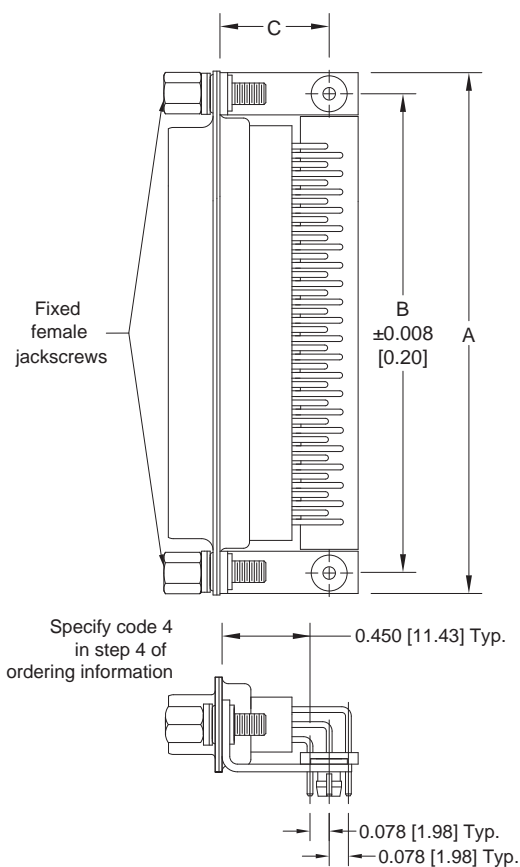
NOTE:

*1 Contact termination code as specified in Step 4 of ordering information.



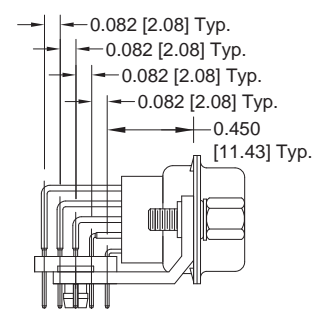
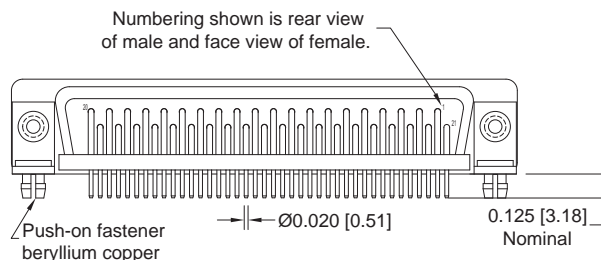
TYPICAL PART NUMBER:
SDD62S3S60T2G

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
CODE 4, 0.450 [11.43] CONTACT EXTENSION

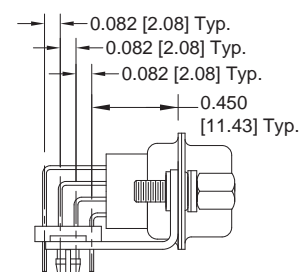


TYPICAL PART NUMBER:
SDD44S4R7NT2G

SDD**4*** 0.450 [11.43] CONTACT EXTENSION			
PART NUMBER	A	B	C
SDD15*4***	1.204 [30.58]	0.984 [24.99]	0.528 [13.41]
SDD26*4***	1.532 [38.91]	1.312 [33.32]	0.528 [13.41]
SDD44*4***	2.072 [52.63]	1.852 [47.04]	0.528 [13.41]
SDD62*4***	2.720 [69.09]	2.500 [63.50]	0.528 [13.41]
SND50*5***	2.626 [66.70]	2.406 [61.11]	0.573 [14.55]
SDD104*4***	2.720 [69.09]	2.500 [63.50]	0.614 [15.60]



TYPICAL PART NUMBER:
SDD104M4R7NT2G



TYPICAL PART NUMBER:
SDD78M4R7NT2G



Positronic Industries
connectpositronic.com

SDD SERIES

MILITARY / SPACE FLIGHT QUALITY

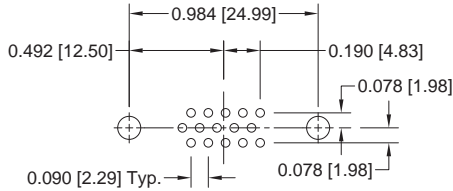
HIGH DENSITY REMOVABLE OR PCB CONTACTS

High
Performance
D-sub

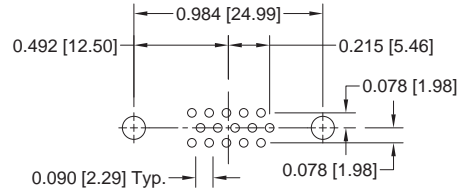
RIGHT ANGLE (90°) AND STRAIGHT SOLDER PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

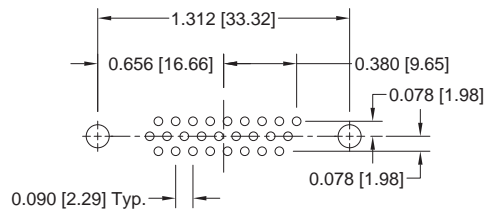
SDD15 MALE



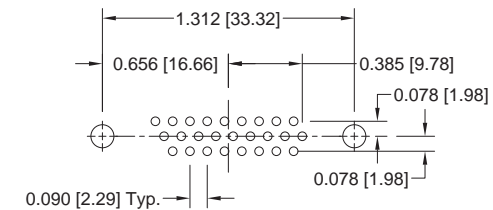
SDD15 FEMALE



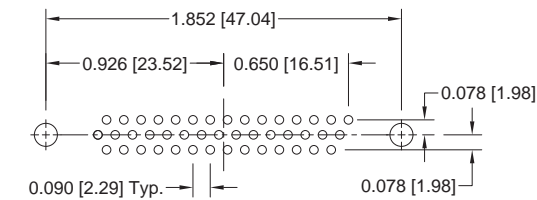
SDD26 MALE



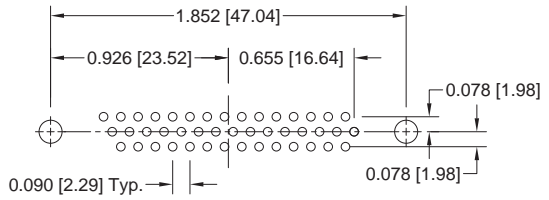
SDD26 FEMALE



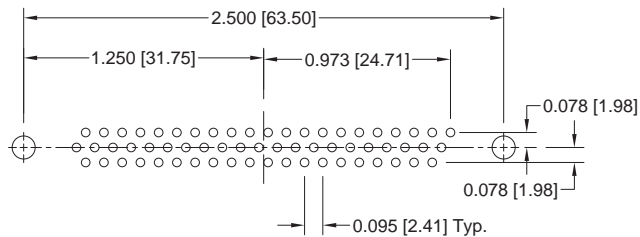
SDD44 MALE



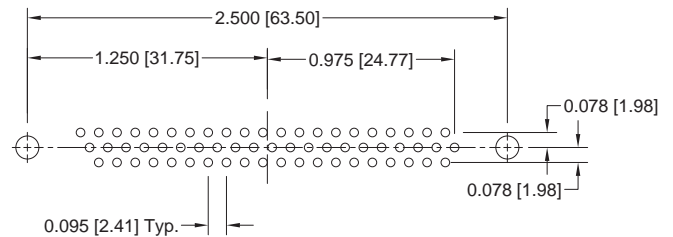
SDD44 FEMALE



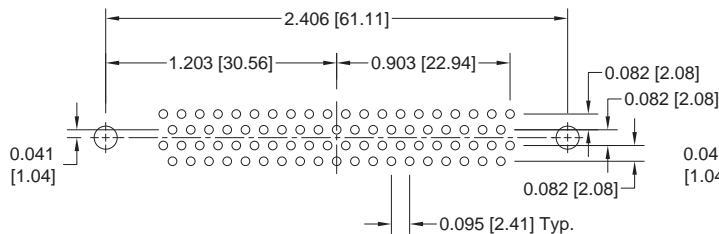
SDD62 MALE



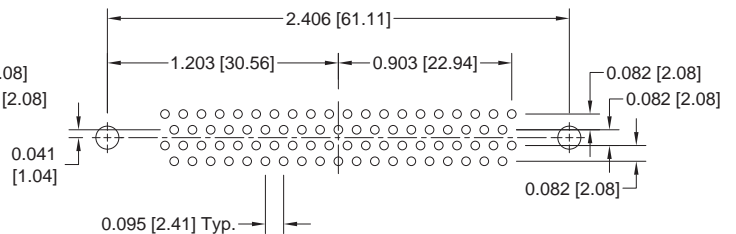
SDD62 FEMALE



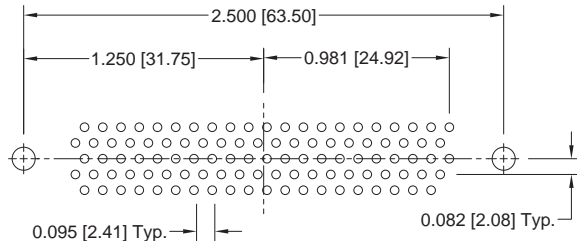
SDD78 MALE



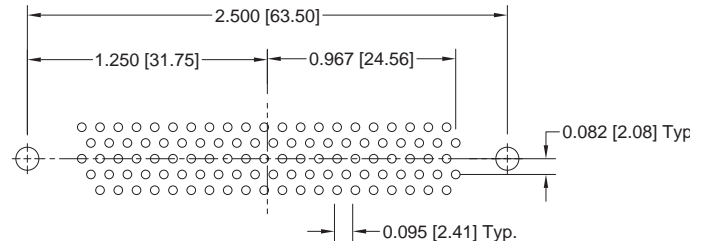
SDD78 FEMALE



SDD104 MALE



SDD104 FEMALE



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.035 [0.89] Ø hole for contact termination positions.
Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



REMOVABLE CONTACT ORDERING ASSISTANCE CHART



SDD SERIES CRIMP AND SOLDER CONTACT TERMINATIONS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 78 for additional information	22	FC8020M2	MC8020M	20 [0.5] max.
			FC8022M2	MC8022M	22 / 24 / 26 / 28 / 30 [0.3 / 0.25 / 0.12 / 0.08 / 0.05]
SOLDER	see page 79 for additional information	22	FS8022M2	MS8022M	22 [0.3] max.

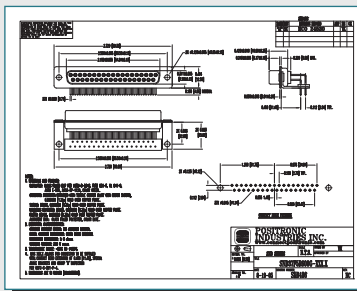
NOTE: For ordering crimp contacts on reels, add "R" to part number, see page 77 for details.
Examples: FC8022M2R or MC8022MR

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.

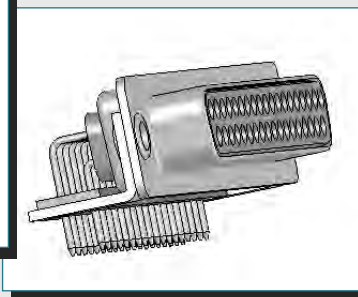
For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 96.

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or use the search function on our web site, www.connectpositronic.com.



2-D Drawing



3-D Model



Positronic Industries
connectpositronic.com

SDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY REMOVABLE OR PCB CONTACTS

High
Performance
D-sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SDD	62	S	4	R7	N	T6	G	—

STEP 1 - BASIC SERIES

SDD series

STEP 2 - CONNECTOR VARIANTS

15, 26, 44, 62, 78, 104

STEP 3 - CONNECTOR GENDER

- M - Male
- S - Female - PosiBand closed entry contacts, see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE

- 0 - Contacts ordered separately, see contact chart on page 18.
- 1 - Crimp, 22 AWG - 30 AWG [0.3 mm² - 0.05 mm²].
- 3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
- 32 - Solder, straight printed board mount with 0.300 [7.62] tail length.
- 4 - Solder, right angle (90°) printed board mount with 0.450 [11.43] Contact Extension.

*1 STEP 5 - MOUNTING STYLE

- 0 - Mounting hole, 0.120 [3.05] Ø.
- 02 - Mounting hole, 0.154 [3.91] Ø.
- B3 - Bracket, mounting, right angle (90°) metal with cross bar.
- C5 - Swaged spacer, cul-de-sac style, 4-40 threads, 0.350 [8.89] length. For use with cable connectors only.
- C7 - Bracket, mounting, right angle (90°) metal, swaged to connector with cul-de-sac spacer and 4-40 threads with cross bar.
- F - Float mounts, universal.
- P - Threaded post, brass, 0.375 [9.53] length.
- R2 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar.
- R6 - Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar.
- R7 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar.
- R8 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar.
- S - Swaged spacer, 4-40 threads, 0.375 [9.53] length.
- S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length.
- S5 - Swaged locknut, 4-40 threads.
- S6 - Swaged spacer with push-on fastener, 4-40 threads, 0.375 [9.53] length.

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - CONNECTOR HOUSING (SHELLS) OPTION

- G - Gold over copper plate.
- D - Gold over copper plate and dimpled (male connectors only).

*1 STEP 7 - LOCKING AND POLARIZING SYSTEMS

- 0 - None.
- T - Fixed female jackscrews.
- T2 - Fixed female jackscrews.
- T6 - Fixed male and female polarized jackscrews.
- E - Rotating male jackscrews.
- E2 - Rotating male screw locks.
- E3 - Rotating male with internal hex for 3/32 hex drives.
- E6 - Rotating male and female polarized jackscrews.

*1 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER

- 0 - None.
- H - Cable adapter, top opening, brass.
- AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.
- N - Push-on fastener for right angle (90°) mounting brackets.

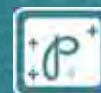
NOTE:

- *1 For additional information on accessories listed in Step 5, 6, and 7, see the Accessories section, pages 86-94.

*Do you need 2-D drawings
or 3-D models?*

See page 18 for more information!

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 **fixed** and Size 8 **removable** contacts.
- ✓ All female closed entry signal contacts utilize the "PosiBand®" system. *See page 1 for details.* GSFC S-311-P-4/10 offers two contact engagement test options. Size 20 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Twenty-two connector variants with a mixture of signal, power, shielded and high voltage contacts.
- ✓ Terminations include cable or wire crimp and solder, straight and right angle PCB mount.
- ✓ Current ratings to 70 amperes.
See temperature rise curves on page 3 & 4 for details.
- ✓ A wide variety of options and accessories.
- ✓ Applicable variants are qualified to GSFC and military specifications. *See page 98 for details.*

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- DSCC Specification 85039

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled polyester per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124, blue color.
Contacts:	
Size 20:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 8:	
Power:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Shielded:	<i>For material and finishes, see page 77.</i>
High Voltage:	<i>For material and finishes, see page 77.</i>

Connector Housing (Shells):

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Mounting Spacers and Brackets:

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Push-On Fasteners:

Phosphor bronze or beryllium copper with 0.000050 inch [1.27 microns] gold over copper plate.

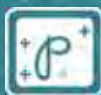
Jackscrew Systems:

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Cable Adapter (Hood):

Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

continued on next page. . .



Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

High
Performance
D-sub

TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

MECHANICAL CHARACTERISTICS:

Contacts:

Size 20 Fixed: Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.*

Size 8 Removable:
Power: Install contact to rear face of connector insert and remove from front face of connector insert. Male contact - 0.142 inch [3.61 mm] mating diameter. Female contact - features Large Surface Area (L.S.A.) closed entry design utilizing BeCu mechanical retention member. *For removable size 8 contacts, see pages 81-85.*

Shielded: *For mechanical characteristics, see page 77.*

High Voltage: *For mechanical characteristics, see page 77.*

Contact Retention in Connector Insert:

Size 20: 9 lbs. [40N].
Size 8 Power / Shielded: 22 lbs. [98N].

Resistance to Solder Iron Heat: 500°F [260°C] for 10 seconds duration per IEC 60512-6.

Contact Terminations:

Size 20: Solder cup - wire size 20 AWG [0.5 mm²] maximum; *see page 24 for details.*
Straight solder printed board mount - 0.028 inch [0.71 mm] termination diameter.
Right angle (90°) printed board mount - 0.028 inch [0.71 mm] termination diameter.

Size 8
Power: Closed barrel crimp or solder cup - wire sizes 8 [10.0 mm²], 10 [4.3 mm²], 12 [4.0 mm²], and 16 [1.5 mm²] AWG.
Straight solder printed board mount - 0.078 inch [1.98 mm], 0.094 inch [2.39 mm] and 0.125 inch [3.18 mm] termination diameters.

Right angle (90°) printed board mount - 0.078 inch [1.98 mm] and 0.125 inch [3.18 mm] termination diameters.

Shielded: *Refer to RF Cable in chart on page 84 for contact terminations.*

High Voltage: Straight and right angle (90°) terminations - 0.041 inch [1.04 mm] minimum hole diameter.

Connector Housing (Shells):

Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization:

Trapezoidally-shaped connector housing and polarized jackscrews.

Mounting to Angle Brackets:

Jackscrews and riveted fasteners with 0.120 inch [3.05 mm] diameter hole, and threaded riveted fasteners with 4-40 threads and polyester inserts.

Mounting to Printed Board:

Rapid installation push-on fasteners and threaded posts.

Locking Systems:

Jackscrews.

Mechanical Operations:

1,000 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating: 7.5 amperes, nominal
Initial Contact Resistance: 0.005 ohms maximum.
Proof Voltage: 1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

Contact Current Rating - Tested per U.L. 1977:

0.078 inches diameter / 12 AWG terminations: 39 amperes.
0.094 inches diameter / 10 AWG terminations: 50 amperes.
0.125 inches diameter / 8 AWG terminations: 70 amperes.

See Temperature Rise Curves on page 3 for details.

Initial Contact Resistance: 0.0005 ohms max. per IEC 60512-2, Test 2b.

SHIELDED CONTACTS

For electrical characteristics, see page 77.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 77.

CONNECTOR

Insulation Resistance: 5 G ohms.
Clearance and Creepage Distance: 0.039 inch [1.0 mm], minimum.
Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.
Damp Heat, Steady State: 21 days.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

— SHELL SIZE 1 —

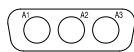


***1 2WK2**



5W1

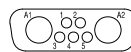
— SHELL SIZE 2 —



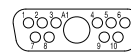
3W3



***2 3WK3**

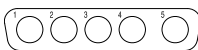


7W2

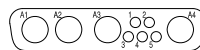


11W1

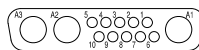
— SHELL SIZE 3 —



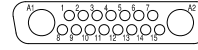
5W5



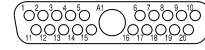
9W4



13W3

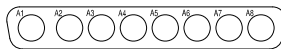


17W2



21W1

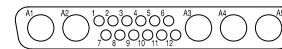
— SHELL SIZE 4 —



8W8



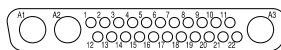
13W6



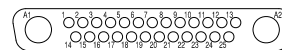
17W5



21WA4

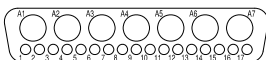


25W3

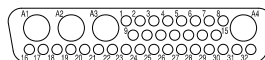


27W2

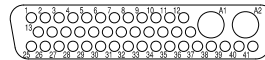
— SHELL SIZE 5 —



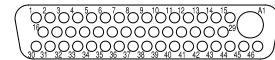
24W7



36W4

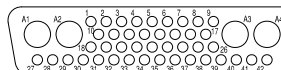


43W2



47W1

— SHELL SIZE 6 —



46W4

Notes:

*1 2WK2 connectors have 1 male and 1 female contacts. Female connector should be loaded with female contact in A2 position.

*2 3WK3 male variant contains 2 male contacts and 1 female contact. Female variant contains 2 female contacts and 1 male contact



Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

High
Performance
D-sub

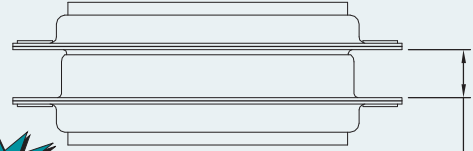
STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY



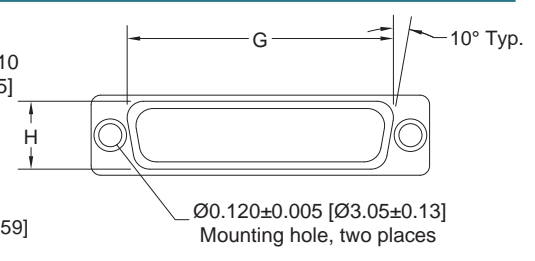
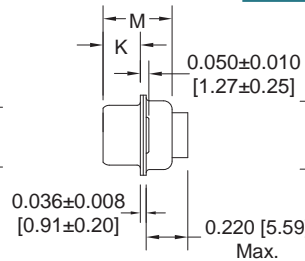
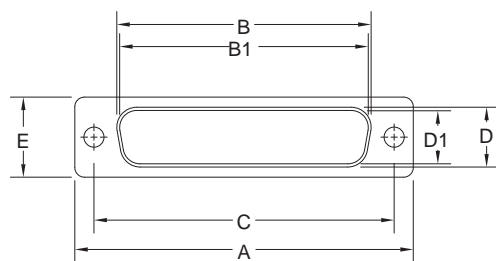
SCBM3W3M0000G

SCBM5W5M0000G

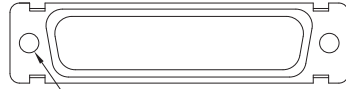
RECOMMENDED MATING DIMENSIONS



Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]

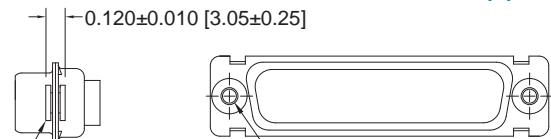


OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



Ø0.120±0.005 [Ø3.05±0.13]
Mounting hole, two places
for stainless steel shell (0 option)
Ø0.154 [3.91] Mounting hole,
two places (02 option)

OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)

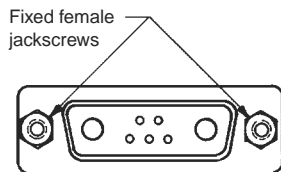
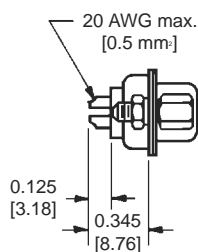


Ø0.120±0.010 [3.05±0.25]
0.032 [0.81]
Total diametral float
Ø0.086^{+0.005}_{-0.000} [Ø2.18^{+0.13}_{-0.00}]
Mounting hole, two places

SHELL SIZE	GENDER	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
1	MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
2	MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
3	MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
4	MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
5	MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
6	MALE	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

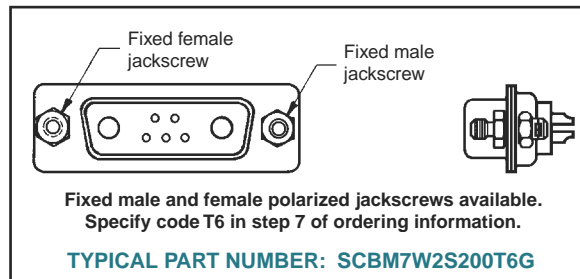


**SOLDER CUP TERMINATION
CODE 2**



For solder cup contacts,
specify code 2 in step 4 of
ordering information.

Typical Part Number:
SCBM7W2M200T2G



SCBM21WA4M2000G WITH MS4820M

SCBM21WA4S65S00G

**STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
CODE 3, 35, 36 AND 37**

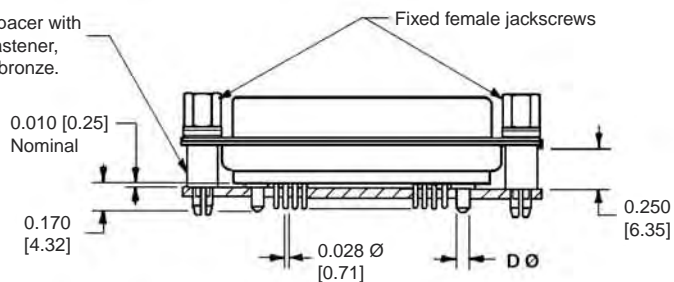
*1 CODE NUMBER	D Ø
3	Size 8 contacts not supplied
35	0.078 [1.98]
36	0.094 [2.39]
37	0.125 [3.18]



NOTE:

*1 Contact termination code as specified
in Step 4 of ordering information.

Swaged spacer with
push-on fastener,
phosphor bronze.



Typical Part Number:
SCBM17W2S35S60T2G



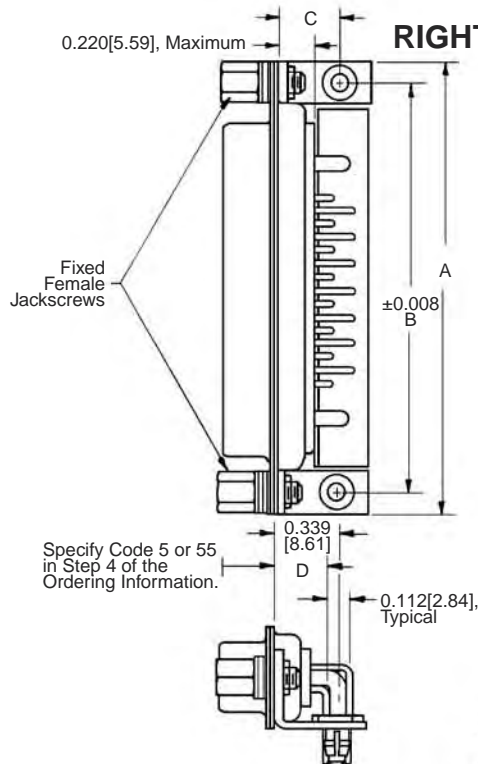
Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

High
Performance
D-sub



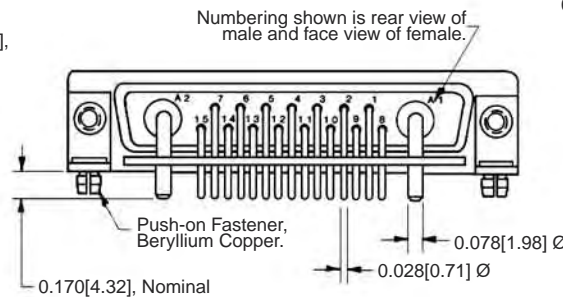
TYPICAL PART NUMBER:
SCBM17W2M55R7NT2G

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH 0.078 [1.98] Ø POWER CONTACTS

CODE 5 AND 55, 0.283 [7.19] CONTACT EXTENSION

See temperature rise curves on pages 3 and 4

SCBM**(5 or 55)*** 0.283 [7.19] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]



TYPICAL PART NUMBER:
SCBM36W4S55R7NT2G

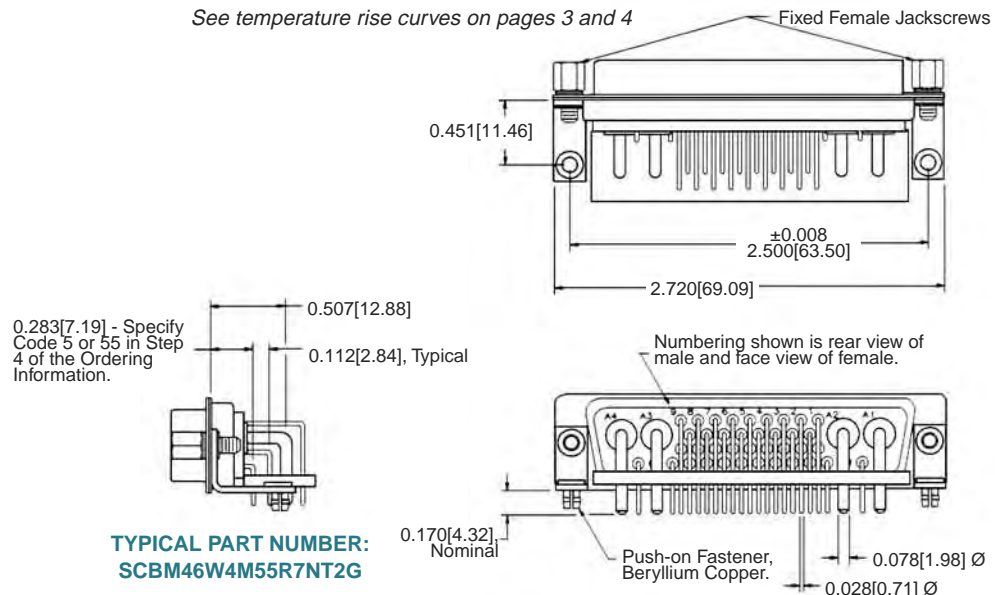
SHELL SIZE 6

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH 0.078 [1.98] Ø POWER CONTACTS

CODE 5 AND 55, 0.283 [7.19] CONTACT EXTENSION

CONNECTOR VARIANT 46W4

See temperature rise curves on pages 3 and 4

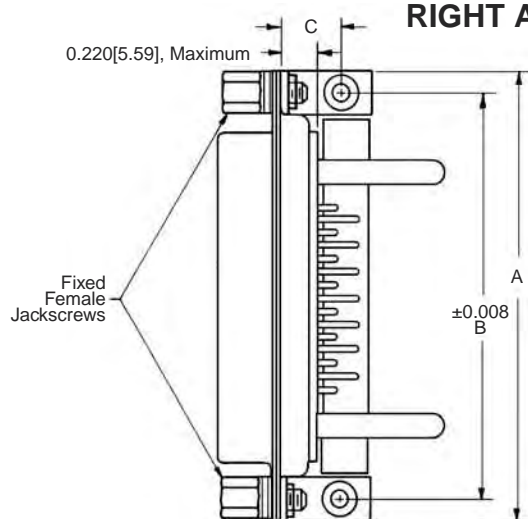


TYPICAL PART NUMBER:
SCBM46W4M55R7NT2G

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH 0.125 [3.18] Ø POWER CONTACTS

CODE 5 AND 57, 0.283 [7.19] CONTACT EXTENSION

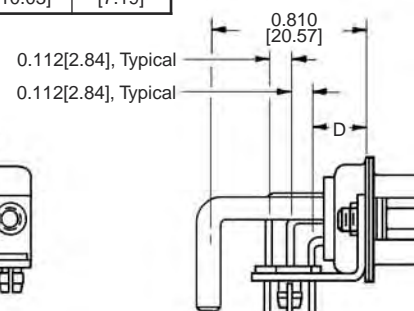
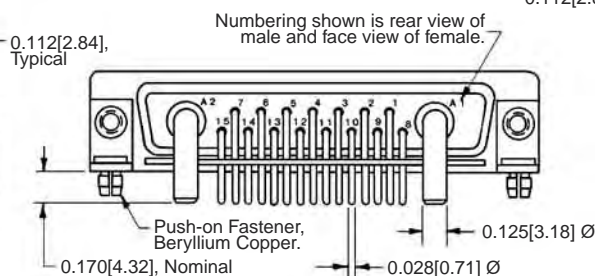
See temperature rise curves on pages 3 and 4



SCBM**(5 or 57)**** 0.283 [7.19] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.283 [7.19]

Specify Code 5 or 57
in Step 4 of the
Ordering Information.

TYPICAL PART NUMBER:
SCBM17W2M57R7NT2G



Typical Part Number:
SCBM36W4S57R7NT2G

SHELL SIZE 6

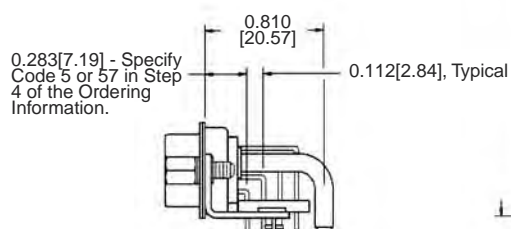
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH 0.125 [3.18] Ø POWER CONTACTS

CODE 5 AND 57, 0.283 [7.19] CONTACT EXTENSION

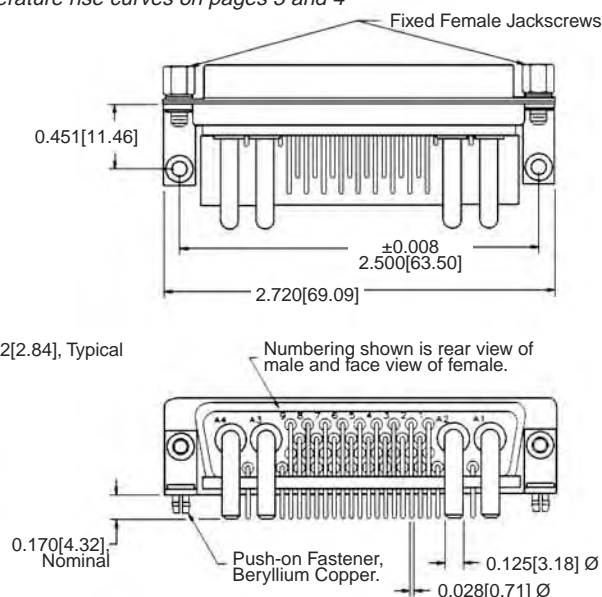
CONNECTOR VARIANT 46W4

See temperature rise curves on pages 3 and 4

SHELL SIZE 6 CONNECTOR



TYPICAL PART NUMBER:
SCBM46W4M57R7NT2G



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

SCBM SERIES

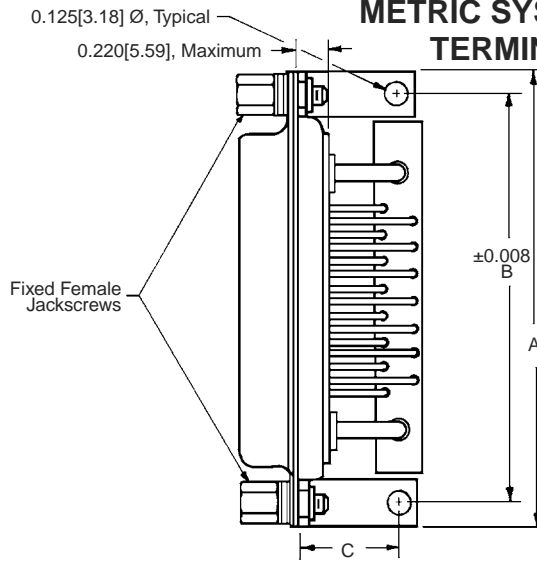
MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

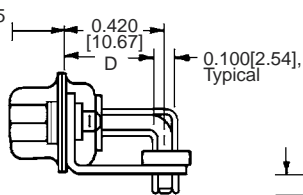
High
Performance
D-sub

METRIC SYSTEM RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH 0.078 [1.98] Ø POWER CONTACTS CODE 7 AND 75, 0.370 [9.40] CONTACT EXTENSION

See temperature rise curves on pages 3 and 4

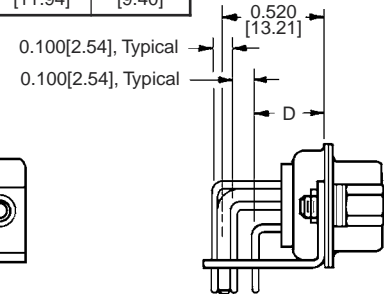
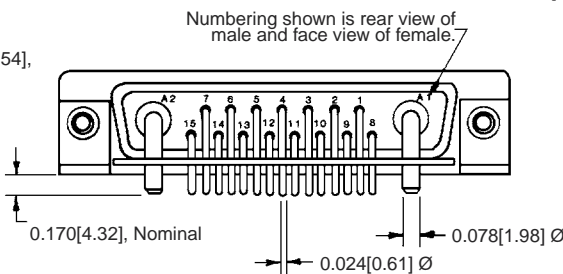


Specify Code 7 or 75
in Step 4 of the Or-
dering Information.



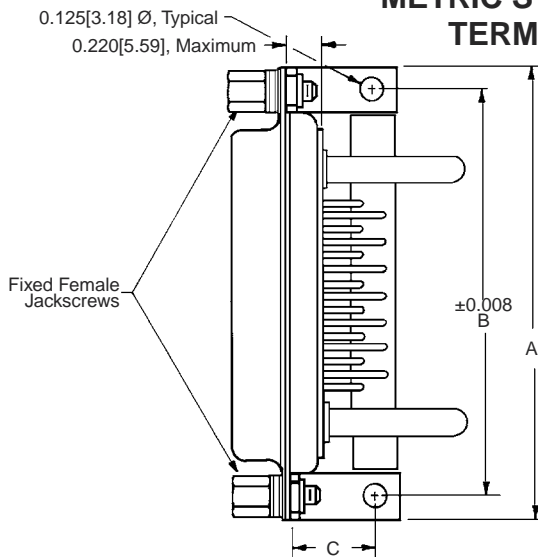
TYPICAL PART NUMBER:
SCBM17W2M75R70T2G

SCBM**(7 or 75)*** 0.370 [9.40] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]

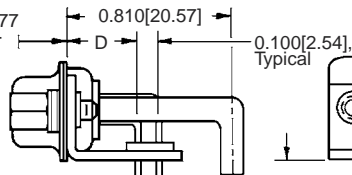


TYPICAL PART NUMBER:
SCBM36W4S75R70T2G

METRIC SYSTEM RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH 0.125 [3.18] Ø POWER CONTACTS CODE 7 AND 77, 0.370 [9.40] CONTACT EXTENSION

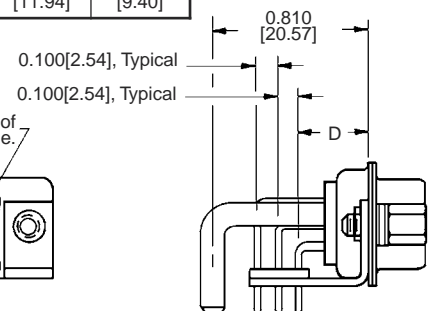
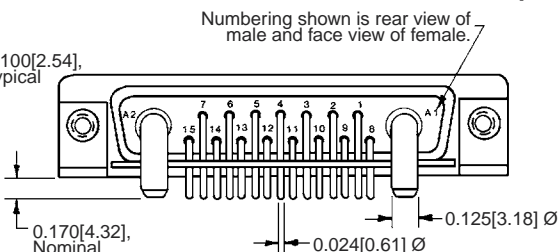


Specify Code 7 or 77
in Step 4 of the Or-
dering Information.

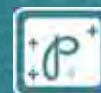


TYPICAL PART NUMBER:
SCBM17W2M77R70T2G

SCBM**(7 or 77)*** 0.370 [9.40] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.420 [10.67]	0.370 [9.40]
SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.470 [11.94]	0.370 [9.40]



TYPICAL PART NUMBER:
SCBM36W4S77R70T2G

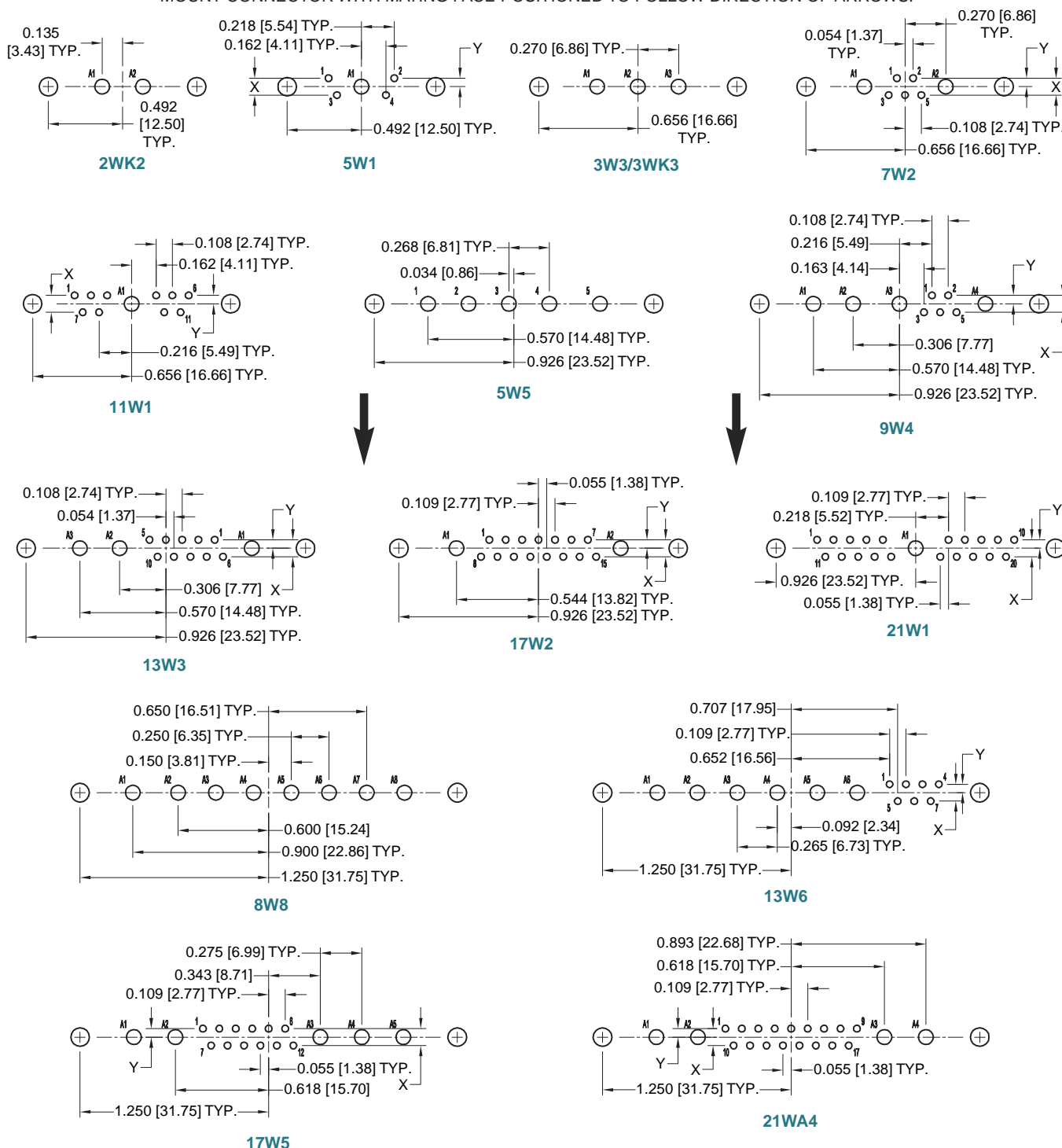


PRINTED BOARD CONTACT HOLE PATTERNS

RIGHT ANGLE (90°) WITH 0.078 [1.98] Ø POWER CONTACTS AND STRAIGHT SOLDER PRINTED BOARD MOUNT WITH 0.078 [1.98] Ø, 0.094 [2.39] Ø AND 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for size 20 contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.114 [2.90] Ø hole for 0.094 [2.39] Ø power contact termination positions.
Suggest 0.145 [3.68] Ø hole for 0.125 [3.18] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

For "X" and "Y" dimensions, see chart on page 29.

continued on next page. . .

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

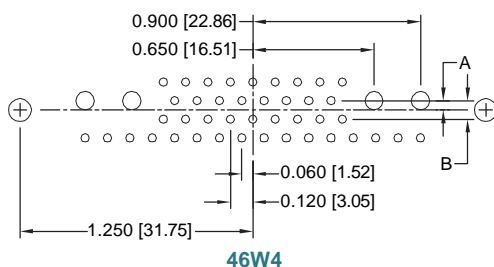
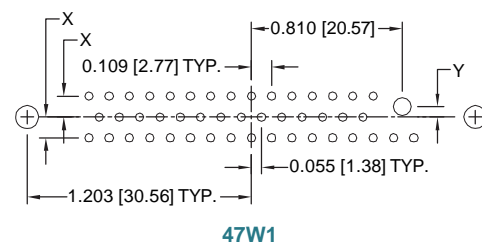
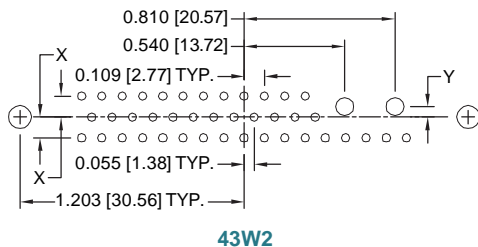
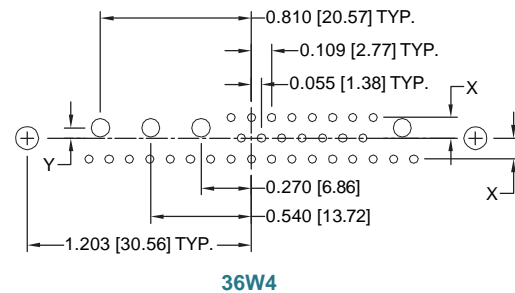
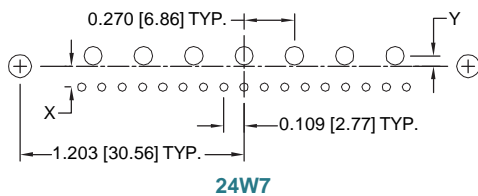
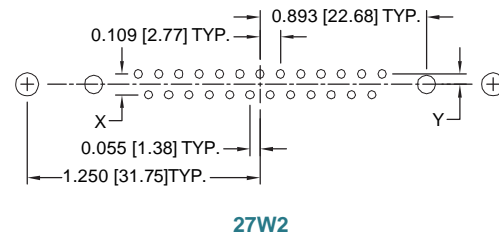
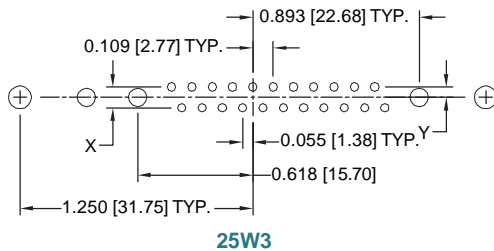
High
Performance
D-sub

PRINTED BOARD CONTACT HOLE PATTERNS

RIGHT ANGLE (90°) WITH 0.078 [1.98] Ø POWER CONTACTS AND STRAIGHT SOLDER PRINTED BOARD MOUNT WITH 0.078 [1.98] Ø, 0.094 [2.39] Ø AND 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

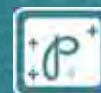
continued from previous page. . .



CODE NUMBER	X	Y	A	B
3				
35				
36	0.112 [2.84]	0.056 [1.42]	0.050 [1.27]	0.100 [2.54]
37				
5	0.112 [2.84]	0.056 [1.42]	0.056 [1.42]	0.112 [2.84]
55				
7	0.100 [2.54]	0.050 [1.27]	0.050 [1.27]	0.100 [2.54]
75				

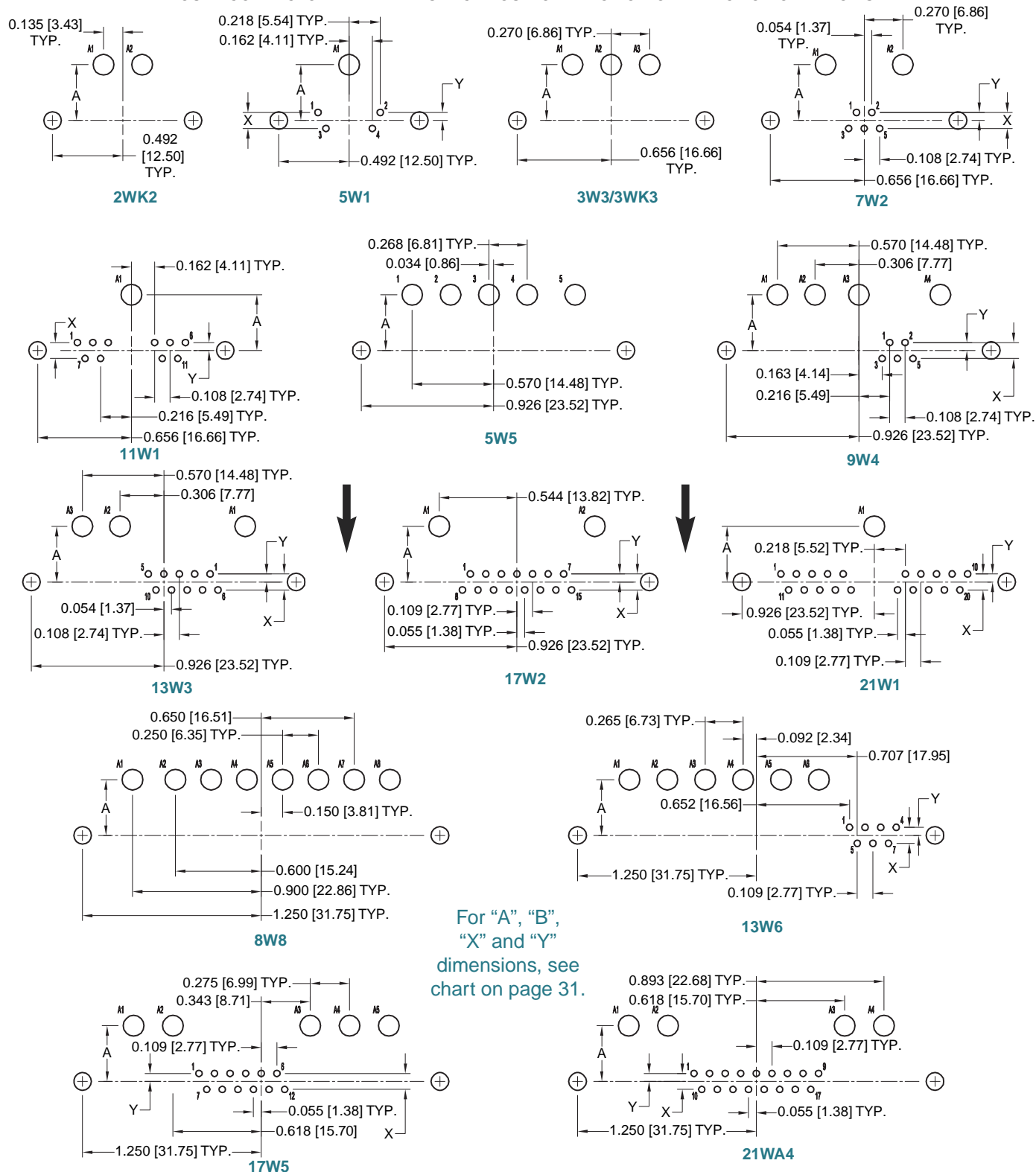
SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for size 20 contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.114 [2.90] Ø hole for 0.094 [2.39] Ø power contact termination positions.
Suggest 0.145 [3.68] Ø hole for 0.125 [3.18] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.



PRINTED BOARD CONTACT HOLE PATTERN
RIGHT ANGLE (90°) WITH 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for size 20 contact termination positions.
Suggest 0.145 [3.68] Ø hole for power contact termination positions.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

continued on next page. . .

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 30**



Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

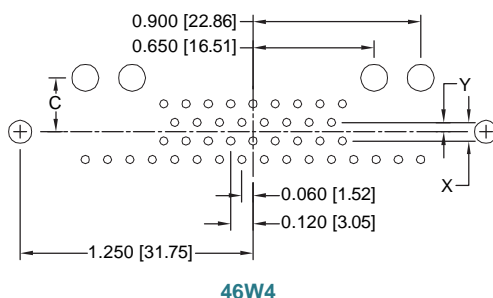
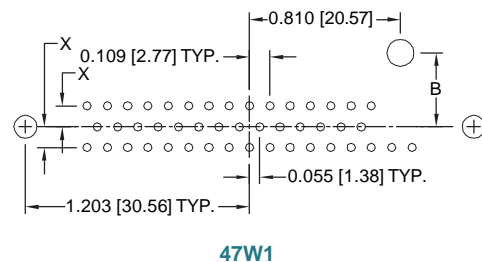
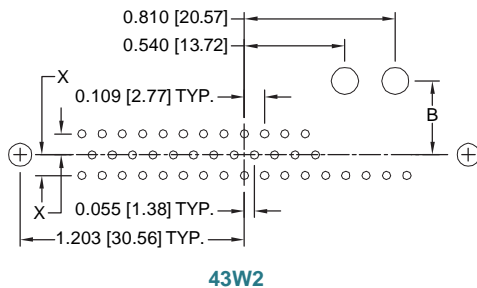
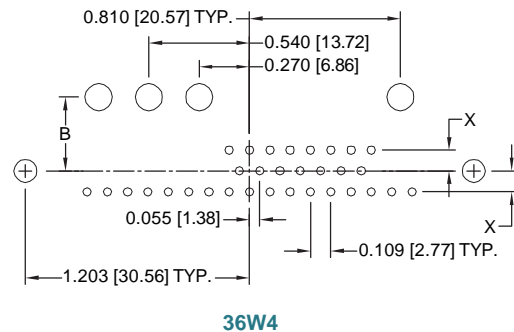
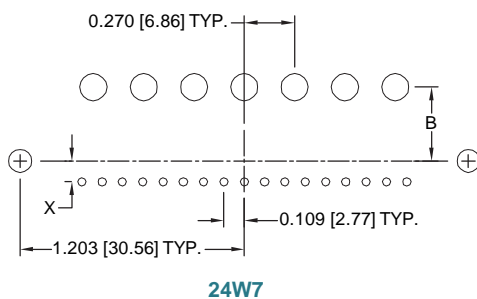
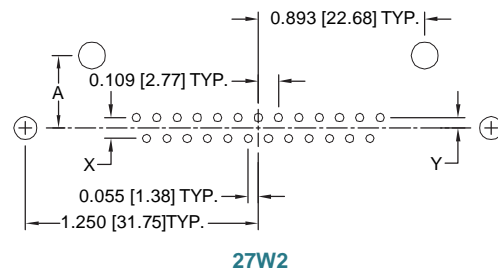
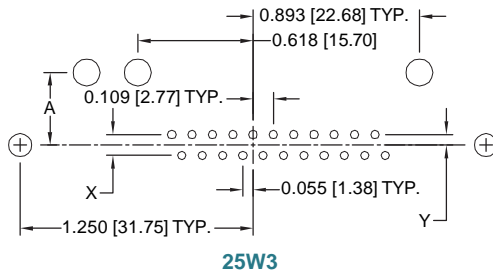
High
Performance
D-sub

PRINTED BOARD CONTACT HOLE PATTERN

RIGHT ANGLE (90°) WITH 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

continued from previous page. . .

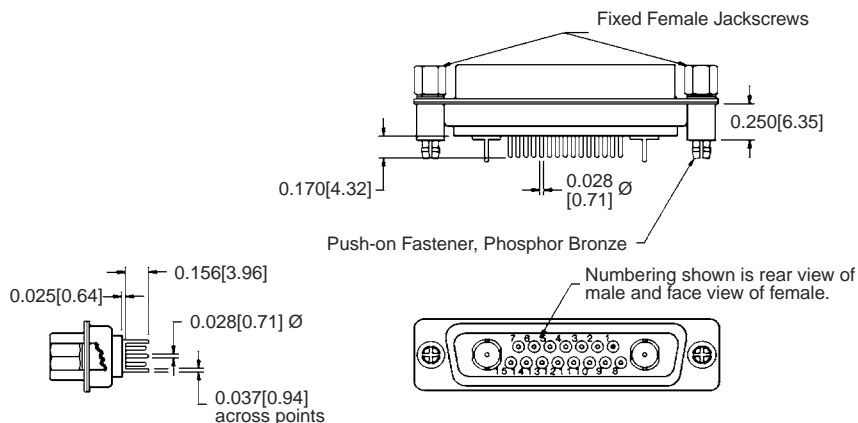


CODE NUMBER	A	B	C	X	Y
5	0.471 [11.96]	0.415 [10.54]	0.359 [9.12]	0.112 [2.84]	0.056 [1.42]
57					
7	0.390 [9.91]	0.340 [8.64]	0.290 [7.37]	0.100 [2.54]	0.056 [1.42]
77					

SUGGESTED PRINTED BOARD HOLE SIZES:

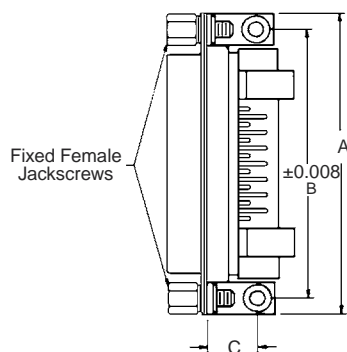
Suggest 0.045 [1.14] Ø hole for size 20 contact termination positions.
Suggest 0.145 [3.68] Ø hole for power contact termination positions.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION WITH SHIELDED CONTACTS
CODE 65, CONNECTOR WITH FDS4201M OR MDS4201M CONTACTS



TYPICAL PART NUMBER:
SCBM17W2M65S60T2G

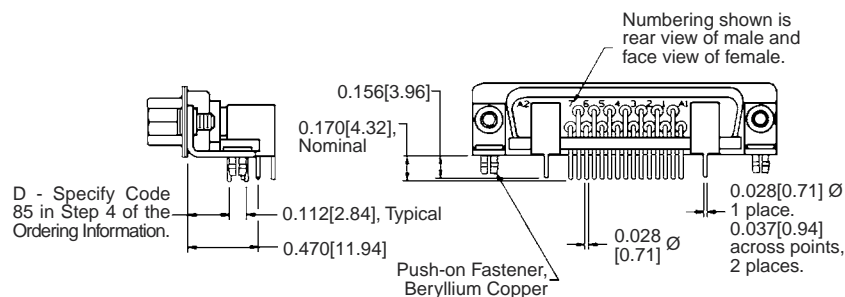
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH SHIELDED CONTACTS
CODE 85, CONNECTOR WITH FRT4201M OR MRT4201M CONTACTS



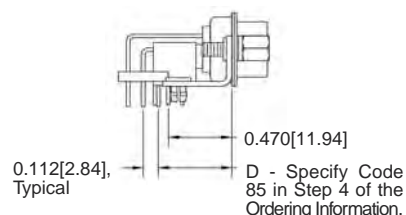
SCBM**85**** 0.283 [7.19] CONTACT EXTENSION				
SHELL SIZE	A	B	C	D
SHELL SIZE 1	1.204 [30.58]	0.984 [24.99]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]	0.339 [8.61]	0.283 [7.19]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]	0.339 [8.61]	0.283 [7.19]
*1 SHELL SIZE 5	2.626 [66.70]	2.406 [61.11]	0.395 [10.03]	0.545 [13.84]

NOTE:

*1 Shell size 5 connectors are supplied inverted when ordered with right angle (90°) printed board mount shielded contacts.



TYPICAL PART NUMBER:
SCBM17W2M85R7NT2G



TYPICAL PART NUMBER:
SCBM36W4M85R7NT2G



Positronic Industries
connectpositronic.com

SCBM SERIES

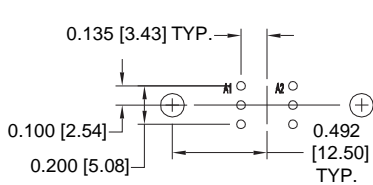
MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

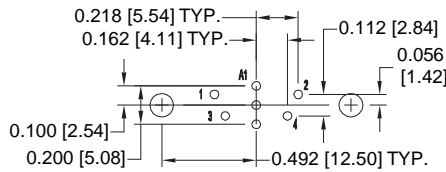
High
Performance
D-sub

STRAIGHT SOLDER PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FDS4201M AND MDS4201M SHIELDED CONTACTS

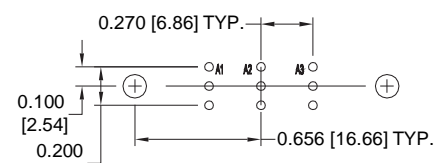
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.



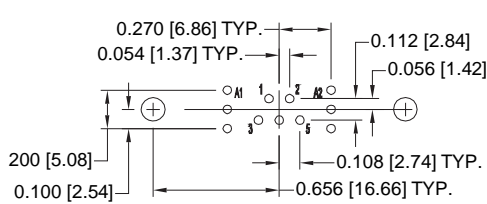
2WK2



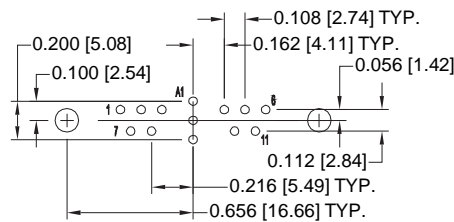
5W1



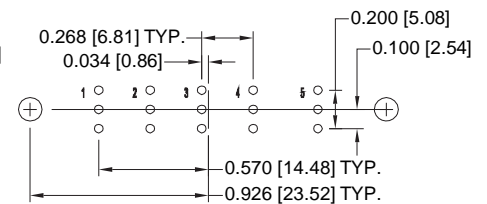
3W3/3WK3



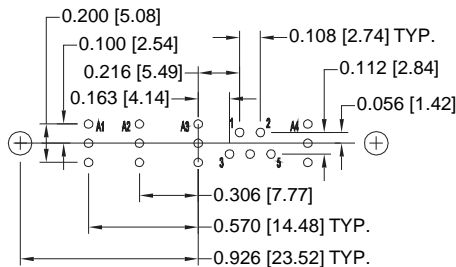
7W2



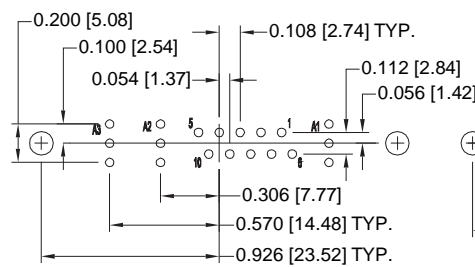
11W1



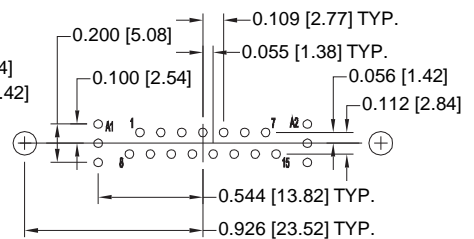
5W5



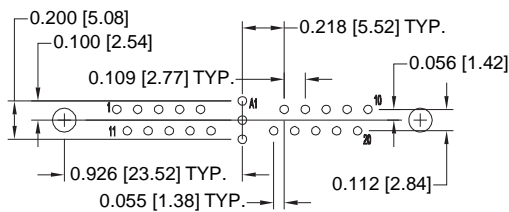
9W4



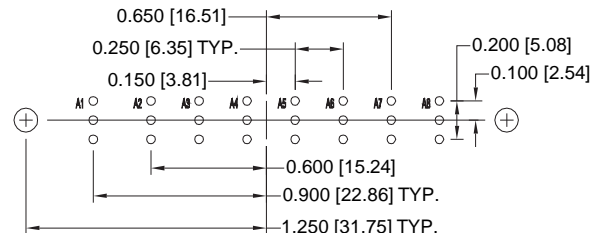
13W3



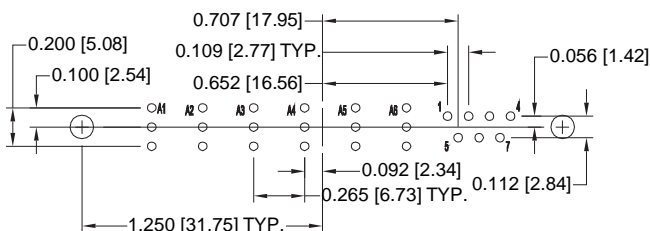
17W2



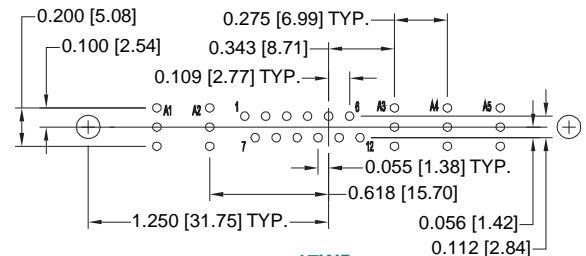
21W1



8W8



13W6



17W5

continued on next page. . . .

SUGGESTED PRINTED BOARD HOLE SIZES:

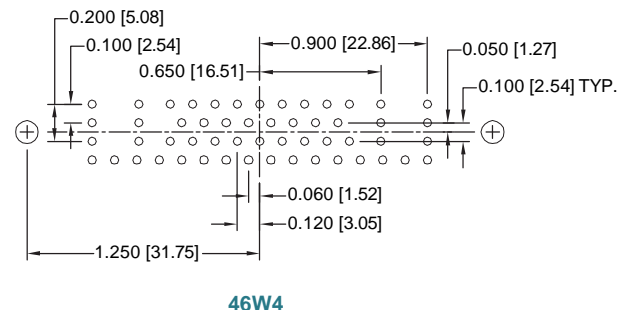
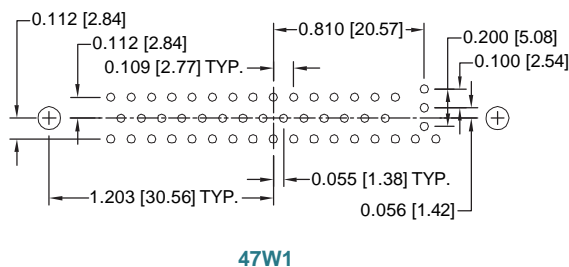
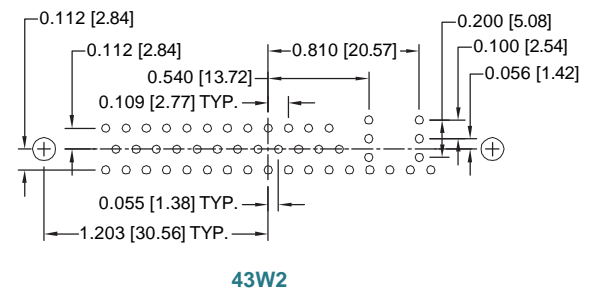
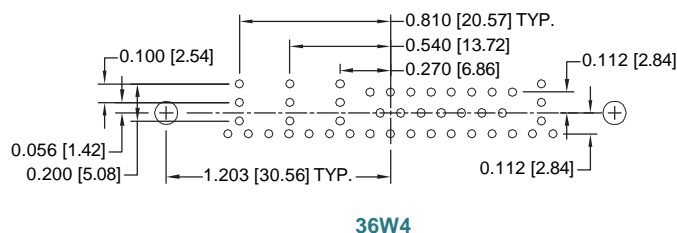
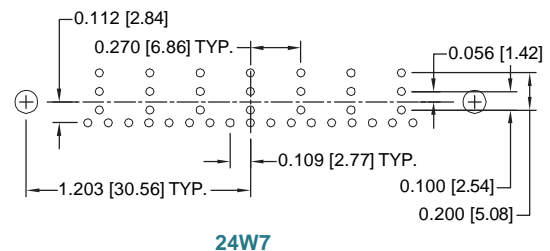
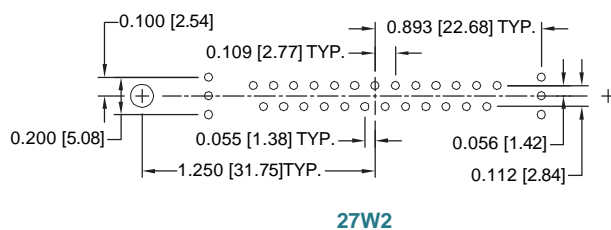
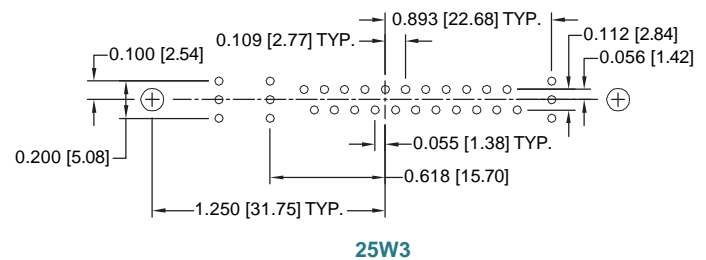
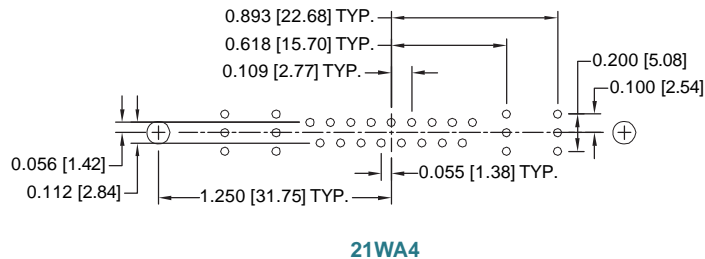
Suggest 0.045 [1.14] Ø hole for size 20 contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.



**STRAIGHT SOLDER PRINTED BOARD MOUNT CONTACT HOLE PATTERN
WITH FDS4201M AND MDS4201M SHIELDED CONTACTS**

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.

continued from previous page. . .



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for size 20 contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.



Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

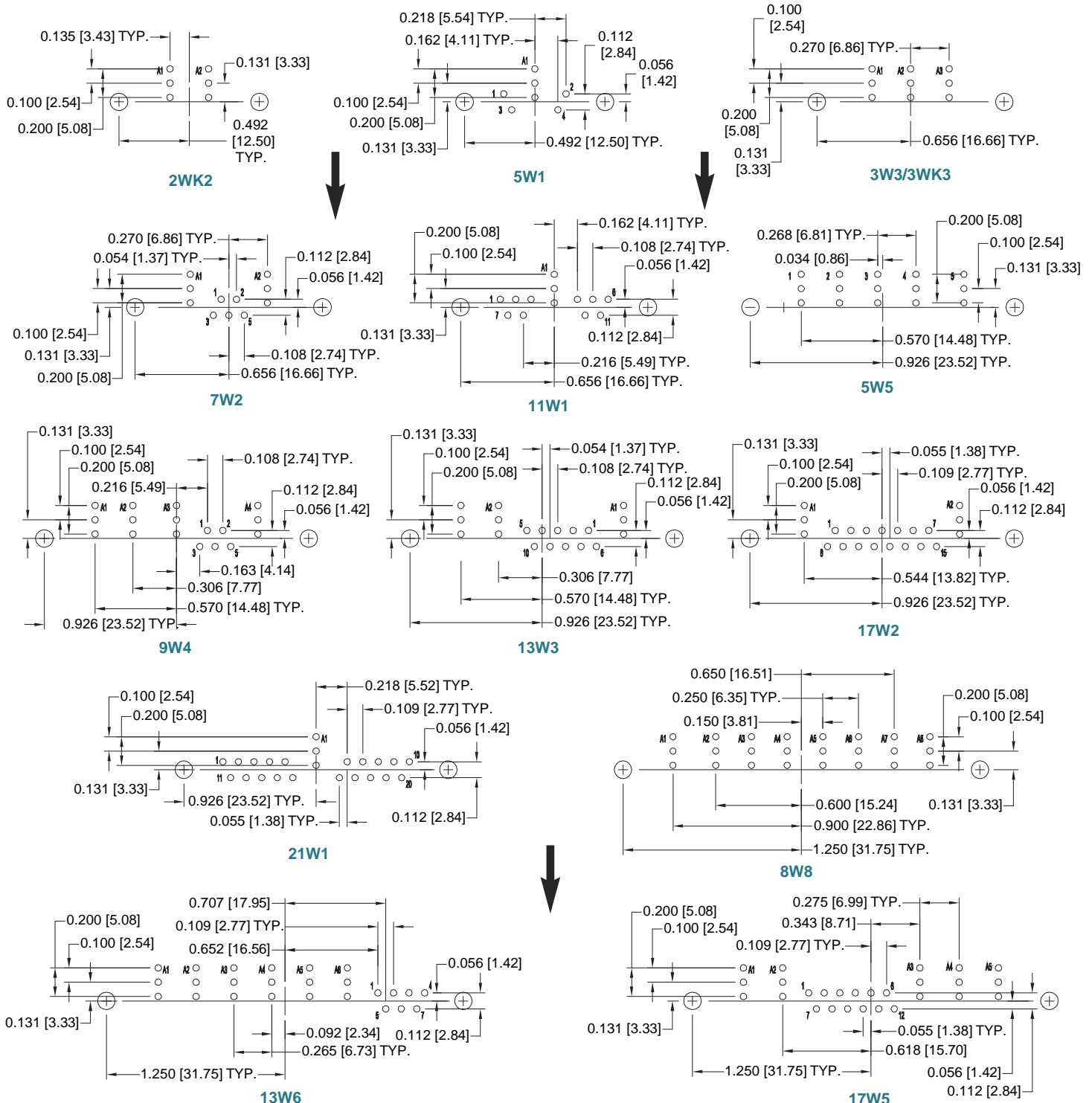
STANDARD DENSITY PCB MOUNT

High
Performance
D-sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FRT4201M AND MRT4201M SHIELDED CONTACTS

HOLE IDENTIFICATION SHOWN IS FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



continued on next page. . .

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for size 20 contact termination position.

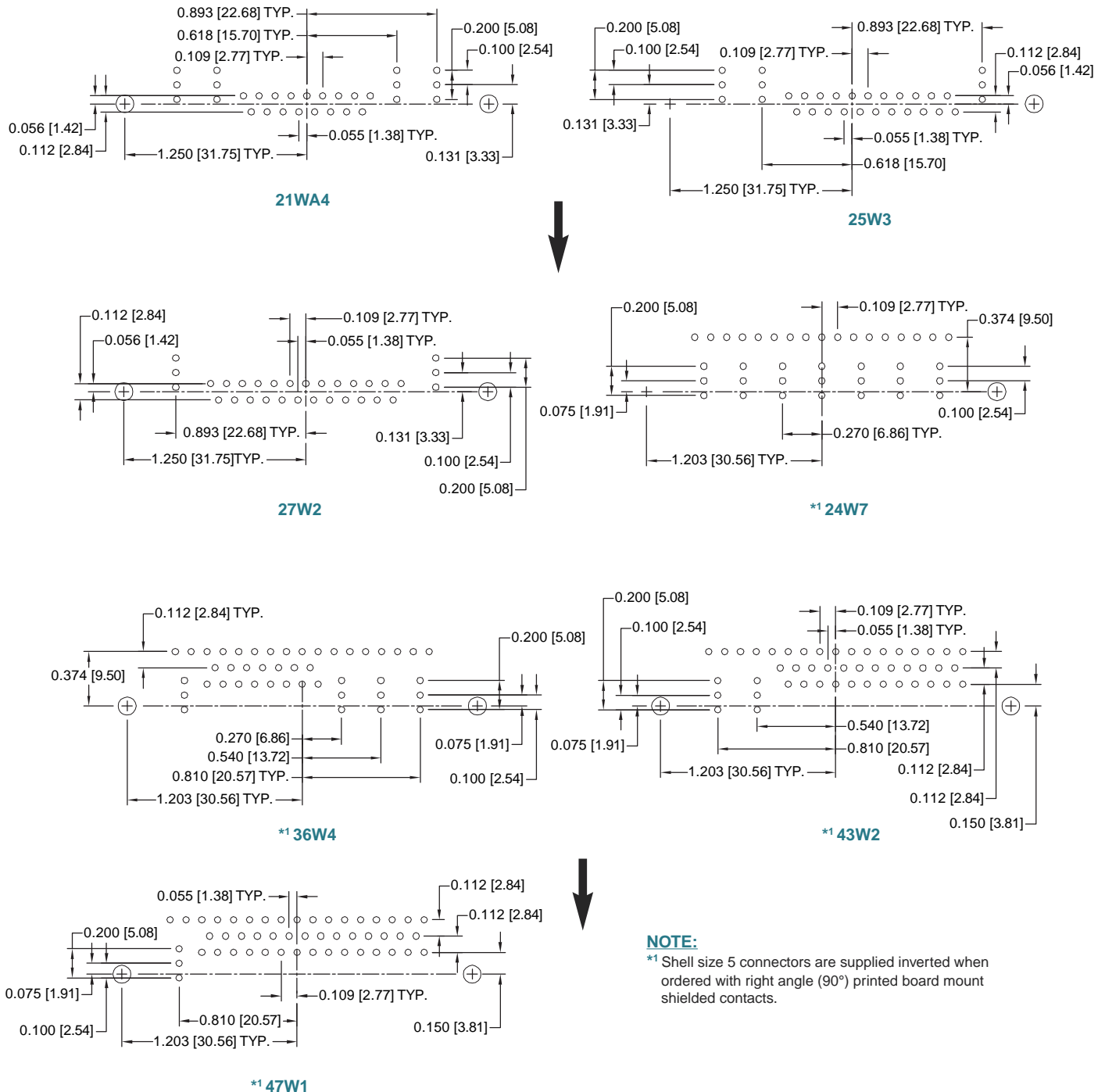
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.



RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FRT4201M AND MRT4201M SHIELDED CONTACTS

HOLE IDENTIFICATION SHOWN IS FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.

continued from previous page. . .



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for size 20 contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.** 36



Positronic Industries
connectpositronic.com

SCBM SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY PCB MOUNT

High
Performance
D-sub

REMOVABLE CONTACT ORDERING ASSISTANCE CHART



SCBM SERIES CRIMP AND SOLDER CUP TERMINATION CONTACTS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 81 for additional information	8	FC4008M	MC4008M	8 [10.0]
			FC4010M	MC4010M	10 [5.3]
			FC4012M	MC4012M	12 [4.0]
			FC4016M	MC4016M	16 [1.5]
SOLDER CUP	see page 82 for additional information	8	FS4008M	MS4008M	8 [10.0]
			FS4012M	MS4012M	12 [4.0]
			FS4016M	MS4016M	16 [1.5]
HIGH VOLTAGE <i>Straight Solder Wire</i>	see page 83 for additional information	8	FS4820M	MS4820M	20 [0.5]
HIGH VOLTAGE <i>Right Angle (90°) Solder Wire</i>			FS4920M	MS4920M	20 [0.5]
SHIELDED	see page 84 for additional information	SOLDER / CRIMP	FC4101M	MC4101M	RG 178 B/U, 196 B/U
			FC4102M	MC4102M	RG 179 BU/, 316 B/U
			FC4103M	MC4103M	RG 180 B/U
			FC4104M	MC4104M	RG 58 B/U
		SOLDER / SOLDER	FS4101M	MS4101M	RG 178 B/U, 196 B/U
			FS4102M	MS4102M	RG 179 B/U, 316 B/U
			FS4103M	MS4103M	RG 180 B/U
			FS4104M	MS4104M	RG 58 B/U
		CRIMP / CRIMP	FCC4101M	MCC4101M	RG 178 B/U, 196 B/U
			FCC4102M	MCC4102M	RG 179 BU/, 316 B/U
			FCC4103M	MCC4103M	RG 180 B/U
			FCC4104M	MCC4104M	RG 58 B/U

NOTE: For ordering crimp contacts on reels, add "R" to part number, see page 77 for details. Examples: FC4008MR or MC4008MR

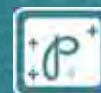
SCBM SERIES PRINTED BOARD MOUNT TERMINATION CONTACTS

TERMINATION TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	TERMINATION LENGTH	TERMINATION DIMENSION
STRAIGHT SOLDER PRINTED BOARD MOUNT	see page 82 for additional information	8	FDS4314M	MDS4314M	0.170 [4.32]	0.078 [1.98] Ø
			FDS4312M	MDS4312M		0.094 [2.39] Ø
			FDS4310M	MDS4310M		0.125 [3.18] Ø
	see page 85 for additional information	SHIELDED	FDS4201M	MDS4201M	0.156 [3.96]	SHIELDED
RIGHT ANGLE (90°) PRINTED BOARD MOUNT	see page 83 for additional information	8	FRT4314M	MRT4314M	0.339 [8.61]	0.078 [1.98] Ø
			FRT4414M	MRT4414M	0.451 [11.56]	0.078 [1.98] Ø
			FRT4714M	MRT4714M	0.420 [10.67]	0.078 [1.98] Ø
			FRT4814M	MRT4814M	0.520 [13.21]	0.078 [1.98] Ø
			FRT4310M	MRT4310M	0.810 [20.57]	0.125 [3.18] Ø
			FRT4410M	MRT4410M	0.810 [20.57]	0.125 [3.18] Ø
	see page 85 for additional information	SHIELDED	FRT4201M	MRT4201M	0.162 [6.10]	SHIELDED

NOTE: Positronic recommends printed circuit board contacts be supplied factory installed in the connector. *Contact technical sales.*

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 96.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SCBM	17W2	S	55	R7	N	T2	G	
STEP 1 - BASIC SERIES									STEP 9 - SPECIAL OPTIONS
SCBM series									SEE APPENDIX ON PAGE 95.
STEP 2 - CONNECTOR VARIANTS									STEP 8 - CONNECTOR HOUSING (SHELLS) OPTION
Shell Size 1 - 2WK2, 5W1									G - Gold over copper plate.
Shell Size 2 - 3W3, 3WK3, 7W2, 11W1									D - Gold over copper plate and dimpled (male connectors only).
Shell Size 3 - 5W5, 9W4, 13W3, 17W2, 21W1									
Shell Size 4 - 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2									
Shell Size 5 - 24W7, 36W4, 43W2, 47W1									
Shell Size 6 - 46W4									
STEP 3 - CONNECTOR GENDER									*3 STEP 7 - LOCKING AND POLARIZING SYSTEMS
M - Male									0 - None.
S - Female - PosiBand closed entry contacts, see page 1 for more information.									T - Fixed female jackscrews.
									T2 - Fixed female jackscrews.
									T6 - Fixed male and female polarized jackscrews.
									E - Rotating male jackscrews.
									E2 - Rotating male screw locks.
									E3 - Rotating male with internal hex for 3/32 hex drives.
									E6 - Rotating male and female polarized jackscrews.
STEP 4 - CONTACT TERMINATION TYPE									*3 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER
*10 - Connector ordered without size 8 power shielded or high voltage removable contacts, see contact chart on page 37 for details.									0 - None.
2 - Fixed, solder cup, signal contacts only.									H - Cable adapter, top opening, brass.
3 - Solder, straight printed board mount with signal contacts only, 0.170 [4.32] tail length.									AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.
35 - Solder, straight printed board mount with signal and 0.078 [1.98] Ø power contacts, 0.170 [4.32] tail length.									N - Push-on fastener for right angle (90°) mounting brackets.
36 - Solder, straight printed board mount with signal and 0.094 [2.39] Ø power contacts, 0.170 [4.32] tail length.									
37 - Solder, straight printed board mount with signal and 0.125 [3.18] Ø power contacts, 0.170 [4.32] tail length.									
5 - Solder, right angle (90°) printed board mount with signal contacts only, 0.283 [7.19] signal contact extension.									
55 - Solder, right angle (90°) printed board mount with signal and 0.078 [1.98] Ø power contacts, 0.283 [7.19] signal contact extension.									
57 - Solder, right angle (90°) printed board mount with signal and 0.125 [3.18] Ø power contacts, 0.283 [7.19] signal contact extension.									
65 - Solder, straight printed board mount with signal and shielded contacts, MDS/FDS 4201M footprint, 0.170 [4.32] signal contact tail length.									
7 - Solder, metric system right angle (90°) printed board mount with signal contacts only, 0.370 [9.40] signal contact extension.									
75 - Solder, metric system right angle (90°) printed board mount with signal and 0.078 [1.98] Ø power contacts, 0.370 [9.40] signal contact extension.									
77 - Solder, metric system right angle (90°) printed board mount with signal and 0.125 [3.18] Ø power contacts, 0.370 [9.40] signal contact extension.									
*285 - Solder, right angle (90°) printed board mount with signal and shielded contacts, MRT/FRT 4201M footprint, 0.283 [7.19] signal contact extension.									
NOTES:									
*1 Available on 2WK2, 3W3, 3WK3, 5W5 and 8W8 variants only.									
*2 Not available on shell size 6, SCBM 46W4.									
*3 For additional information on accessories listed in Step 5, 6, and 7, see the Accessories section, pages 86-94.									
*4 Not available on 2WK2, 3W3, 3WK3, 5W5 and 8W8 variants when choosing code 57, 77 or 85 in Step 4.									



Positronic Industries
connectpositronic.com

SCBC SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY REMOVABLE CONTACTS

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 and Size 8 **removable** contacts.
- ✓ All female closed entry signal contacts utilize the “PosiBand®” system. *See page 1 for details.* GSFC S-311-P-4/10 offers two contact engagement test options. Size 20 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Sixteen connector variants with a mixture of signal, power, shielded and high voltage contacts.
- ✓ Terminations include cable or wire crimp and solder.
- ✓ Current ratings to 70 amperes.
See temperature rise curves on page 3 & 4 for details.
- ✓ A wide variety of options and accessories.
- ✓ Applicable variants are qualified to GSFC and military specifications. *See page 99 for details.*

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4
- DSCC Specification 85039

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled polyester per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124 blue color.
Contacts:	
Size 20:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate.
Size 8:	
Power:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate.
Shielded:	<i>For material and finishes, see page 77.</i>
High Voltage:	<i>For material and finishes, see page 77.</i>

Connector Housing (Shells):

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Mounting Spacers and Brackets:

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Jackscrew Systems:

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Cable Adapter (Hood):

Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

continued on next page. . .



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

MECHANICAL CHARACTERISTICS:

Size 20 Removable: Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details. For removable size 20 contacts, see page 79-80.*

Size 8 Removable:
Power: Male contact - 0.142 inch [3.61 mm] mating diameter. Female contact - features Large Surface Area (L.S.A.) closed entry design utilizing BeCu mechanical retention member. *For removable size 8 contacts, see pages 81-85.*

Shielded: *For mechanical characteristics, see page 77.*

High Voltage: *For mechanical characteristics, see page 77.*

Contact Retention in Connector Insert:

Size 20: 9 lbs. [40 N].
Size 8 Power / Shielded: 22 lbs. [98 N].

Contact Terminations:

Size 20: Closed barrel crimp - wire sizes 18 AWG [1.0 mm²] through 30 AWG [0.05 mm²].
Closed barrel solder - wire size 20 AWG [0.5 mm²] maximum; *see page 80 for details.*

Size 8:
Power: Closed barrel crimp or solder cup - wire sizes 8 [10.0 mm²], 10 [5.3 mm²], 12 [4.0 mm²], and 16 [1.5 mm²] AWG.

Shielded: *Refer to RF Cable in chart on page 84 for contact terminations.*

High Voltage: Straight and right angle (90°) terminations 0.041 inch [1.04 mm] minimum hole diameter.

Connector Housing (Shells):

Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization:

Trapezoidally-shaped connector housings and polarized jackscrews.

Locking Systems:

Jackscrews.

Mechanical Operations:

1,000 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating: 7.5 amperes, nominal
Initial Contact Resistance: 0.004 ohms maximum.
Proof Voltage: 1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

For electrical characteristics, see page 21.

SHIELDED CONTACTS

For electrical characteristics, see page 77.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 77.

CONNECTOR

Insulation Resistance: 5 G ohms.
Clearance and Creepage Distance: 0.039 inch [1.0 mm], minimum.
Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.
Damp Heat, Steady State: 21 days.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



SCBM13W6M55R200D
(shown left)

SCBC13W6S1000G WITH FC4008M CONTACTS
(shown right)



Positronic Industries
connectpositronic.com

SCBC SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY REMOVABLE CONTACTS

High
Performance
D-sub

*1 CONTACT VARIANTS

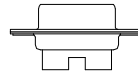
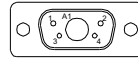
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

NOTES:

*1 Additional contact variants may be tooled at customer request.

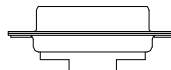
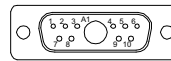
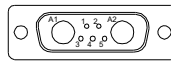
*2 13W6 and 27W2 variant currently available in female only. Contact Technical Sales for availability of male connector.

SHELL SIZE 1



5W1

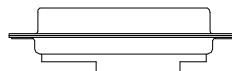
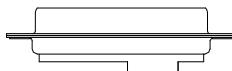
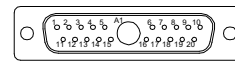
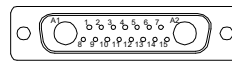
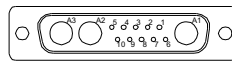
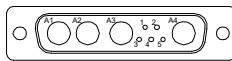
SHELL SIZE 2



7W2

11W1

SHELL SIZE 3



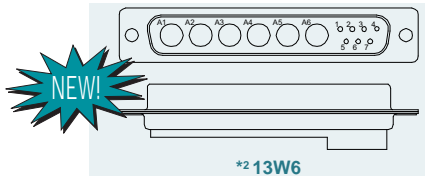
9W4

13W3

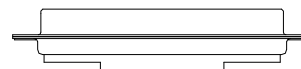
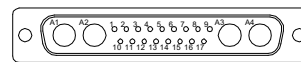
17W2

21W1

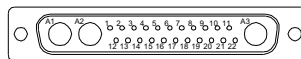
SHELL SIZE 4



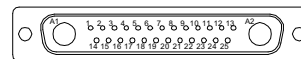
*2 13W6



21WA4

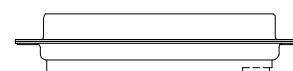
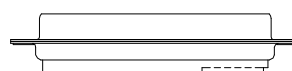
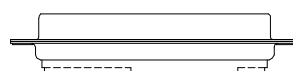
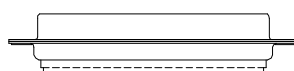
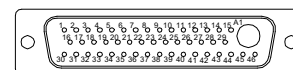
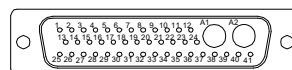
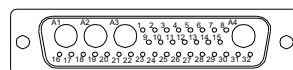
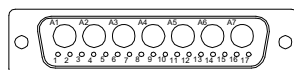


25W3



*2 27W2

SHELL SIZE 5



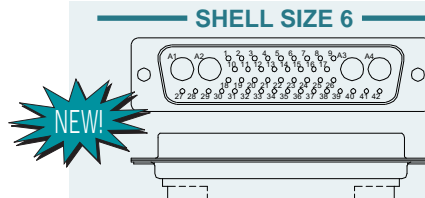
24W7

36W4

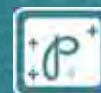
43W2

47W1

SHELL SIZE 6



46W4



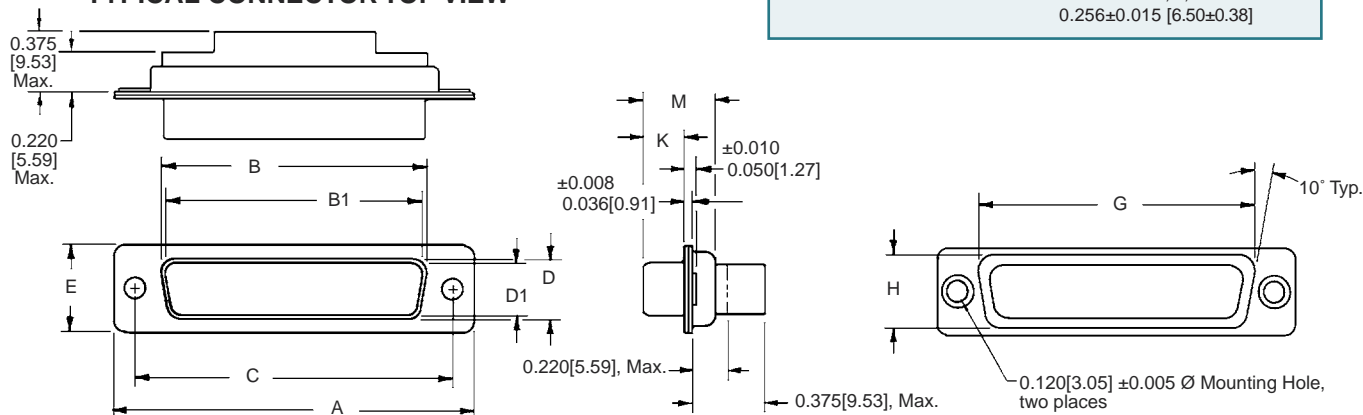
STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY



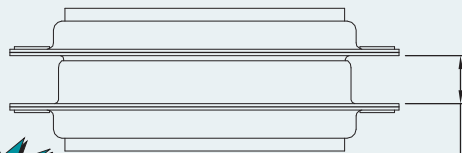
SCBC7W2S0000G

SCBC17W2M0000G

TYPICAL CONNECTOR TOP VIEW



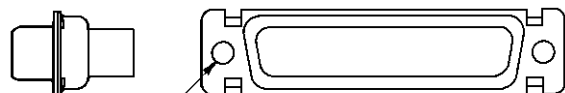
RECOMMENDED MATING DIMENSIONS



Shell Sizes 1 & 2 =
0.265 \pm 0.015 [6.73 \pm 0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256 \pm 0.015 [6.50 \pm 0.38]

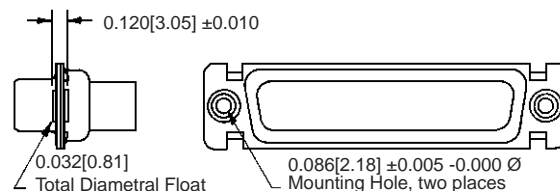


OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



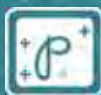
$\varnothing 0.120 \pm 0.005$ [3.05 \pm 0.031]
Mounting hole, two places
for stainless steel connector housing (0 option).
 $\varnothing 0.154$ [3.91] Mounting hole,
two places (02 option)

OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



SHELL SIZE	GENDER	A ± 0.015 [0.38]	B ± 0.005 [0.13]	B1 ± 0.005 [0.13]	C ± 0.005 [0.13]	D ± 0.005 [0.13]	D1 ± 0.005 [0.13]	E ± 0.015 [0.38]	G ± 0.010 [0.25]	H ± 0.010 [0.25]	K ± 0.005 [0.13]	M ± 0.010 [0.25]
1	MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
2	MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
3	MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
4	MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
5	MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]
6	MALE	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	2.302 [58.47]	0.596 [15.14]	0.243 [6.17]	0.429 [10.90]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

SCBC SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY REMOVABLE CONTACTS

High
Performance
D-sub

REMOVABLE CONTACT ORDERING ASSISTANCE CHART



SCBC SERIES CRIMP AND SOLDER TERMINATION CONTACTS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 79 for additional information	20	FC6020M2	MC6020M	20 [0.5] / 22 [0.3] / 24 [0.25]
			FC6026M2	MC6026M	26 [0.12] / 28 [0.08] / 30 [0.5]
			FC6018M2	MC6018M	18 [1.0] max.
	see page 81 for additional information	8	FC4008M	MC4008M	8 [10.0]
			FC4010M	MC4010M	10 [5.3]
			FC4012M	MC4012M	12 [4.0]
			FC4016M	MC4016M	16 [1.5]
SOLDER	see page 80 for additional information	20	FS6020M2	MS6020M	20 [0.5] max.
SOLDER CUP	see page 82 for additional information	8	FS4008M	MS4008M	8 [10.0]
			FS4012M	MS4012M	12 [4.0]
			FS4016M	MS4016M	16 [1.5]
HIGH VOLTAGE Straight Solder Wire	see page 83 for additional information	8	FS4820M	MS4820M	20 [0.5]
HIGH VOLTAGE Right Angle (90°) Solder Wire			FS4920M	MS4920M	20 [0.5]
SHIELDED	see page 84 for additional information	SOLDER / CRIMP	FC4101M	MC4101M	RG 178 B/U, 196 B/U
			FC4102M	MC4102M	RG 179 BU/, 316 B/U
			FC4103M	MC4103M	RG 180 B/U
			FC4104M	MC4104M	RG 58 B/U
		SOLDER / SOLDER	FS4101M	MS4101M	RG 178 B/U, 196 B/U
			FS4102M	MS4102M	RG 179 B/U, 316 B/U
			FS4103M	MS4103M	RG 180 B/U
			FS4104M	MS4104M	RG 58 B/U
		CRIMP / CRIMP	FCC4101M	MCC4101M	RG 178 B/U, 196 B/U
			FCC4102M	MCC4102M	RG 179 BU/, 316 B/U
			FCC4103M	MCC4103M	RG 180 B/U
			FCC4104M	MCC4104M	RG 58 B/U

NOTE: For ordering crimp contacts on reels, add "R" to part number, see page 77 for details. Examples: FC4008MR or MC4008MR

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 96.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SCBC	7W2	M	14	0	0	E	D	

STEP 1 - BASIC SERIES

SCBC Series

*4 STEP 2 - CONNECTOR VARIANTS

Shell Size 1

5W1

Shell Size 2

7W2, 11W1

Shell Size 3

9W4, 13W3, 17W2, 21W1

Shell Size 4

*113W6, 21WA4, 25W3, *127W2

Shell Size 5

24W7, 36W4, 43W2, 47W1

Shell Size 6

46W4

STEP 3 - CONNECTOR GENDER

M - Male

S - Female - PosiBand closed entry contacts,
see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE

0 - Contacts ordered separately, see contact chart on
page 43 for details.

*3 1 - Signal contacts, 20 AWG - 24 AWG [0.5mm²-0.25mm²].

*3 11 - Signal contacts, 20 AWG - 24 AWG [0.5mm²-0.25mm²]
with MC/FC 4012M power contact.

*3 12 - Signal contacts, 20 AWG - 24 AWG [0.5mm²-0.25mm²]
with MC/FC 4016M power contact

*3 13 - Signal contacts, 20 AWG - 24 AWG [0.5mm²-0.25mm²]
with MCC/FCC 4101M shielded contacts.

*3 14 - Signal contacts, 20 AWG - 24 AWG [0.5mm²-0.25mm²]
with MCC/FCC 4102M shielded contacts.

*2 STEP 5 - MOUNTING STYLE

0 - Mounting hole, 0.120 [3.05] Ø.

02 - Mounting hole, 0.154 [3.91] Ø.

C5 - Swaged spacer, cul-de-sac style, 4-40 threads, 0.350 [8.89] length.

F - Float mounts, universal.

S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] Length.

S5 - Swaged locknut, 4-40 threads.

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled
(male connectors only).

*2 STEP 7 - LOCKING AND POLARIZING SYSTEMS

0 - None.

T - Fixed female jackscrews.

T2 - Fixed female jackscrews.

T6 - Fixed male and female polarized jackscrews.

E - Rotating male jackscrews.

E2 - Rotating male screw locks.

E3 - Rotating male with internal hex for 3/32 hex drives

E6 - Rotating male and female polarized jackscrews.

*2 STEP 6 - CABLE ADAPTER (HOOD)

0 - None.

H - Cable adapter, top opening, brass.

AN - Cable adapter, lightweight aluminum, electroless nickel
plate, see page 91 for details.

NOTE:

*1 13W6 and 27W2 variant currently available in female only.
Contact Technical Sales for availability of male connector.

*2 For additional information on accessories listed in Step 5, 6,
and 7, see the Accessories section, pages 86-94.

*3 Kitted contacts are supplied in sealed bags.

*4 See SCBM series for removable contact versions of 2WK2,
3WK3, 3WK3, 5W5 and 8W8 variants.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com



SCBDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY PCB MOUNT

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 22 **fixed** contacts, Size 16 **fixed** contacts and Size 8 **removable** contacts.
- ✓ All female closed entry signal contacts utilize the “PosiBand®” system. *See page 1 for details.* GSFC S-311-P-4/08 offers two contact engagement test options. Size 22 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Four connector variants with a mixture of signal, power, shielded and high voltage contacts.
- ✓ Terminations include cable or wire crimp and solder, straight and right angle PCB mount.
- ✓ Current ratings to 70 amperes.
See temperature rise curves on page 3 & 4 for details.
- ✓ A wide variety of options and accessories.

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- DSCC Specification 85039

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled polyester per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124 blue color.
Contacts:	
Size 22:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 16:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 8:	
Power:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

Shielded:	<i>For material and finishes, see page 77.</i>
High Voltage:	<i>For material and finishes, see page 77.</i>
Connector Housing (Shells):	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Mounting Spacers and Brackets:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Push-On Fasteners:	Phosphor bronze or beryllium copper with 0.000050 inch [1.27 microns] gold over copper plate.
Jackscrew Systems:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Cable Adapter (Hood):	Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

continued on next page. . .



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

MECHANICAL CHARACTERISTICS:

Size 22 Fixed:	Male – 0.030 inch [0.76 mm] mating diameter. Female contact - PosiBand closed entry design; <i>see page 1 for details.</i>
Size 16 Fixed:	Male – 0.062 inch [1.57 mm] mating diameter. Female contact - PosiBand closed entry design; <i>see page 1 for details.</i>
Size 8 Removable:	Male – 0.142 inch [3.61mm] mating diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member.
Shielded:	<i>For mechanical characteristics, see page 77.</i>
High Voltage:	<i>For mechanical characteristics, see page 77.</i>

Contact Retention in Connector Insert:

Size 22:	5 lbs. [21N] minimum.
Size 16 Power:	6 lbs. [26N] minimum.
Size 8 Power / Shielded:	22 lbs. [98N].
Resistance to Solder Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6.

Contact Terminations:

Size 22:	Solder cup - wire size 22 AWG [0.25 mm ²] maximum. Straight solder printed board mount - 0.020 inch [0.51 mm] termination diameter. Right angle (90°) printed board mount - 0.030 inch [0.76 mm] termination diameter.
Size 16:	Solder cup - wire size 22 AWG [0.25 mm ²] maximum. Straight solder printed board mount - 0.063 inch [1.60 mm] termination diameter. Right angle (90°) printed board mount - 0.062 inch [0.76 mm] termination diameter.
Size 8:	
Power:	Closed barrel crimp or solder cup - wire sizes 8 [10.0 mm ²], 10 [5.3 mm ²], 12 [4.0 mm ²], and 16 [1.5 mm ²] AWG. Straight solder printed board mount - 0.078 inch [1.98 mm], 0.094 inch [2.39 mm] and 0.125 inch [3.18 mm] termination diameters. Right angle (90°) printed board mount - 0.078 inch [1.98 mm] and 0.125 inch [3.18 mm] termination diameters.
Shielded:	<i>Refer to RF Cable in chart on page 84 for contact terminations.</i>

High Voltage:

Straight and right angle (90°) terminations 0.041 inch [1.04 mm] minimum hole diameter.

Connector Housing (Shells):

Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization:

Trapezoidally-shaped connector housing and polarized jackscrews.

Mounting to Angle Brackets:

Jackscrews and riveted fasteners with 0.120 inch [3.05 mm] diameter hole, and threaded riveted fasteners with 4-40 threads and polyester inserts.

Mounting to Printed Board:

Rapid installation push-on fasteners and threaded posts.

Locking Systems:

Jackscrews.

Mechanical Operations:

1,000 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 22 CONTACTS

Contact Current Rating:	5 amperes, nominal
Initial Contact Resistance:	0.005 ohms maximum.
Proof Voltage:	1000 V r.m.s

SIZE 16 CONTACTS

Contact Current Rating, Tested per UL 1977: 28 amperes

See temperature rise curves on page 4 for details.

Initial Contact Resistance:	0.0016 ohms maximum, per IEC 60512-2, Test 2b.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

For electrical characteristics, see page 21.

SHIELDED CONTACTS

For electrical characteristics, see page 77.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 77.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.042 inch [1.06 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



Positronic Industries
connectpositronic.com



SCBDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY PCB MOUNT

High
Performance
D-sub

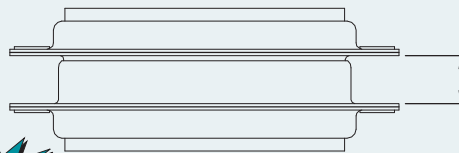
STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY



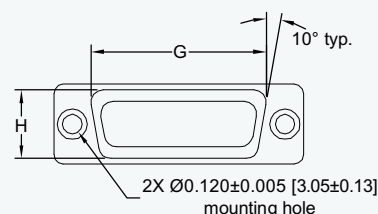
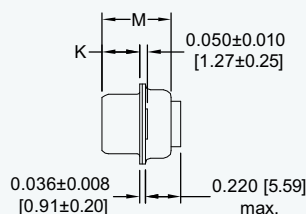
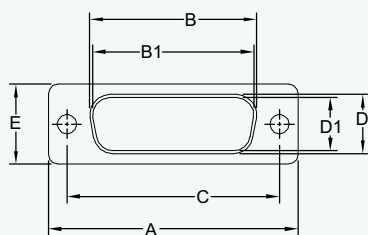
SCBDD8W2M3S00G

SCBDD45W2M3000G

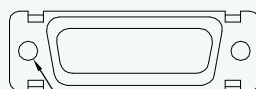
RECOMMENDED MATING DIMENSIONS



Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]



OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



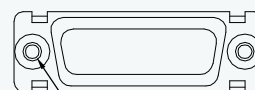
2X Ø120±0.005 [3.05±0.13]
mounting hole for stainless
steel shell (0 option).
2X Ø0.154 [3.91] mounting
hole (02 option).

OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)

0.120±0.010 [3.05±0.25]



0.032 [0.81] total
diametral float



2X Ø0.086±0.005-0.000
[2.18±0.13-0.00]
mounting hole

SHELL SIZES	VARIANT	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
1	8W2M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	8W2S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
2	19W1M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	19W1S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
3	15W4M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	15W4S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
4	45W2M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]

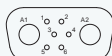
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



***1 CONTACT VARIANTS**

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

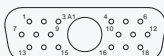
— SHELL SIZE 1 —



8W2

Six (6) Size 22 Signal Contacts and
Two (2) Size 16 Power Contacts

— SHELL SIZE 2 —



19W1

Eighteen (18) Size 22 Signal Contacts
and One (1) Size 8 Power Contact

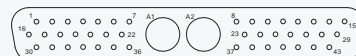
— SHELL SIZE 3 —



15W4

Eleven (11) Size 22 Signal Contacts
and Four (4) Size 8 Power Contacts

— SHELL SIZE 4 —



***2 45W2**

Forty-three (43) Size 22 Signal Contacts
and Two (2) Size 8 Power Contacts

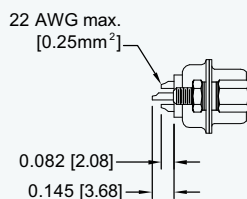
NOTES:

*1 Additional contact variants may be tooled at customer request.

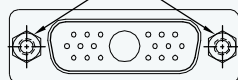
*2 45W2 variant currently available in male only. Contact Technical
Sales for availability of female connector.

OTHER VARIANTS WILL BE ADDED, CONSULT OUR WEBSITE
OR CONTACT TECHNICAL SALES FOR UPDATED INFORMATION.

**SOLDER CUP TERMINATION
CODE 21**

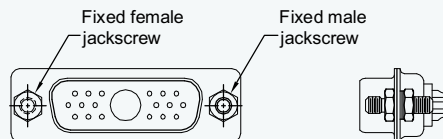


Fixed female jackscrews



For solder cup contacts,
specify code 21 in step 4 of
ordering information.

TYPICAL PART NUMBER:
SCBDD19W1M2100T2G



Fixed male and female polarized jackscrews available.
Specify code T6 in step 7 of ordering information.

TYPICAL PART NUMBER:
SCBDD19W1M2100T6G



Positronic Industries
connectpositronic.com



SCBDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY PCB MOUNT

High
Performance
D-sub

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION CODE 3, 35, 36, AND 37

FOR VARIANTS INCLUDING SIZE 16 CONTACTS	
*1 CONTACT NUMBER	D Ø
3	0.063 [1.60]

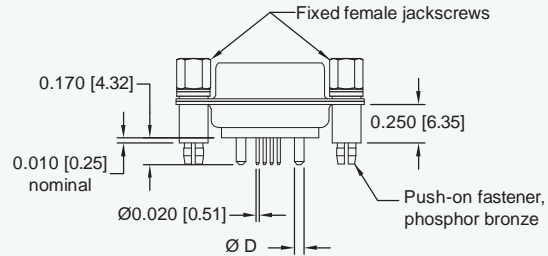
NOTE:

*1 Contact termination code as specified
in Step 4 of ordering information.

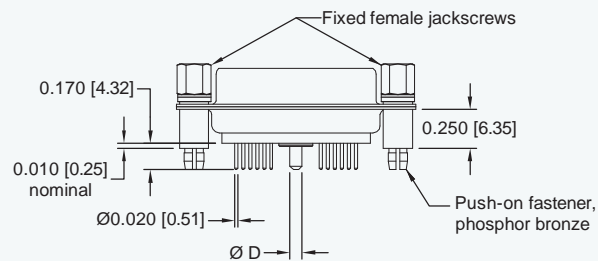
FOR VARIANTS WITH SIZE 8 CAVITY	
*1 CONTACT NUMBER	D Ø
3	Size 8 contacts not supplied
35	0.078 [1.98]
36	0.094 [2.39]
37	0.125 [3.18]

NOTE:

*1 Contact termination code as specified
in Step 4 of ordering information.



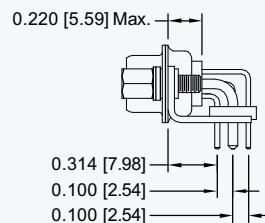
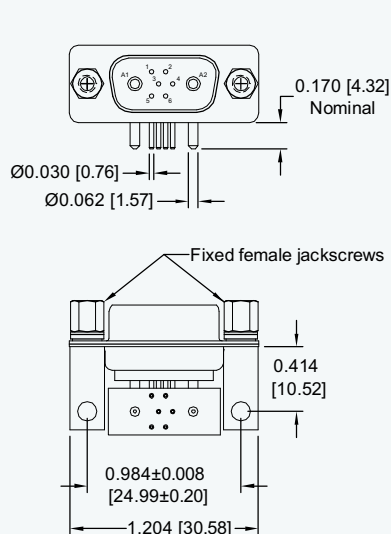
Typical Part Number: **SCBDD8W2S3S60T2G**



TYPICAL PART NUMBER:
SCBDD19W1S35S60T2G

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION SIZE 16 POWER CONTACTS WITH 0.062 [1.57] Ø TERMINATIONS CODE 4, 0.314 [7.98] CONTACT EXTENSION

See temperature rise curves on pages 3 and 4

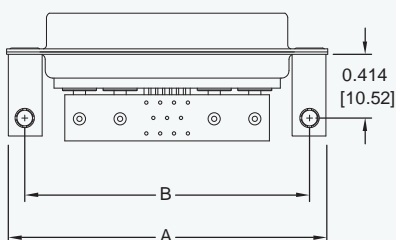
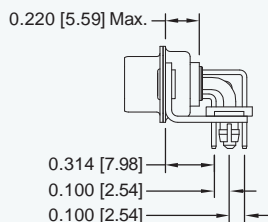
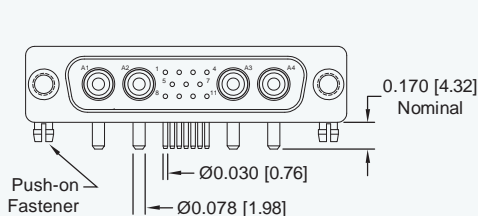


TYPICAL PART NUMBER:
SCBDD8W2M4R70T2G



RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
SIZE 8 POWER CONTACTS WITH 0.078 [1.98] Ø TERMINATIONS
CODE 4 AND 45, 0.314 [7.98] CONTACT EXTENSION

See temperature rise curves on pages 3 and 4

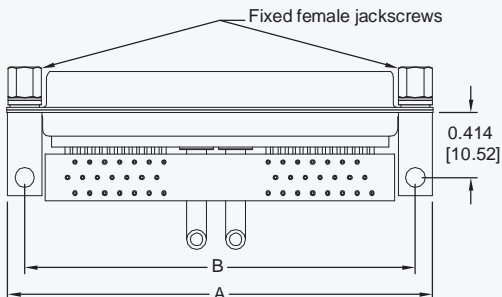
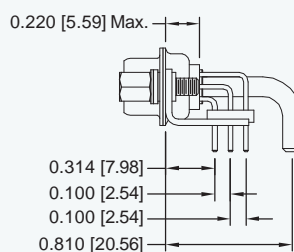
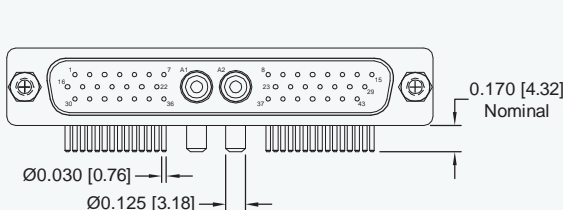


TYPICAL PART NUMBER:
SCBDD15W4M45R7N0G

SCBDD*** (4 or 45)**** 0.314 [7.98] CONTACT EXTENSION		
SHELL SIZE	A	B
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
SIZE 8 POWER CONTACTS WITH 0.125 [3.18] Ø TERMINATIONS
CODE 4 AND 47, 0.314 [7.98] CONTACT EXTENSION

See temperature rise curves on pages 3 and 4



TYPICAL PART NUMBER:
SCBDD45W2M47R70T2G

SCBDD*** (4 or 47)**** 0.314 [7.98] CONTACT EXTENSION		
SHELL SIZE	A	B
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]



Positronic Industries
connectpositronic.com



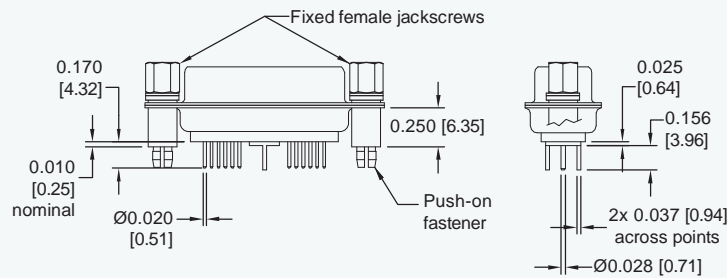
SCBDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY PCB MOUNT

High
Performance
D-sub

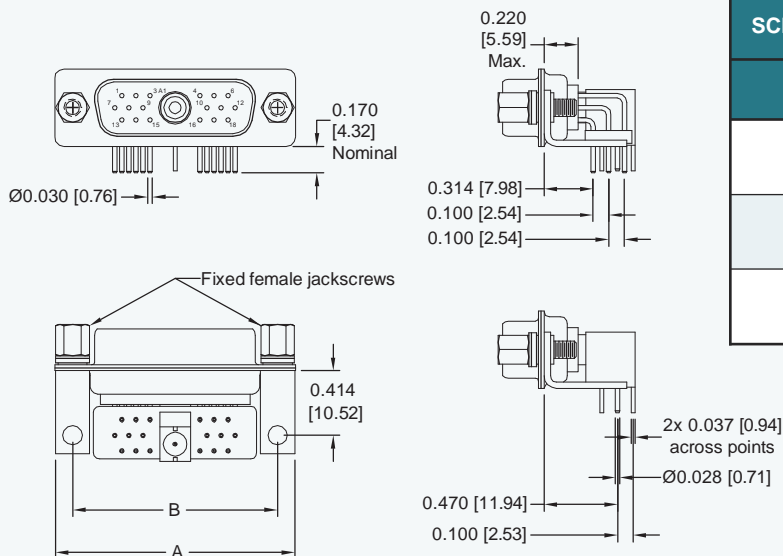
STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION WITH FDS4201M OR MDS4201M SHIELDED CONTACTS CODE 65



TYPICAL PART NUMBER:
SCBDD19W1M65S60T2G

Shielded contacts only
visible this view for clarity

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH FRT4201M OR MRT4201M SHIELDED CONTACTS CODE 84



TYPICAL PART NUMBER:
SCBDD19W1M84R70T2G

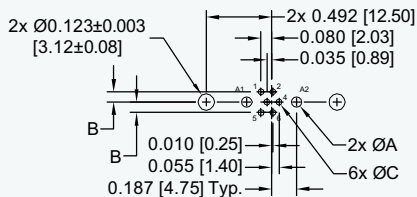
SCBDD***84**** 0.314 [7.98] CONTACT EXTENSION		
SHELL SIZE	A	B
SHELL SIZE 2	1.532 [38.91]	1.312 [33.32]
SHELL SIZE 3	2.072 [52.63]	1.852 [47.04]
SHELL SIZE 4	2.720 [69.09]	2.500 [63.50]

Shielded contacts only
visible this view for clarity



PRINTED BOARD MOUNT CONTACT HOLE PATTERN

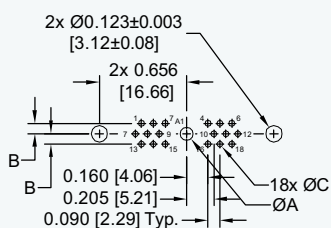
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT RIGHT ANGLE (90°) CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



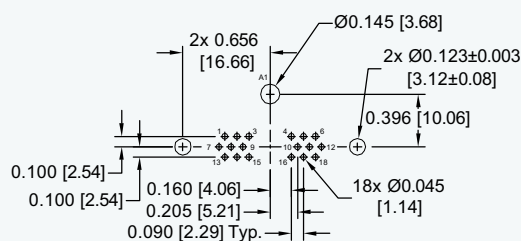
SCBDD8W2M3
SCBDD8W2M4

SUGGESTED PRINTED BOARD HOLE SIZES:

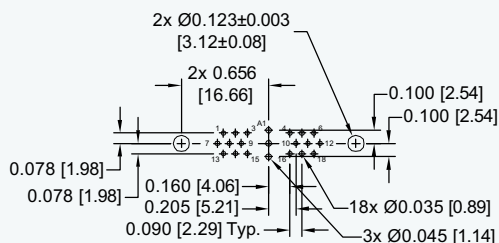
See Suggested Printed Board Hole Size chart on page 53.



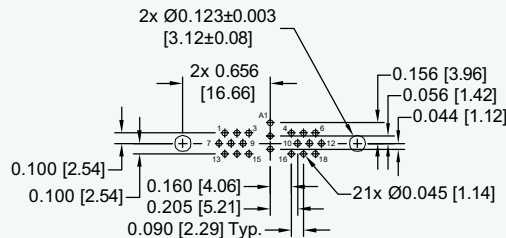
SCBDD19W1M3, 35, 36, 37
SCBDD19W1M4, 45



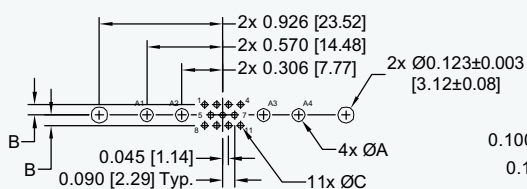
SCBDD19W1M47



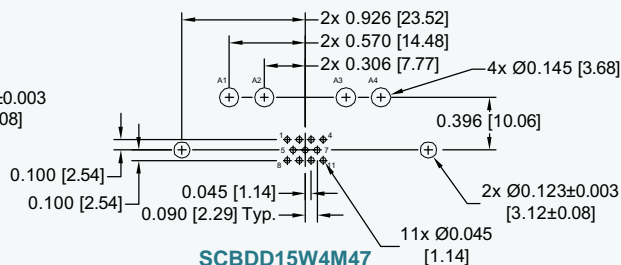
SCBDD19W1M65



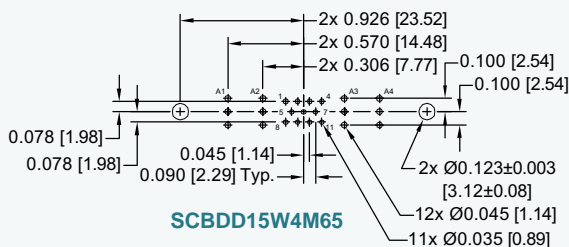
SCBDD19W1M84



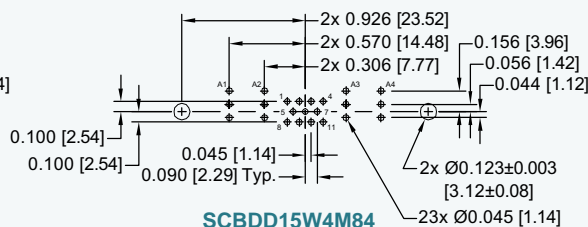
SCBDD15W4M3, 35, 36, 37
SCBDD15W4M4, 45



SCBDD15W4M47

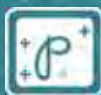


SCBDD15W4M65



SCBDD15W4M84

continued on next page. . .



Positronic Industries
connectpositronic.com



SCBDD SERIES

MILITARY / SPACE FLIGHT QUALITY

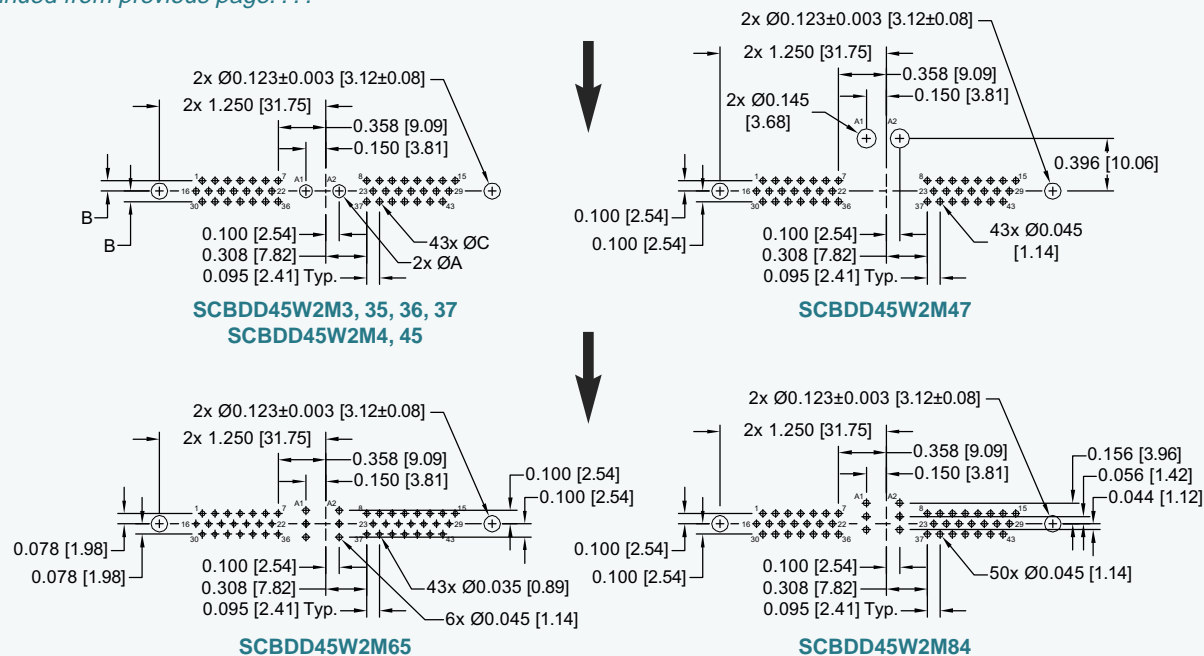
HIGH DENSITY PCB MOUNT

High
Performance
D-sub

PRINTED BOARD MOUNT CONTACT HOLE PATTERN

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT RIGHT ANGLE (90°) CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

continued from previous page. . .



SUGGESTED PRINTED BOARD HOLE SIZES

VARIANT	CODE	ØA	B	ØC
8W2	3	0.080 [2.03]	0.078 [1.98]	0.035 [0.89]
	4	0.080 [2.03]	0.100 [2.54]	0.045 [1.14]
19W1 15W4 45W2	3, 35	0.098 [2.49]	0.078 [1.98]	0.035 [0.89]
	36	0.114 [2.90]		
	37	0.145 [3.68]		
	4	N/A	0.100 [2.54]	0.045 [1.14]
	45	0.098 [2.49]	0.100 [2.54]	0.045 [1.14]
	47	N/A	N/A	N/A
	65	N/A	N/A	N/A
	84	N/A	N/A	N/A



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

FOR CONNECTORS NOT INCLUDING SIZE 8 CONTACTS

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SCBDD	8W2	S	3	S6	0	T2	G	—

STEP 1 - BASIC SERIES

SCBDD Series

STEP 2 - CONNECTOR VARIANTS

Shell Size 1 - 8W2

See page 56 for ordering information for other shell size options.

STEP 3 - CONNECTOR GENDER

M - Male

S - Female - PosiBand closed entry contacts, see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE

*1 21 - Fixed, solder cup.

*1 3 - Solder, straight printed board mount, 0.170 [4.32] tail length.

*1 4 - Solder, right angle (90°) printed board mount, 0.314 [7.98] signal contact extension.

*2 STEP 5 - MOUNTING STYLE

0 - Mounting hole, 0.120 [3.05] Ø

02 - Mounting hole, 0.154 [3.91] Ø

C5 - Swaged spacer, cul-de-sac style, 4-40 threads, 0.350 [8.89] length. For use with cable connectors only.

C7 - Bracket, mounting, right angle (90°) metal, swaged to connector with cul-de-sac spacer and 4-40 threads with cross bar.

F - Float mounts, universal

P - Threaded post, brass, 0.250 [6.35] length

R2 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar

R6 - Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar

R7 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar

R8 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar

S - Swaged spacer, 4-40 threads, 0.250 [6.35] length

S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length

S5 - Swaged locknut, 4-40 threads

S6 - Swaged spacer with push-on fastener, 4-40 threads, 0.250 [6.35] length

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled (male connectors only).

*2 STEP 7 - LOCKING AND POLARIZING SYSTEMS

0 - None.

T - Fixed female jackscrews.

T2 - Fixed female jackscrews.

T6 - Fixed male and female polarized jackscrews.

E - Rotating male jackscrews.

E2 - Rotating male screw locks.

E3 - Rotating male with internal hex for 3/32 hex drives.

E6 - Rotating male and female polarized jackscrews.

*2 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER

0 - None

AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.

H - Cable adapter, top opening, brass

N - Push-on fastener, for right angle (90°) mounting brackets

NOTES

*1 Size 16 power contacts are included when used on 8W2 variant in Step 2.

*2 For additional information of options listed in steps 5, 6, and 7, see Accessories Section on pages 86-94.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!



Positronic Industries
connectpositronic.com



SCBDD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY PCB MOUNT

High
Performance
D-sub

REMOVABLE CONTACT ORDERING ASSISTANCE CHART



SCBDD SERIES CRIMP AND SOLDER CUP TERMINATION CONTACTS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 81 for additional information	8	FC4008M	MC4008M	8 [10.0]
			FC4010M	MC4010M	10 [5.3]
			FC4012M	MC4012M	12 [4.0]
			FC4016M	MC4016M	16 [1.5]
SOLDER CUP	see page 82 for additional information	8	FS4008M	MS4008M	8 [10.0]
			FS4012M	MS4012M	12 [4.0]
			FS4016M	MS4016M	16 [1.5]
HIGH VOLTAGE <i>Straight Solder Wire</i>	see page 83 for additional information	8	FS4820M	MS4820M	20 [0.5]
HIGH VOLTAGE <i>Right Angle (90°) Solder Wire</i>		8	FS4920M	MS4920M	20 [0.5]
SHIELDED	see page 84 for additional information	SOLDER / CRIMP	FC4101M	MC4101M	RG 178 B/U, 196 B/U
			FC4102M	MC4102M	RG 179 BU/, 316 B/U
			FC4103M	MC4103M	RG 180 B/U
			FC4104M	MC4104M	RG 58 B/U
		SOLDER / SOLDER	FS4101M	MS4101M	RG 178 B/U, 196 B/U
			FS4102M	MS4102M	RG 179 B/U, 316 B/U
			FS4103M	MS4103M	RG 180 B/U
			FS4104M	MS4104M	RG 58 B/U
		CRIMP / CRIMP	FCC4101M	MCC4101M	RG 178 B/U, 196 B/U
			FCC4102M	MCC4102M	RG 179 BU/, 316 B/U
			FCC4103M	MCC4103M	RG 180 B/U
			FCC4104M	MCC4104M	RG 58 B/U

NOTE: For ordering crimp contacts on reels, add "R" to part number, *see page 77 for details*. Examples: FC4008MR or MC4008MR

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 77-85.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 96.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

FOR CONNECTORS INCLUDING SIZE 8 CONTACTS

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SCBDD	19W1	M	47	R7	0	T2	G	—

STEP 1 - BASIC SERIES

SCBDD Series

STEP 2 - CONNECTOR VARIANTS

Shell Size 2 - 19W1

Shell Size 3 - 15W4

*1 Shell Size 4 - 45W2

See page 54 for ordering information for shell size 1 - 8W2 options.

STEP 3 - CONNECTOR GENDER

M - Male

S - Female - PosiBand closed entry contacts, see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE

- 21 - Fixed, solder cup, signal contact only.
- 3 - Solder, straight printed board mount with signal contacts only 0.170 [4.32] tail length.
- 35 - Solder, straight printed board mount with signal and 0.078 [1.98] Ø power contacts, 0.170 [4.32] tail length.
- 36 - Solder, straight printed board mount with signal and 0.094 [2.39] Ø power contacts, 0.170 [4.32] tail length.
- 37 - Solder, straight printed board mount with signal and 0.125 [3.18] Ø power contacts, 0.170 [4.32] tail length.
- 4 - Solder, right angle (90°) printed board mount with signal contacts only, 0.314 [7.98] signal contact extension.
- 45 - Solder, right angle (90°) printed board mount with signal and 0.078 [1.98] Ø power contacts, 0.314 [7.98] signal contact extension.
- 47 - Solder, right angle (90°) printed board mount with signal and 0.125 [3.18] Ø power contacts, 0.314 [7.98] signal contact extension.
- 65 - Solder, straight printed board mount with signal and shielded contacts MDS/FDS4201D footprint, 0.170 [4.32] signal contact tail length.
- 84 - Solder, right angle (90°) printed board mount with signal and shielded contacts MRT/FDS4201D footprint, 0.314 [7.98] signal contact extension.

NOTES

*1 45W2 variant currently available in male only.

*2 For additional information of options listed in steps 5, 6, and 7, see Accessories Section on pages 86-94.

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled (male connectors only).

*2 STEP 7 - LOCKING AND POLARIZING SYSTEMS

- 0 - None.
- T - Fixed female jackscrews.
- T2 - Fixed female jackscrews.
- T6 - Fixed male and female polarized jackscrews.
- E - Rotating male jackscrews.
- E2 - Rotating male screw locks.
- E3 - Rotating male with internal hex for 3/32 hex drives.
- E6 - Rotating male and female polarized jackscrews.

*2 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER

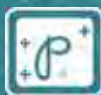
- 0 - None
- AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.
- H - Cable adapter, top opening, brass
- N - Push-on fastener, for right angle (90°) mounting brackets

*2 STEP 5 - MOUNTING STYLE

- 0 - Mounting hole, 0.120 [3.05] Ø
- 02 - Mounting hole, 0.154 [3.91] Ø
- C5 - Swaged spacer, Cul-de-Sac style, 4-40 threads, 0.350 [8.89] length. For use with cable connectors only.
- C7 - Bracket, mounting, right angle (90°) metal, swaged to connector with Cul-de-Sac spacer and 4-40 threads with cross bar.
- F - Float mounts, universal
- P - Threaded post, brass, 0.250 [6.35] length
- R2 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar
- R6 - Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] Ø mounting hole with cross bar
- R7 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar
- R8 - Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar
- S - Swaged spacer, 4-40 threads, 0.250 [6.35] length
- S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length
- S5 - Swaged locknut, 4-40 threads
- S6 - Swaged spacer with push-on fastener, 4-40 threads, 0.250 [6.35] length

*Do you need 2-D drawings
or 3-D models?*

See page 18 for more information!



Positronic Industries
connectpositronic.com

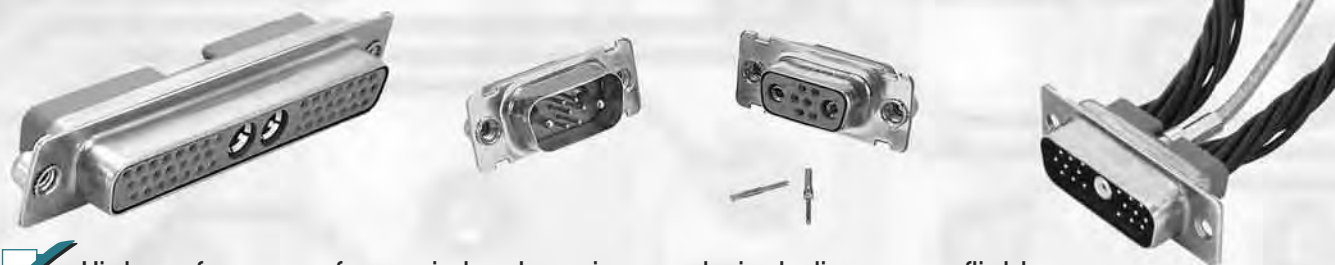


SCBCD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY REMOVABLE CONTACTS

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 22, Size 16 and Size 8 **removable** contacts.
- ✓ All female closed entry signal contacts utilize the "PosiBand®" system. *See page 1 for details.* GSFC S-311-P-4/08 offers two contact engagement test options. Size 22 PosiBand contacts meet the higher 40 gram requirements per 4.2.2.b.
- ✓ Three connector variants with a mixture of signal, power, shielded and high voltage contacts.
- ✓ Terminations include cable or wire crimp and solder.
- ✓ Current ratings to 70 amperes.
See temperature rise curves on page 3 & 4 for details.
- ✓ A wide variety of options and accessories.

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- DSCC Specification 85039

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled polyester per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124 blue color.
Contacts:	
Size 22:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 16:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 8:	
Power:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Shielded:	<i>For material and finishes, see page 77.</i>
High Voltage:	<i>For material and finishes, see page 77.</i>
Connector Housing (Shells):	Brass with 0.000050 inch [1.27 microns] gold over copper plate.
Mounting Spacers and Brackets:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Jackscrew Systems:

Brass with 0.000050 inch [1.27 microns] gold over copper plate.

Cable Adapter (Hood):

Brass with 0.000050 inch [1.27 microns] gold over copper plate; aluminum with electroless nickel plate. Other finishes available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Size 22 Removable:

Male contact - 0.030 inch [0.76 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.* *For removable size 22 contacts, see page 79.*

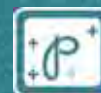
Size 16 Removable:

Male - 0.062 inch [1.57mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.* *For removable size 16 contacts, see page 81.*

Size 8 Removable:

Male contact - 0.142 inch [3.61 mm] mating diameter. Female contact - features Large Surface Area (L.S.A.) closed entry design utilizing BeCu mechanical retention member. Closed crimp barrel. *For removable size 8 contacts, see pages 81-85.*

continued on next page. . .



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

MECHANICAL CHARACTERISTICS, *continued*:

Shielded:	For mechanical characteristics, see page 77.
High Voltage:	For mechanical characteristics, see page 77.
Contact Retention in Connector Insert:	
Size 22:	9 lbs. [40N] minimum.
Size 16:	15 lbs. [67N] minimum.
Size 8 Power / Shielded:	22 lbs. [98N].
Contact Terminations:	
Size 22:	Closed barrel crimp - wire sizes 20 AWG [0.5 mm ²] through 30 AWG [0.05 mm ²]. Closed barrel solder - wire size 22 AWG [0.3 mm ²] maximum; see page 79 for details.
Size 16:	Closed barrel crimp - wire sizes 12 AWG [4.0 mm ²] through 24 AWG [0.25 mm ²].
Size 8:	
Power:	Closed barrel crimp or solder cup - wire sizes 8 [10.0 mm ²], 10 [5.3 mm ²], 12 [4.0 mm ²], and 16 [1.5 mm ²] AWG.
Shielded:	Refer to RF Cable in chart on page 84 for contact terminations.
High Voltage:	Straight and right angle (90°) terminations - 0.041 inch [1.04 mm] minimum hole diameter.
Connector Housing (Shells):	Male connector housings may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally-shaped connector housings and polarized jackscrews.

Locking Systems:	Jackscrews.
Mechanical Operations:	1,000 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

SIZE 22 CONTACTS

Contact Current Rating:	5 amperes, nominal
Initial Contact Resistance:	0.005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 16 CONTACTS

Contact Current Rating, Tested per UL 1977:	28 amperes <i>See temperature rise curves on page 4 for details.</i>
Initial Contact Resistance:	0.0016 ohms maximum, per IEC 60512-2, Test 2b.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

POWER CONTACTS

For electrical characteristics, see page 21.

SHIELDED CONTACTS

For electrical characteristics, see page 77.

HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 77.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.042 inch [1.06 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

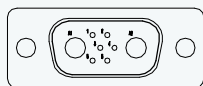
Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	10 days.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

*1 CONTACT VARIANT

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

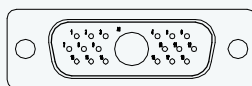
— SHELL SIZE 1 —



8W2

Six (6) Size 22 Signal Contacts and Two (2) Size 16 Power Contacts

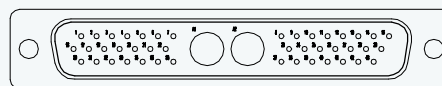
— SHELL SIZE 2 —



19W1

Eighteen (18) Size 22 Signal Contacts and One (1) Size 8 Power Contact

— SHELL SIZE 4 —



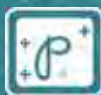
***2 45W2**

Forty-three (43) Size 22 Signal Contacts and Two (2) Size 8 Power Contacts

OTHER VARIANTS WILL BE ADDED, CONSULT OUR WEBSITE OR CONTACT TECHNICAL SALES FOR UPDATED INFORMATION.

NOTES:

- *1 Additional contact variants may be tooled at customer request.
- *2 45W2 variant currently available in female only. Contact Technical Sales for availability of male connector.



Positronic Industries
connectpositronic.com



SCBCD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY REMOVABLE CONTACTS

High
Performance
D-sub

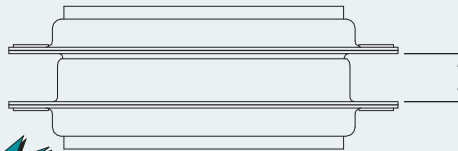
STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY



SCBCD45W2S0000G

SCBCD8W2S0000G

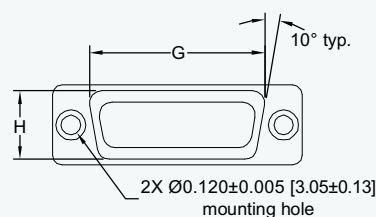
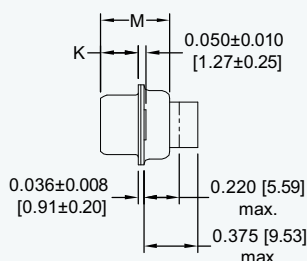
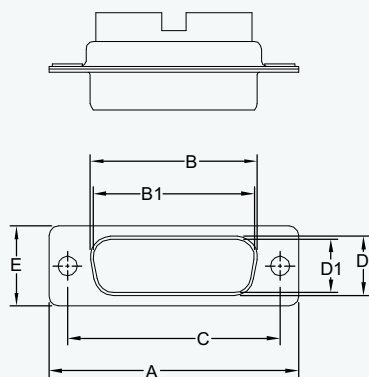
RECOMMENDED MATING DIMENSIONS



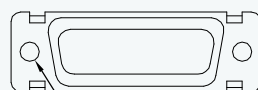
Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]



TYPICAL CONNECTOR TOP VIEW



OPTIONAL CONNECTOR HOUSING ASSEMBLY (0, 02)



2X Ø120±0.005 [3.05±0.13]
mounting hole for stainless
steel shell (0 option).
2X Ø0.154 [3.91] mounting
hole (02 option).

OPTIONAL CONNECTOR HOUSING ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



0.120±0.010 [3.05±0.25]
0.032 [0.81] total
diametral float
2X Ø0.086±0.005-0.000
[2.18±0.13-0.00]
mounting hole

SHELL SIZES	VARIANT	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
1	8W2 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	8W2 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
2	19W1 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	19W1 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
4	45W2 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]



REMOVABLE CONTACT ORDERING ASSISTANCE CHART



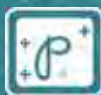
SCBCD SERIES CRIMP AND SOLDER TERMINATION CONTACTS

TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 78 for additional information	22	FC8022M2	MC8022M	22 [0.3] / 24 [0.25] / 26 [0.12] / 28 [0.08] / 30 [0.5]
			FC8020M2	MC8020M	20 [0.5] max.
	see page 81 for additional information	16	FC112N4-50	MC112N-50-133.0	12 [4.0]
			FC114N4-50	MC114N-50-133.0	14 [2.5] / 16 [1.5]
			FC116N4-50	MC116N-50-133.0	16 [1.5] / 18 [1.0]
			FC120N4-50	MC120N-50-133.0	20 [0.5] / 22 [0.3] / 24 [0.25]
	see page 81 for additional information	8	FC4008M	MC4008M	8 [10.0]
			FC4010M	MC4010M	10 [5.3]
			FC4012M	MC4012M	12 [4.0]
			FC4016M	MC4016M	16 [1.5]
SOLDER	see page 79 for additional information	22	FS8022M2	MS8022M	22 [0.3] max.
SOLDER CUP	see page 82 for additional information	8	FS4008M	MS4008M	8 [10.0]
			FS4012M	MS4012M	12 [4.0]
			FS4016M	MS4016M	16 [1.5]
HIGH VOLTAGE Straight Solder Wire	see page 83 for additional information	8	FS4820M	MS4820M	20 [0.5]
HIGH VOLTAGE Right Angle (90°) Solder Wire		8	FS4920M	MS4920M	20 [0.5]
SHIELDED	see page 84 for additional information	SOLDER / CRIMP	FC4101M	MC4101M	RG 178 B/U, 196 B/U
			FC4102M	MC4102M	RG 179 BU/, 316 B/U
			FC4103M	MC4103M	RG 180 B/U
			FC4104M	MC4104M	RG 58 B/U
		SOLDER / SOLDER	FS4101M	MS4101M	RG 178 B/U, 196 B/U
			FS4102M	MS4102M	RG 179 B/U, 316 B/U
			FS4103M	MS4103M	RG 180 B/U
			FS4104M	MS4104M	RG 58 B/U
		CRIMP / CRIMP	FCC4101M	MCC4101M	RG 178 B/U, 196 B/U
			FCC4102M	MCC4102M	RG 179 BU/, 316 B/U
			FCC4103M	MCC4103M	RG 180 B/U
			FCC4104M	MCC4104M	RG 58 B/U

NOTE: For ordering crimp contacts on reels, add "R" to part number, see page 77 for details. Examples: FC4008MR or MC4008MR

For information regarding REMOVABLE CONTACTS, see contact illustration drawings and charts on pages 77-85.

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com



SCBCD SERIES

MILITARY / SPACE FLIGHT QUALITY

HIGH DENSITY REMOVABLE CONTACTS

High
Performance
D-sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SCBCD	8W2	S	0	0	0	0	G	—

STEP 1 - BASIC SERIES

SCBCD Series

STEP 2 - CONNECTOR VARIANTS

Shell Size 1 - 8W2

Shell Size 2 - 19W1

*1 Shell Size 4 - 45W2

STEP 3 - CONNECTOR GENDER

M - Male

S - Female - PosiBand closed entry contacts,
see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE

0 - Contacts ordered separately, see contact chart on page 60 for details.

1 - Signal contacts, 22 AWG-30 AWG [0.03mm²-0.05mm²].

*2 11 - Signal contacts, 22 AWG-30 AWG [0.03mm²-0.05mm²] with MC/FC 4012M power contact.

*2 12 - Signal contacts, 22 AWG-30 AWG [0.03mm²-0.05mm²] with MC/FC 4016M power contact.

*2 13 - Signal contacts, 22 AWG-30 AWG [0.03mm²-0.05mm²] with MCC/FCC 4101M shielded contacts.

*2 14 - Signal contacts, 22 AWG-30 AWG [0.03mm²-0.05mm²] with MCC/FCC 4102M shielded contacts.

*3 STEP 5 - MOUNTING STYLE

0 - Mounting hole, 0.120 [3.05] Ø

02 - Mounting hole, 0.154 [3.91] Ø

C5 - Swaged spacer, Cul-de-Sac style, 4-40 threads, 0.350 [8.89] length.

F - Float mounts, universal

S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length

S5 - Swaged locknut, 4-40 threads

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled
(male connectors only).

*3 STEP 7 - LOCKING AND POLARIZING SYSTEMS

0 - None.

T - Fixed female jackscrews.

T2 - Fixed female jackscrews.

T6 - Fixed male and female polarized jackscrews.

E - Rotating male jackscrews.

E2 - Rotating male screw locks.

E3 - Rotating male with internal hex for 3/32 hex drives

E6 - Rotating male and female polarized jackscrews.

*3 STEP 6 - CABLE ADAPTER (HOOD) AND PUSH-ON FASTENER

0 - None

AN - Cable adapter, lightweight aluminum, electroless nickel plate, see page 91 for details.

H - Cable adapter, top opening, brass

N - Push-on fastener, for right angle (90°) mounting brackets

NOTES

*1 45W2 variant currently available in female only.

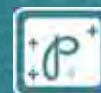
*2 Available on 19W1 and 45W2 connectors only.

*3 For additional information of options listed in steps 5, 6, and 7, see Accessories Section on pages 86-94.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 **fixed** contacts.
- ✓ Female closed entry contacts utilize the "PosiBand®" system.
See page 1 for details.
- ✓ Five connector variants include 9, 15, 25, 37, and 50 contacts.
- ✓ Suitable for use as connector saver or gender changer.
- ✓ A wide variety of jackscrew options allows for mechanical keying.

**Conforming To Applicable
Material, Dimensional and
Performance Requirements:**

- GSFC S-311-P4 & GSFC S-311-P10
- MIL-DTL-24308 Class M

**Conforming To Outgassing
Requirements:**

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insulator: Glass-filled DAP per ASTM-D-5948, UL 94V-0, ASTM E-595, NASA-RP-1124.

Contacts: Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

Connector Housing (Shells), Spacers and Jackscrew Systems: Brass with 0.000050 inch [1.27 microns] gold over copper plate.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed: Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; *see page 1 for details.*

Connector Saver: Male to female, or male to male.

Contact Retention: 9 lbs. [40 N].

Connector Housing (Shells): Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization: Trapezoidally-shaped connector housings.

Mechanical Operations: 1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes, nominal.

Initial Contact Resistance: 0.008 ohms, maximum.

Proof Voltage: 1,000 V r.m.s.

Insulator Resistance: 5 G ohms.

Clearance and Creepage Distance: 0.039 inch [1.0 mm], minimum.

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



Positronic Industries
connectpositronic.com

SAD SERIES

MILITARY / SPACE FLIGHT QUALITY

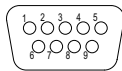
STANDARD DENSITY CONNECTOR SAVER

High
Performance
D-sub

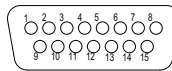
SAD SERIES SIZE 20 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

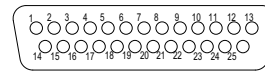
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



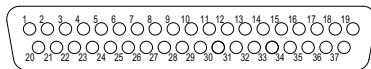
SAD 9



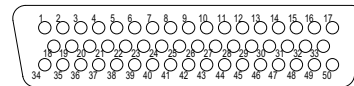
SAD 15



SAD 25



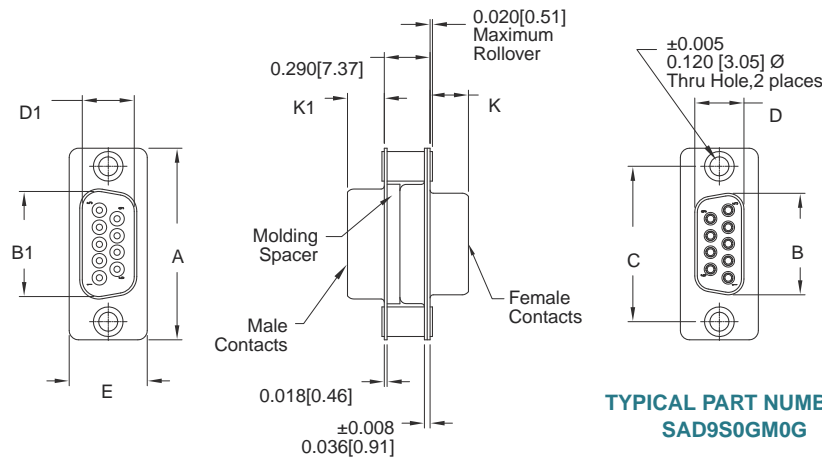
SAD 37



SAD 50

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY DIMENSIONS

SIZE 20 CONTACTS



TYPICAL PART NUMBER:
SAD9S0GM0G

CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
9 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
9 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
15 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
25 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
25 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
37 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
37 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
50 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		
50 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	

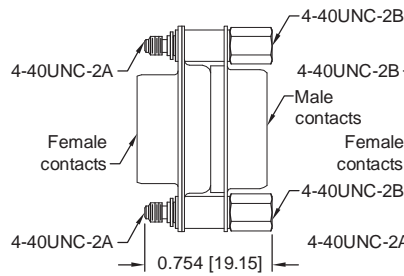


JACKSCREW SYSTEMS

CODE E, E6, T AND T6

ROTATING
MALE AND FEMALE
JACKSCREWS

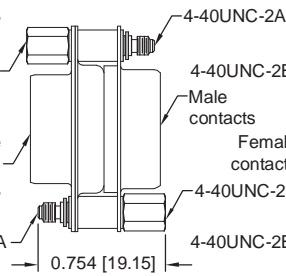
E



EXAMPLE PART NUMBER:
SAD9SEGM0G

ROTATING
MALE AND FEMALE
POLARIZED
JACKSCREWS

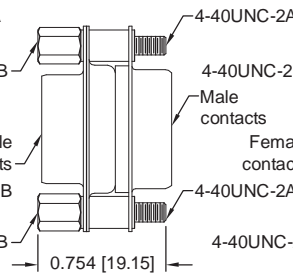
E6



EXAMPLE PART NUMBER:
SAD9SE6GM0G

FIXED
MALE AND FEMALE
JACKSCREWS

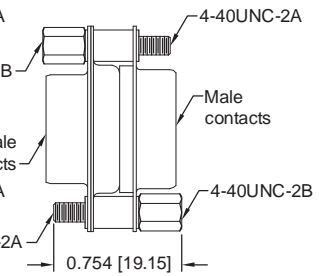
T



EXAMPLE PART NUMBER:
SAD9STGM0G

FIXED
MALE AND FEMALE
POLARIZED
JACKSCREWS

T6



EXAMPLE PART NUMBER:
SAD9ST6GM0G



SAD15S0GM0G connector saver mated to
SND15S5R70T2G connector.



Positronic Industries
connectpositronic.com

SAD SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY CONNECTOR SAVER

High
Performance
D-sub



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8		9
EXAMPLE	SAD	9	S	S	G	M	S	D	—	

STEP 1 - BASIC SERIES

SAD series

STEP 2 - CONNECTOR VARIANT

9, 15, 25, 37, 50

STEP 3 - 1ST CONNECTOR GENDER

M - Male
S - Female - PosiBand closed entry contacts,
see page 1 for more information.

*1 STEP 4 - 1ST CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *2 E - Rotating male and female jackscrews
(Select 0 in Step 7)
- *2 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 7)
- *2 T - Fixed male and female jackscrews
(Select 0 in Step 7)
- *2 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 7)

STEP 5 - 1ST CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - 2ND CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

*1 STEP 7 - 2ND CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05μ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *2 E - Rotating male and female jackscrews
(Select 0 in Step 4)
- *2 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 4)
- *2 T - Fixed male and female jackscrews
(Select 0 in Step 4)
- *2 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 4)

STEP 6 - 2ND CONNECTOR GENDER

M - Male

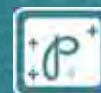
NOTES

*1 Connector mating style for both connectors must be the same if 0 or S is used. If E or E6 is used in either Step 4 or 8 the other step must be 0.

*2 For hardware information, see page 64.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 22 **fixed** contacts.
- ✓ Female closed entry contacts utilize the "PosiBand®" system. *See page 1 for details.*
- ✓ Five connector variants include 15, 26, 44, 62, 78, and 104 contacts.
- ✓ Suitable for use as connector saver or gender changer.
- ✓ A wide variety of jackscrew options allows for mechanical keying.

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4
- MIL-DTL-24308 Class M

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insulator:	Polyester glass-filled per ASTM-D-5927, UL 94V-0, ASTM E-595, NASA-RP-1124.
Contacts:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Connector Housing (Shells), Spacers and Jackscrew Systems:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed:	Male contact - 0.030 inch [0.76 mm] mating diameter. Female contact - Posi-Band closed entry design; <i>see page 1 for details.</i>
Connector Saver:	Male to female (or male to male, Size 78 only).
Contact Retention:	9 lbs. [40 N].

Connector Housing (Shells):

Male connector housings may be dimpled for EMI/ESD ground paths.

Polarization:

Trapezoidally-shaped connector housings.

Mechanical Operations:

1,000 operations, minimum, per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	5 amperes, nominal.
Initial Contact Resistance:	0.008 ohms, maximum.
Proof Voltage:	1,000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
---------------------------	------------------

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>



Positronic Industries
connectpositronic.com

SADD SERIES

MILITARY / SPACE FLIGHT QUALITY

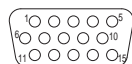
HIGH DENSITY CONNECTOR SAVER

High
Performance
D-sub

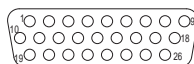
SADD SERIES SIZE 22 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

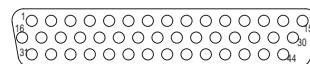
FACE VIEW OF MALE OR USE MIRROR IMAGE FOR FEMALE



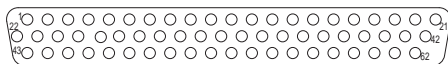
SADD 15



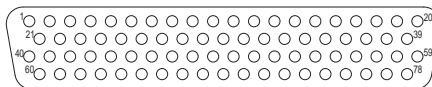
SADD 26



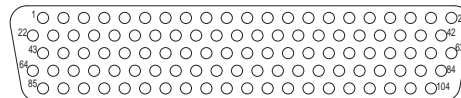
SADD 44



SADD 62



SADD 78

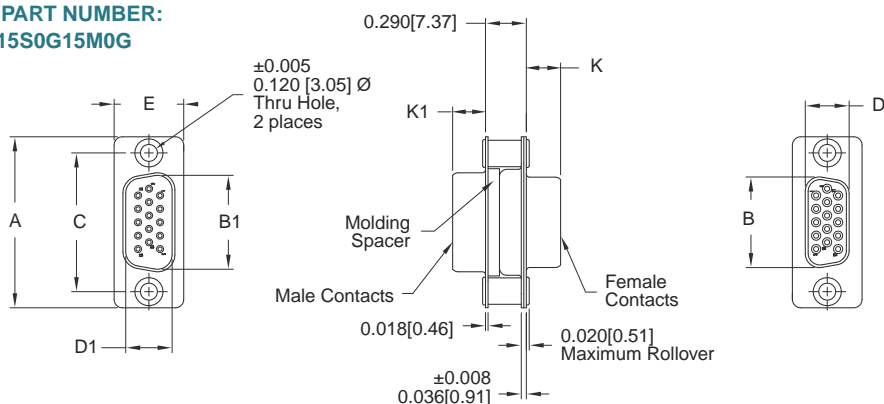


SADD 104

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY DIMENSIONS

SIZE 22 CONTACTS

TYPICAL PART NUMBER:
SADD15S0G15M0G



CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	K1 ±0.005 [0.13]
15 M	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
15 S	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
26 M	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]		0.233 [5.92]
26 S	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
44 M	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
44 S	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]		0.230 [5.84]
62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	
78 M	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]		
78 S	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	
104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]		0.230 [5.84]
104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	0.243 [6.17]	



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SADD	15	S	S	G	M	S	D	

STEP 1 - BASIC SERIES

SADD series

STEP 2 - CONNECTOR VARIANT

15, 26, 44, 62, 78, 104

STEP 3 - 1ST CONNECTOR GENDER

*3 M - Male
S - Female - PosiBand closed entry contacts,
see page 1 for more information.

*1 STEP 4 - 1ST CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05µ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *2 E - Rotating male and female jackscrews
(Select 0 in Step 7)
- *2 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 7)
- *2 T - Fixed male and female jackscrews
(Select 0 in Step 7)
- *2 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 7)

STEP 5 - 1ST CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - 2ND CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.
D - Gold over copper plate and dimpled
(male connectors only).

*1 STEP 8 - 2ND CONNECTOR MATING STYLE

- 0 - Swaged spacer 0.120 [3.05µ] mounting hole
- S - Swaged spacer 4-40 UNC-2B threads
- *2 E - Rotating male and female jackscrews
(Select 0 in Step 4)
- *2 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 4)
- *2 T - Fixed male and female jackscrews
(Select 0 in Step 4)
- *2 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 4)

STEP 6 - 2ND CONNECTOR GENDER

M - Male

NOTES

- *1 Connector mating style for both connectors must be the same if 0 or S is used. If E or E6 is used in either Step 4 or 8 the other step must be 0.
- *2 For hardware information, see page 64.
- *3 Male option available only on connector variant 78.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!



Positronic Industries
connectpositronic.com

SACBMP SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY COMBO-D CONNECTOR SAVER

High
Performance
D-sub



- ✓ High performance for use in harsh environments, including space flight.
- ✓ Size 20 and Size 8 **fixed** contacts.
- ✓ All female closed entry signal contacts utilize the "PosiBand®" system. *See page 1 for details.*
- ✓ Twenty-two connector variants with a mixture of signal, power, shielded and high voltage contacts.
- ✓ Suitable for use as connector saver or gender changer.
- ✓ Current ratings: signal level to 7.5 amperes. *See temperature rise curves on page 2 for details.*
- ✓ A wide variety of jackscrew options allows for mechanical keying.

Conforming To Applicable Material, Dimensional and Performance Requirements:

- GSFC S-311-P4 & GSFC S-311-P10
- DSCC Specification 85039

Conforming To Outgassing Requirements:

- ASTM E-595 & NASA-RP-1124

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insulator:	Glass-filled polyester per ASTM-D-5927, UL 94-V0, ASTM E-595, NASA-RP-1124, blue color.
Contacts:	
Size 20:	Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Size 8:	Precision machined high conductivity copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Connector Housing (Shells), Spacers and Jackscrew Systems:	Brass with 0.000050 inch [1.27 microns] gold over copper plate.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed:	Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; <i>see page 1 for details.</i>
Size 8 Fixed:	Male - 0.142 inch [3.61mm] mating diameter. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Closed crimp barrel.
Connector Saver:	Male to female, male to male see page 72 for available variants.
Contact Retention:	9 lbs. [40 N].
Connector Housing (Shells):	Male connector housings may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally-shaped connector housings.
Mechanical Operations:	1,000 operations, minimum, per IEC 60512-5.

... continued on next page



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . .

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

Contact Current Rating:	7.5 amperes, nominal
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SIZE 8 CONTACTS

Contact Current Rating:	40 amperes, nominal
Initial Contact Resistance:	0.008 ohms maximum.
Proof Voltage:	1000 V r.m.s.

CONNECTOR

Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
--------------------	------------------

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/62/HighPerformanceD-subminiature/catalogs/>

SACBMP SERIES SIZE 20 AND SIZE 8 CONTACT CONNECTOR SAVER

CONTACT VARIANTS

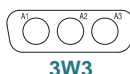
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

SHELL SIZE 1

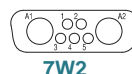


5W1

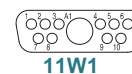
SHELL SIZE 2



3W3

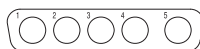


7W2



11W1

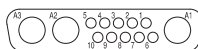
SHELL SIZE 3



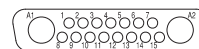
5W5



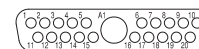
9W4



13W3

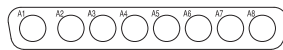


17W2

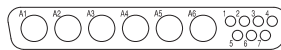


21W1

SHELL SIZE 4



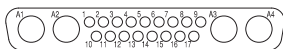
8W8



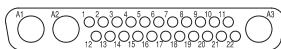
13W6



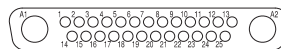
17W5



21WA4

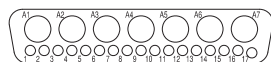


25W3

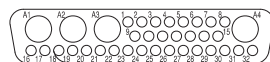


27W2

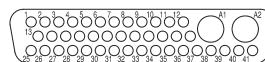
SHELL SIZE 5



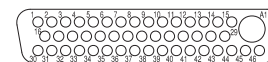
24W7



36W4

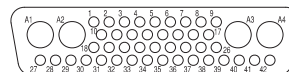


43W2



47W1

SHELL SIZE 6



46W4

Note: For high density 8W2, 19W1, 15W4 and 45W2 variants contact Technical Sales for availability.



Positronic Industries
connectpositronic.com

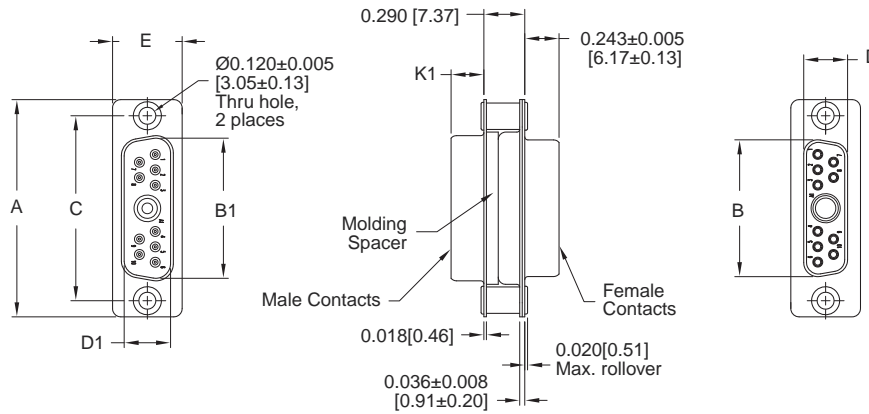
SACBMP SERIES

MILITARY / SPACE FLIGHT QUALITY

STANDARD DENSITY COMBO-D CONNECTOR SAVER

High
Performance
D-sub

STANDARD CONNECTOR HOUSING (SHELLS) ASSEMBLY DIMENSIONS SIZE 20 AND SIZE 8 CONTACTS



NOTE:

Code S = Swaged
spacer with 4-40
UNC-2B threads.

TYPICAL PART NUMBER:
SACBMP11W1S0GM0G

SHELL SIZES	CONNECTOR VARIANT	A ± 0.015 [0.38]	B ± 0.005 [0.13]	B1 ± 0.005 [0.13]	C ± 0.005 [0.13]	D ± 0.005 [0.13]	D1 ± 0.005 [0.13]	E ± 0.015 [0.38]	K1 ± 0.005 [0.13]
1	5W1	1.213 [30.81]	0.643 [16.33]	0.666 [16.92]	0.984 [24.99]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
2	3W3, 7W2, 11W1	1.541 [39.14]	0.971 [24.66]	0.994 [25.25]	1.312 [33.32]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.233 [5.92]
3	5W5, 9W4, 13W3, 17W2, 21W1	2.088 [53.04]	1.511 [38.38]	1.534 [38.96]	1.852 [47.04]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
4	8W8, 13W6, 17W5, 21WA4, 25W3, 27W2	2.729 [69.32]	2.159 [54.84]	2.182 [55.42]	2.500 [63.50]	0.311 [7.90]	0.329 [8.36]	0.494 [12.55]	0.230 [5.84]
5	24W7, 36W4, 43W2, 47W1	2.635 [66.93]	2.064 [52.43]	2.079 [52.81]	2.406 [61.11]	0.423 [10.74]	0.441 [11.20]	0.605 [15.37]	0.230 [5.84]
6	46W4	2.729 [69.32]	2.189 [55.60]	2.212 [56.18]	2.500 [63.50]	0.485 [12.32]	0.503 [12.78]	0.668 [16.97]	0.230 [5.84]



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8		9
EXAMPLE	SACBMP	11W1	S	S	G	M	S	D	—	

STEP 1 - BASIC SERIES

SACBMP series

STEP 2 - CONNECTOR VARIANT

Shell Size 1

5W1

Shell Size 2

3W3, 7W2, 11W1

Shell Size 3

5W5, 9W4, 13W3, 17W2, 21W1

Shell Size 4

8W8, 13W6, 17W5, 21WA4, 25W3, 27W2

Shell Size 5

24W7, 36W4, 43W2, 47W1

Shell Size 6

46W4

Note: For high density 8W2, 19W1,
15W4 and 45W2 variants contact
Technical Sales for availability.

STEP 3 - 1ST CONNECTOR GENDER

*1 M - Male

S - Female - PosiBand closed entry contacts,
see page 1 for more information.

*2 STEP 4 - 1ST CONNECTOR MATING STYLE

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews
(Select 0 in Step 7)

*3 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 7)

*3 T - Fixed male and female jackscrews
(Select 0 in Step 7)

*3 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 7)

STEP 5 - 1ST CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled
(male connectors only).

STEP 9 - SPECIAL OPTIONS

SEE APPENDIX ON PAGE 95.

STEP 8 - 2ND CONNECTOR HOUSING (SHELLS) OPTION

G - Gold over copper plate.

D - Gold over copper plate and dimpled
(male connectors only).

*2 STEP 8 - 2ND CONNECTOR MATING STYLE

0 - Swaged spacer 0.120 [3.05μ] mounting hole

S - Swaged spacer 4-40 UNC-2B threads

*3 E - Rotating male and female jackscrews
(Select 0 in Step 4)

*3 E6 - Rotating male and female polarized jackscrew
(Select 0 in Step 4)

*3 T - Fixed male and female jackscrews
(Select 0 in Step 4)

*3 T6 - Fixed male and female polarized jackscrew
(Select 0 in Step 4)

STEP 6 - 2ND CONNECTOR GENDER

M - Male

NOTES

*1 Male option in Step 3 available only on connector variants 5W1, 3W3,
7W2, 11W1, 17W2, 21W1, 21WA4, 27W2, 24W7, 46W4.

*2 Connector mating style for both connectors must be the same if 0 or S is
used. If E, E6, T or T6 is used in either Step 4 or 8 the other step must
be 0.

*3 For hardware information, see page 64.

Do you need 2-D drawings or 3-D models?

See page 18 for more information!



Positronic Industries
connectpositronic.com



UNIQUE FEATURES

High
Performance
D-sub

UNIQUE FEATURE SECTION

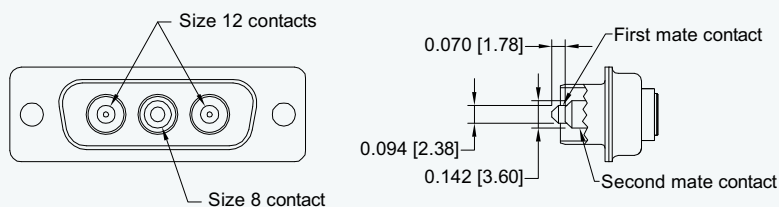


Positronic Industries is **known** around the world **for offering** our customers **flexibility** when choosing connectors.

In addition to allowing **customers** to **create** part numbers for **particular applications**, Positronic offers a **wide variety** of features and accessories within our products.

Positronic is **able** to modify existing products **to meet unique customer requirements**. We are also eager to develop **custom connectors** for specific customer applications. If you do not find what you need in this catalog, please contact us for **assistance**.

SEQUENTIAL MATING CONTACTS



Note: A third level can be accomplished with signal contacts if needed.

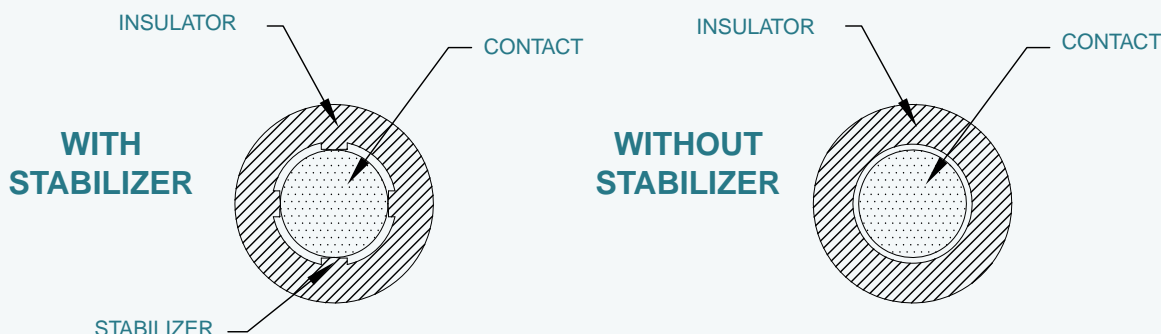
Three levels of sequential mating are possible:

- First mate accomplished by a size 12 power contact. Male contact diameter is 0.094 inch. Contact Technical Sales for first mate size 8 (0.125 inch) diameter contacts.
- Second mate accomplished by a size 8 power contact. Male contact diameter is 0.142 inch.
- Third mate can be accomplished by size 20 signal contacts.

CONTACT TECHNICAL SALES FOR MORE INFORMATION!



SIZE 8 CONTACT STABILIZATION FEATURE MINIMIZES FLOAT IN SIZE 8 CONTACT POSITIONS



SCBM size 8 male contacts are removed toward the rear after utilizing front release tooling. Space must be provided between the contact and the connector molding so the tooling can slide over the mating portion of the contact. This fact allows the contact to float.

In some applications this float creates problems in alignment during mating. Many male contact SCBM variants offer an integral stabilizing feature to minimize problems created by float in size 8 contacts. An alternate tool is used to remove the contact if necessary. Tool number is 4311-0-1-0.

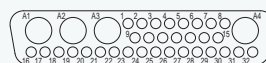
The stabilization feature is currently available for the following male contact variants:



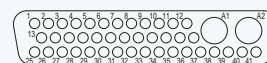
SCBM3W3M



SCBM8W8M



SCBC36W4M



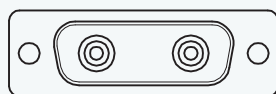
SCBC43W2M

Add MOS -1570.4 to end of part number. Example: SCBM3W3M00000-1570.4

CONTACT TECHNICAL SALES FOR MORE INFORMATION!

SELECTIVELY LOADED CONNECTOR

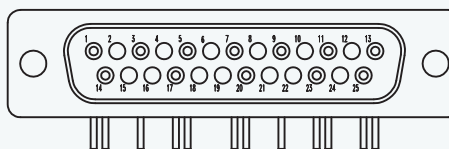
Select loading may be advantageous in applications requiring additional creepage and clearance distances.



SCBM3W3
loaded in 2 positions

Note:

SCBM3W3 and SND25 variants shown for reference.
Selectively loading available on all series and variants.



SND25
loaded in 12 positions

CONTACT TECHNICAL SALES FOR MORE INFORMATION!



Positronic Industries
connectpositronic.com



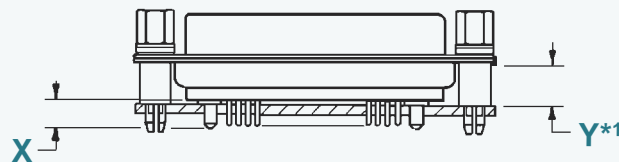
UNIQUE FEATURES

High
Performance
D-sub

CUSTOMER SPECIFIED CONTACT TERMINATION LENGTH

Positronic can supply high performance D-subminiature series connectors with customer specified termination lengths.
A wide variety of options are available.

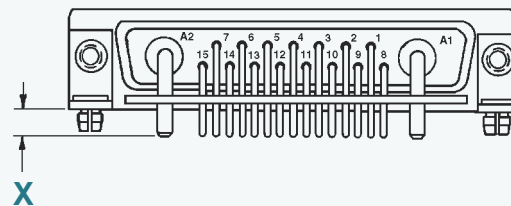
STRAIGHT SOLDER PRINTED BOARD MOUNT



Note:

*1 PCB spacer height can be adjusted according to contact termination length

RIGHT ANGLE (90°) PRINTED BOARD MOUNT



Note:

Combination-D variants shown for reference only. This option is available with SND, SDD, SCBM, SCBC and SCBCD.

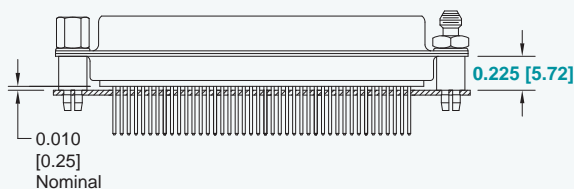
X and Y contact termination lengths can be custom designed to fit specific application requirements.

CONTACT TECHNICAL SALES FOR MORE INFORMATION!

LOW PROFILE INSULATOR

Positronic can supply high performance high density D-subminiature series connectors with a low profile insulator.

LOW PROFILE



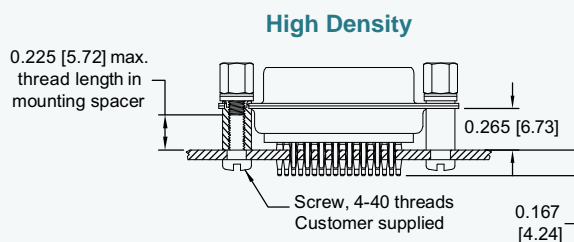
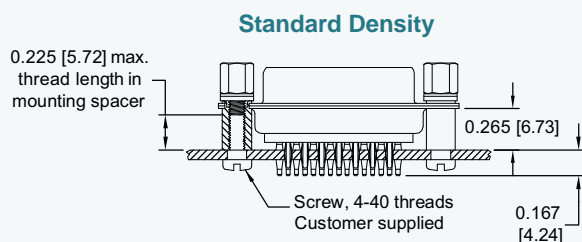
STANDARD PROFILE



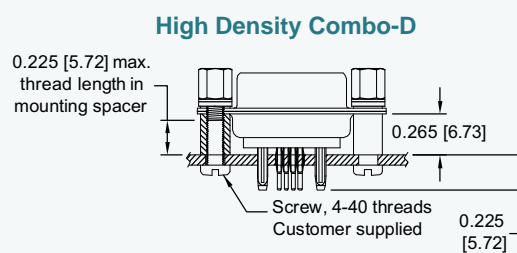
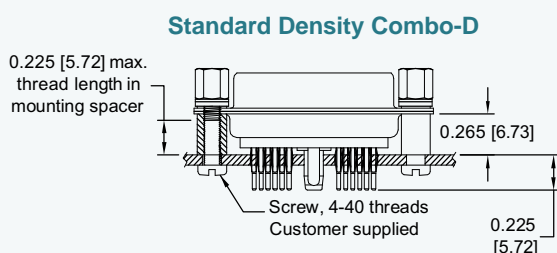
CONTACT TECHNICAL SALES FOR MORE INFORMATION!



COMPLIANT PRESS-IN CONNECTOR



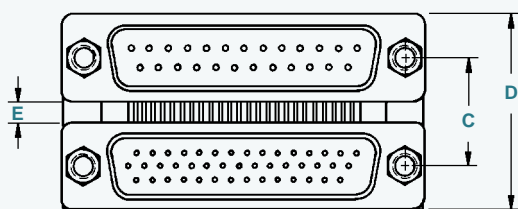
Customers may determine press-in terminations are a viable option based on their application parameters.



CONTACT TECHNICAL SALES FOR MORE INFORMATION!

DUAL PORT CONNECTOR

Connectors can be stacked to conserve printed circuit board space.



Standard density over high density
shown for reference.



THREE HEIGHT OPTIONS!

SPACING BETWEEN CONNECTORS	C	D	E
OPTION 1	0.625 [15.88]	1.119 [28.42]	0.131 [3.33]
OPTION 2	0.750 [19.05]	1.244 [31.60]	0.256 [6.50]
OPTION 3	0.900 [22.86]	1.394 [35.41]	0.406 [10.31]

Connectors can be stacked in a variety
of configurations:

- Standard / Standard Density
- High Density / High Density
- Standard / High Density
- Combination / Combination
- Combination / Standard or High Density

CONTACT TECHNICAL SALES FOR MORE INFORMATION!



Positronic Industries
connectpositronic.com



REMOVABLE CONTACTS

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

SIZE 22 CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

MECHANICAL CHARACTERISTICS:

Install contact to rear face of connector insert and remove from rear face of connector insert. Size 22 contacts, male – 0.030 inch [0.76 mm] mating diameter. Female contact - PosiBand closed entry design; see page 1 for details. Terminations for 20, 22, 24, 26, 28, and 30 AWG. Closed barrel crimp or solder.

ELECTRICAL CHARACTERISTICS:

For SDD series: For electrical characteristics, see page 14.
For SCBCD series: For electrical characteristics, see page 58.

SIZE 20 CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

MECHANICAL CHARACTERISTICS:

Install contact to rear face of connector insert and remove from rear face of connector insert. Size 20 contact, male – 0.040 inch [1.02 mm] mating diameter. Female contact - PosiBand closed entry design; see page 1 for details. Terminations for 18, 20, 22, 24, 26, 28, and 30 AWG. Closed barrel crimp or solder.

ELECTRICAL CHARACTERISTICS:

For SND series: For electrical characteristics, see page 6.
For SCBC series: For electrical characteristics, see page 40.

SIZE 16 CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

MECHANICAL CHARACTERISTICS:

Install contact to rear face of insulator, release from front face of insulator. Size 16 contacts, male – 0.062 inch [1.57mm] mating diameter. Female contact - PosiBand closed entry design; see page 1 for details. Terminations for 12, 14, 16, 18, 20, 22 and 24 AWG. Closed barrel crimp.

ELECTRICAL CHARACTERISTICS:

For electrical characteristics, see SCBCD series on page 58.

SIZE 8 CONTACT

MATERIALS AND FINISHES:

POWER: Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

HIGH VOLTAGE:

Insulator Material: PTFE teflon
Contacts: Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

SHIELDED:

Dielectric Material: PTFE teflon
Inner Contacts: Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.
Outer Contacts: Precision machined copper alloy. 0.000050 inch [1.27 microns] gold over copper plate. Other finishes are available; see page 95.

MECHANICAL CHARACTERISTICS:

POWER:

Install contact to rear face of connector insert and remove from front face of connector insert. Size 8 contacts, male – 0.142 inch [3.61 mm] mating diameter. Female contact - features Large Surface Area (L.S.A.) closed entry design utilizing BeCu mechanical retention member. Closed barrel crimp.

SHIELDED:

Install contact to rear face of insulator and remove from front face of insulator. Size 8 contacts. See page 84 table of cable sizes for contact termination dimensions.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz.

Shock:

30g-11ms.

HIGH VOLTAGE:

Install contact to rear face of insulator and remove from front face of insulator. Size 8 contacts. Straight and right angle (90°) terminations. 0.041 inch [1.04 mm] minimum hole diameter.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz.

Shock:

30g-11ms.

ELECTRICAL CHARACTERISTICS:

POWER:

For electrical characteristics, see page 21.

SHIELDED:

Initial Contact Resistance: 0.008 ohms maximum.

Nominal Impedance: 50 ohms.

Insertion Loss: -0.46 dB at 1 GHz

-1.5 dB at 2 GHz

VSWR:

1.15 average at 1 GHz

1.56 average at 2 GHz

Above values measured using frequency domain techniques.

Proof Voltage:

1000 V r.m.s.

HIGH VOLTAGE:

Flash over Voltage:

3600 V r.m.s.

Proof Voltage:

2700 V r.m.s.

Initial Contact Resistance: 0.008 ohms maximum.

OPTIONAL PLATING FINISHES

-54

0.000100 [2.54 μ] gold over copper by adding "-54" suffix onto part number. Example: FC6026M2-54.

REELED CONTACTS:

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9550-1. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC4008MR for a male contact and FC120N4R-50 for female contact.



Enlarged section of
plastic contact carriers

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



REMOVABLE CRIMP CONTACTS

FOR USE WITH SDD AND SCBCD SERIES CONNECTORS

SIZE 22

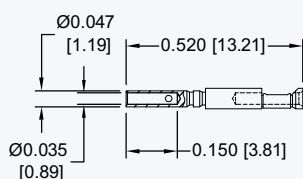


Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

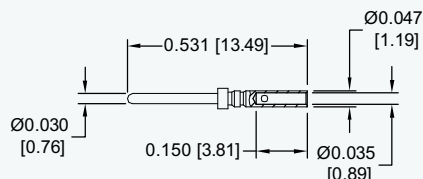


FEMALE CONTACT

"PosiBand" Closed Entry Design



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC8022M2	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MC8022M	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]



REMOVABLE CRIMP CONTACT

FOR USE WITH SDD AND SCBCD SERIES CONNECTORS

CONTACTS USED WITH 20 AWG WIRE

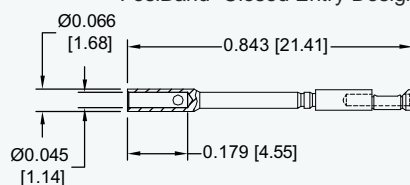
SIZE 22



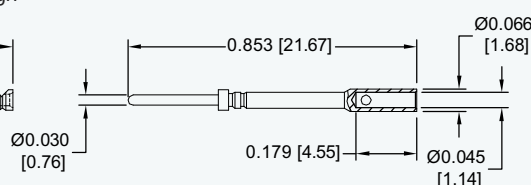
The crimp area of these contacts is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Not suitable for fully loaded connector.

FEMALE CONTACT

"PosiBand" Closed Entry Design



MALE CONTACT



Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

Crimp area extends above connector molding.



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC8020M2	20 [0.5] max



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MC8020M	20 [0.5] max

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com



REMOVABLE CONTACTS MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub



REMOVABLE CLOSED BARREL SOLDER CONTACTS FOR USE WITH SDD AND SCBCD SERIES CONNECTORS

SIZE 22



Authentic POSITRONIC®
PosiBand®

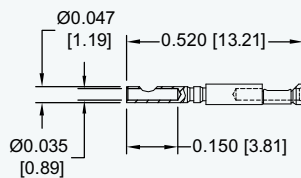
These contacts utilize authentic Positronic® PosiBand® technology.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

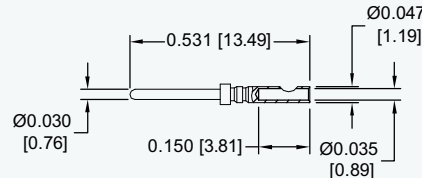


FEMALE CONTACT

"PosiBand" Closed Entry Design



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FS8022M2	22 [0.3] max

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MS8022M	22 [0.3] max

REMOVABLE CRIMP CONTACT

FOR USE WITH SND AND SCBC SERIES CONNECTORS

SIZE 20



Authentic POSITRONIC®
PosiBand®

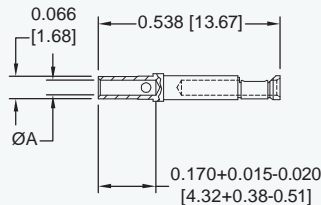
These contacts utilize authentic Positronic® PosiBand® technology.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

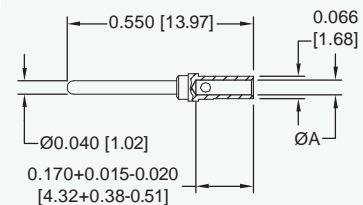


FEMALE CONTACT

"PosiBand" Closed Entry Design



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
FC6020M2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
FC6026M2	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
MC6020M	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]
MC6026M	26 / 28 / 30 [0.12/0.08/0.05]	0.027 [0.69]

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



REMOVABLE CRIMP CONTACT

FOR USE WITH SND AND SCBC SERIES CONNECTORS

CONTACTS USED WITH 18 AWG WIRE

SIZE 20



Authentic POSITRONIC®
PosiBand®

These contacts utilize authentic Positronic® PosiBand® technology.

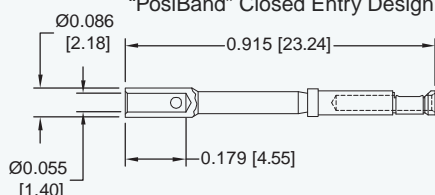
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

The crimp area of these contacts is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Not suitable for fully loaded connector.



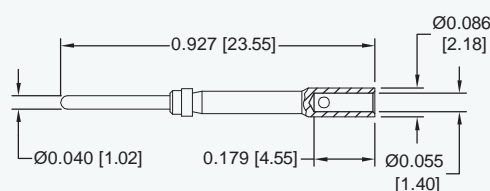
FEMALE CONTACT

"PosiBand" Closed Entry Design



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC6018M2	18 [1.0] max

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MC6018M	18 [1.0] max



REMOVABLE CLOSED BARREL SOLDER CONTACTS

FOR USE WITH SND AND SCBC SERIES CONNECTORS

SIZE 20



Authentic POSITRONIC®
PosiBand®

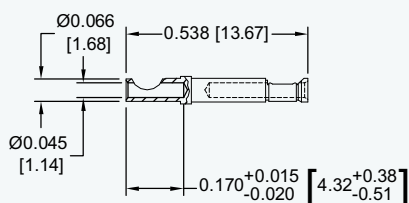
These contacts utilize authentic Positronic® PosiBand® technology.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.



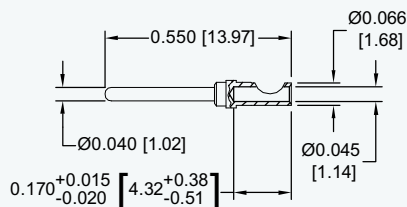
FEMALE CONTACT

"PosiBand" Closed Entry Design



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FS6020M2	20 [0.5] max

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
MS6020M	20 [0.5] max

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com



REMOVABLE CONTACTS

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub



REMOVABLE CRIMP POWER CONTACT

FOR USE WITH SCBCD SERIES CONNECTORS

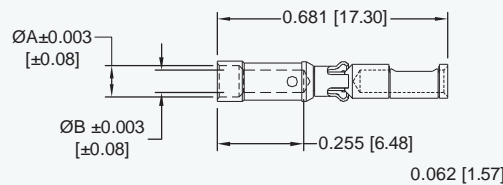
SIZE 16



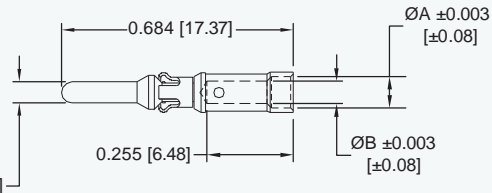
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"PosiBand" Closed Entry Design



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE [AWG] mm²	ØA	ØB
FC112N4-50	12 / [4.0]	N/A	0.098 [2.49]
FC114N4-50	14-16 [2.5-1.5]	0.105 [2.67]	0.081 [2.06]
FC116N4-50	16-18 [1.5-1.0]	0.093 [2.36]	0.067 [1.70]
FC120N4-50	20-22-24 [0.5-0.3-0.25]	0.065 [1.65]	0.045 [1.14]

MALE PART NUMBER	WIRE SIZE mm² [AWG]	ØA	ØB
MC112N-50-133.0	12 / [4.0]	N/A	0.098 [2.49]
MC114N-50-133.0	14-16 [2.5-1.5]	0.105 [2.67]	0.081 [2.06]
MC116N-50-133.0	16-18 [1.5-1.0]	0.093 [2.36]	0.067 [1.70]
MC120N-50-133.0	20-22-24 [0.5-0.3-0.25]	0.065 [1.65]	0.045 [1.14]

REMOVABLE CRIMP POWER CONTACT

FOR USE WITH SCBM, SCBC, SCBDD AND SCBCD SERIES CONNECTORS

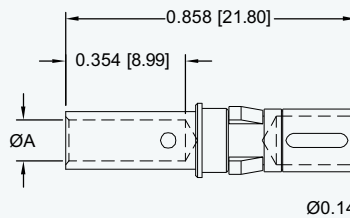
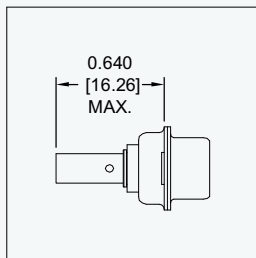
SIZE 8

For contact current rating, see page 21.

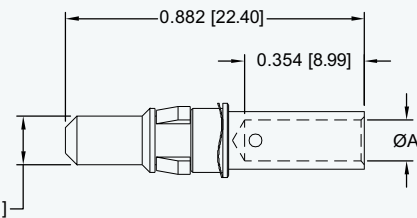
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE [AWG] mm²	Ø A
FC4008M	8 [10.0]	0.181 [4.60]
FC4010M	10 [5.3]	0.122 [3.10]
FC4012M	12 [4.0]	0.101 [2.57]
FC4016M	16 [1.5]	0.067 [1.70]

MALE PART NUMBER	WIRE SIZE [AWG] mm²	Ø A
MC4008M	8 [10.0]	0.181 [4.60]
MC4010M	10 [5.3]	0.122 [3.10]
MC4012M	12 [4.0]	0.101 [2.57]
MC4016M	16 [1.5]	0.067 [1.70]

NOTE: *1 Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



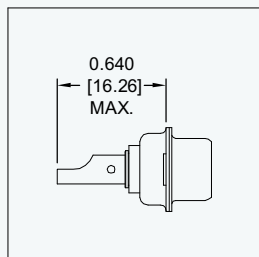
REMOVABLE SOLDER CUP POWER CONTACT

FOR USE WITH SCBM, SCBC, SCBDD AND SCBCD SERIES CONNECTORS

SIZE 8

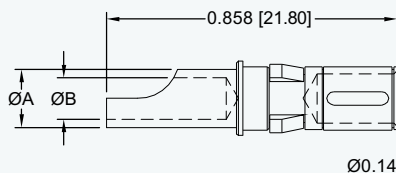
For contact current rating, see page 21

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

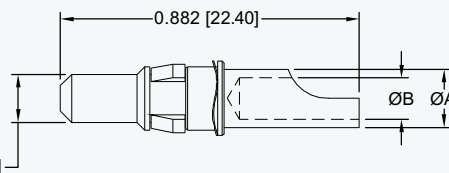


*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE [AWG] mm ²	Ø A	Ø B
FS4008M	8 [10.0]	0.219 [5.56]	0.188 [4.78]
FS4012M	12 [4.0]	0.143 [3.63]	0.112 [2.84]
FS4016M	16 [1.5]	0.100 [2.54]	0.069 [1.75]

MALE PART NUMBER	WIRE SIZE [AWG] mm ²	Ø A	Ø B
MS4008M	8 [10.0]	0.219 [5.56]	0.188 [4.78]
MS4012M	12 [4.0]	0.143 [3.63]	0.112 [2.84]
MS4016M	16 [1.5]	0.100 [2.54]	0.069 [1.75]

NOTE: *1 Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

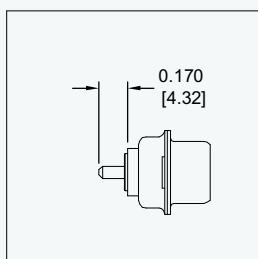
STRAIGHT SOLDER PRINTED BOARD MOUNT POWER CONTACT

FOR USE WITH SCBM AND SCBDD SERIES CONNECTORS

SIZE 8

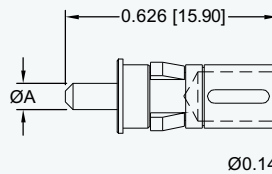
For contact current rating, see page 21.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

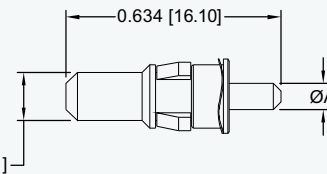


*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



FEMALE PART NUMBER	Ø A	CONTACT CODE
FDS4314M	0.078 [1.98]	35
FDS4312M	0.094 [2.39]	36
FDS4310M	0.125 [3.18]	37

MALE PART NUMBER	Ø A	CONTACT CODE
MDS4314M	0.078 [1.98]	35
MDS4312M	0.094 [2.39]	36
MDS4310M	0.125 [3.18]	37

NOTE: *1 Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com



REMOVABLE CONTACTS

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT POWER CONTACT

FOR USE WITH SCBM AND SCBDD SERIES CONNECTORS

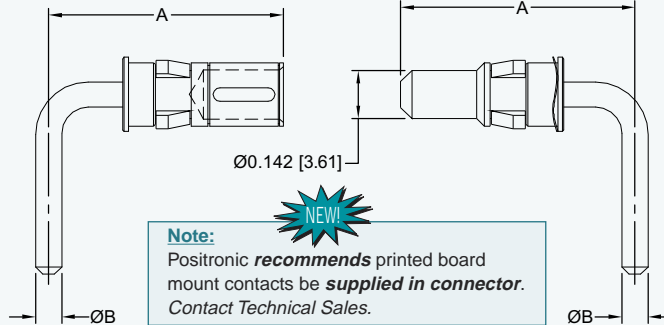
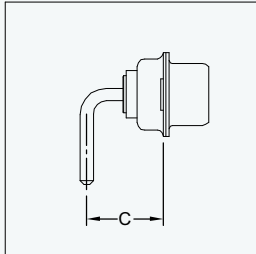
SIZE 8

For contact current rating, see page 21

*1 FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.

MALE CONTACT



NOTE:

*1 Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

Note:

Positronic **recommends** printed board mount contacts be **supplied in connector**.
Contact Technical Sales.

FEMALE PART NUMBER	A REF.	Ø B	C	SHELL SIZE	CONTACT CODE
FRT4314M	0.580 [14.73]	0.078 [1.98]	0.339 [8.61]	1, 2, 3 & 4	55
FRT4414M	0.692 [17.58]	0.078 [1.98]	0.451 [11.46]	5	55
FRT4714M	0.661 [16.79]	0.078 [1.98]	0.420 [10.67]	1, 2, 3 & 4	75
FRT4814M	0.773 [19.63]	0.078 [1.98]	0.520 [13.21]	5	75
FRT4310M	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	1, 2, 3 & 4	57, 77
FRT4410M	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	5	57, 77

MALE PART NUMBER	A REF.	Ø B	C	SHELL SIZE	CONTACT CODE
MRT4314M	0.580 [14.73]	0.078 [1.98]	0.339 [8.61]	1, 2, 3 & 4	55
MRT4414M	0.692 [17.58]	0.078 [1.98]	0.451 [11.46]	5	55
MRT4714M	0.661 [16.79]	0.078 [1.98]	0.420 [10.67]	1, 2, 3 & 4	75
MRT4814M	0.773 [19.63]	0.078 [1.98]	0.520 [13.21]	5	75
MRT4310M	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	1, 2, 3 & 4	57, 77
MRT4410M	1.051 [26.70]	0.125 [3.18]	0.810 [20.57]	5	57, 77

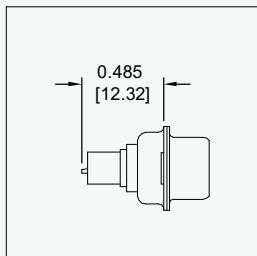
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

REMOVABLE HIGH VOLTAGE POWER CONTACT

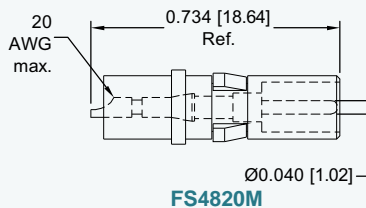
FOR USE WITH SCBM, SCBC, SCBDD AND SCBCD SERIES CONNECTORS

SIZE 8

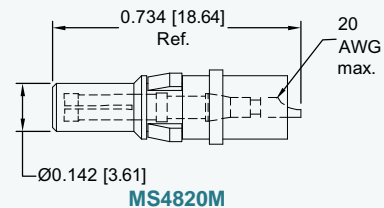
STRAIGHT SOLDER WIRE TERMINATION



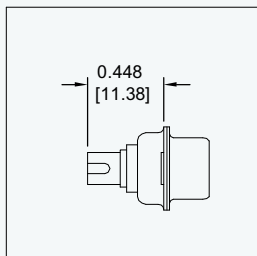
FEMALE CONTACT



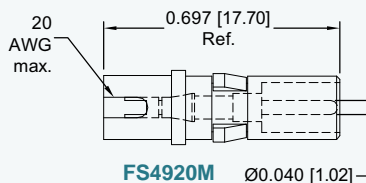
MALE CONTACT



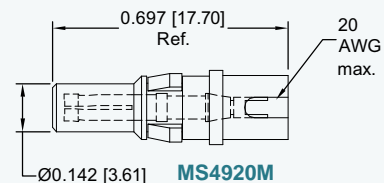
RIGHT ANGLE (90°) SOLDER WIRE TERMINATION



FEMALE CONTACT



MALE CONTACT



For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.

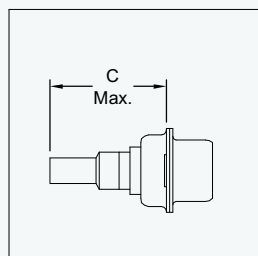


REMOVABLE SHIELDED CONTACT

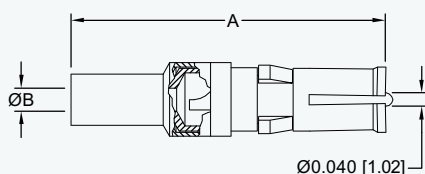
FOR USE WITH SCBM, SCBC, SCBDD AND SCBCD SERIES CONNECTORS

SIZE 8

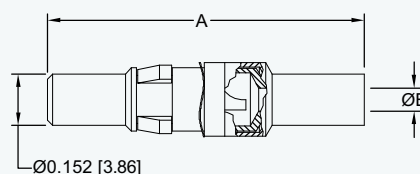
STRAIGHT SOLDER/CRIMP CONTACTS



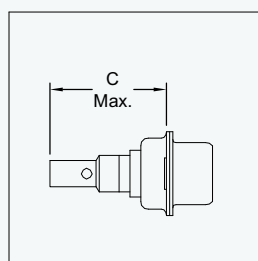
FEMALE CONTACT



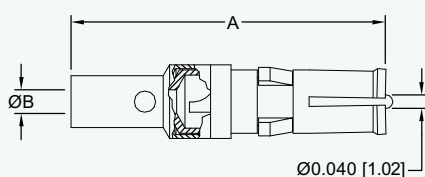
MALE CONTACT



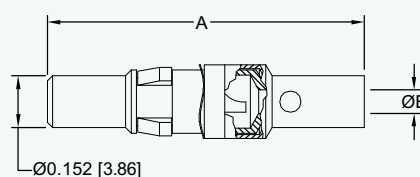
STRAIGHT SOLDER/SOLDER CONTACTS



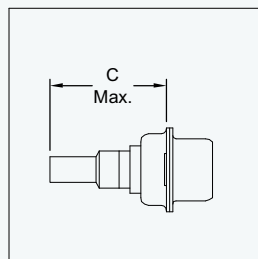
FEMALE CONTACT



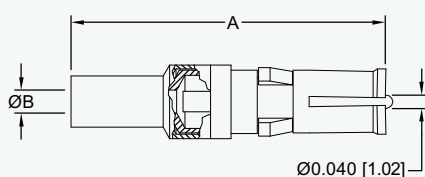
MALE CONTACT



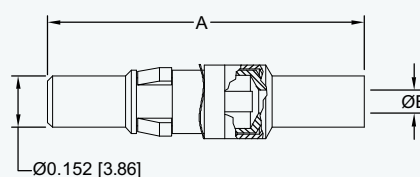
STRAIGHT CRIMP/CRIMP CONTACTS



FEMALE CONTACT



MALE CONTACT



Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

TYPE OF CONTACT	FEMALE PART NUMBER	MALE PART NUMBER	A	Ø B	C MAX.	RG CABLE NUMBER
SOLDER/CRIMP	FC4101M	MC4101M	0.929 [23.60]	0.040 [1.02]	0.739 [18.77]	178 B/U 196 B/U
	FC4102M	MC4102M	0.929 [23.60]	0.067 [1.70]	0.739 [18.77]	179 B/U 316 /U
	FC4103M	MC4103M	1.037 [26.34]	0.108 [2.74]	0.847 [21.51]	180 B/U
	FC4104M	MC4104M	1.037 [26.34]	0.120 [3.05]	0.847 [21.51]	58 B/U
SOLDER/SOLDER	FS4101M	MS4101M	0.929 [23.60]	0.040 [1.02]	0.739 [18.77]	178 B/U 196 B/U
	FS4102M	MS4102M	0.929 [23.60]	0.067 [1.70]	0.739 [18.77]	179 B/U 316 /U
	FS4103M	MS4103M	1.037 [26.34]	0.108 [2.74]	0.847 [21.51]	180 B/U
	FS4104M	MS4104M	1.037 [26.34]	0.120 [3.05]	0.847 [21.51]	58 B/U
CRIMP/CRIMP	FCC4101M	MCC4101M	0.929 [23.60]	0.040 [1.02]	0.739 [18.77]	178 B/U 196 B/U
	FCC4102M	MCC4102M	0.929 [23.60]	0.067 [1.70]	0.739 [18.77]	179 B/U 316 /U
	FCC4103M	MCC4103M	1.037 [26.34]	0.108 [2.74]	0.847 [21.51]	180 B/U
	FCC4104M	MCC4104M	1.037 [26.34]	0.120 [3.05]	0.847 [21.51]	58 B/U



SHIELDED CONTACTS

Two-step crimping action for signal and shielding conductors.

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



Positronic Industries
connectpositronic.com



REMOVABLE CONTACTS

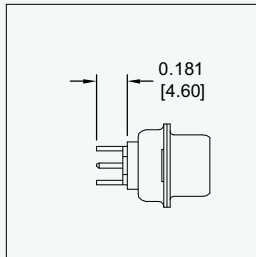
MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

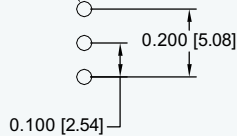
STRAIGHT SOLDER PRINTED BOARD MOUNT SHIELDED CONTACT

FOR USE WITH SCBM AND SCBDD SERIES CONNECTORS

SIZE 8

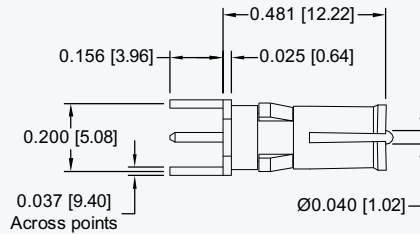


Suggest $\varnothing 0.045$
[1.14] hole



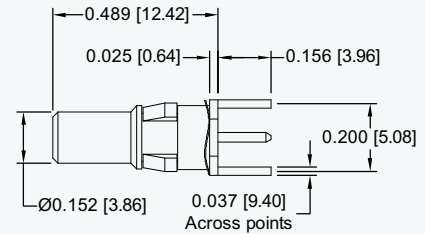
CONTACT HOLE PATTERN

FEMALE CONTACT



FDS4201M

MALE CONTACT



MDS4201M

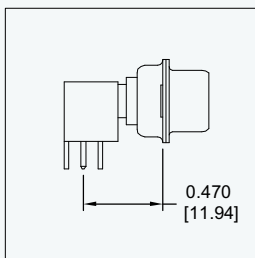
Note:

Positronic **recommends** printed board mount contacts be **supplied in connector**.
Contact Technical Sales.

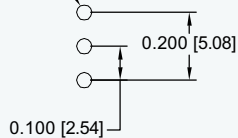
RIGHT ANGLE (90°) PRINTED BOARD MOUNT SHIELDED CONTACTS

FOR USE WITH SCBM AND SCBDD SERIES CONNECTORS

SIZE 8

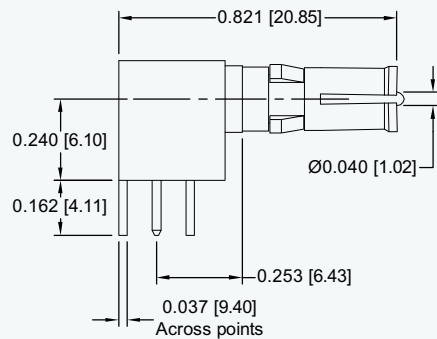


Suggest $\varnothing 0.045$
[1.14] hole



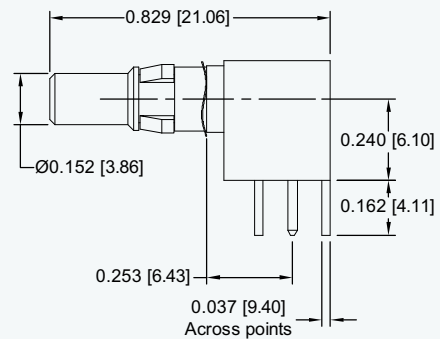
CONTACT HOLE PATTERN

FEMALE CONTACT



FRT4201M

MALE CONTACT



MRT4201M

Note:

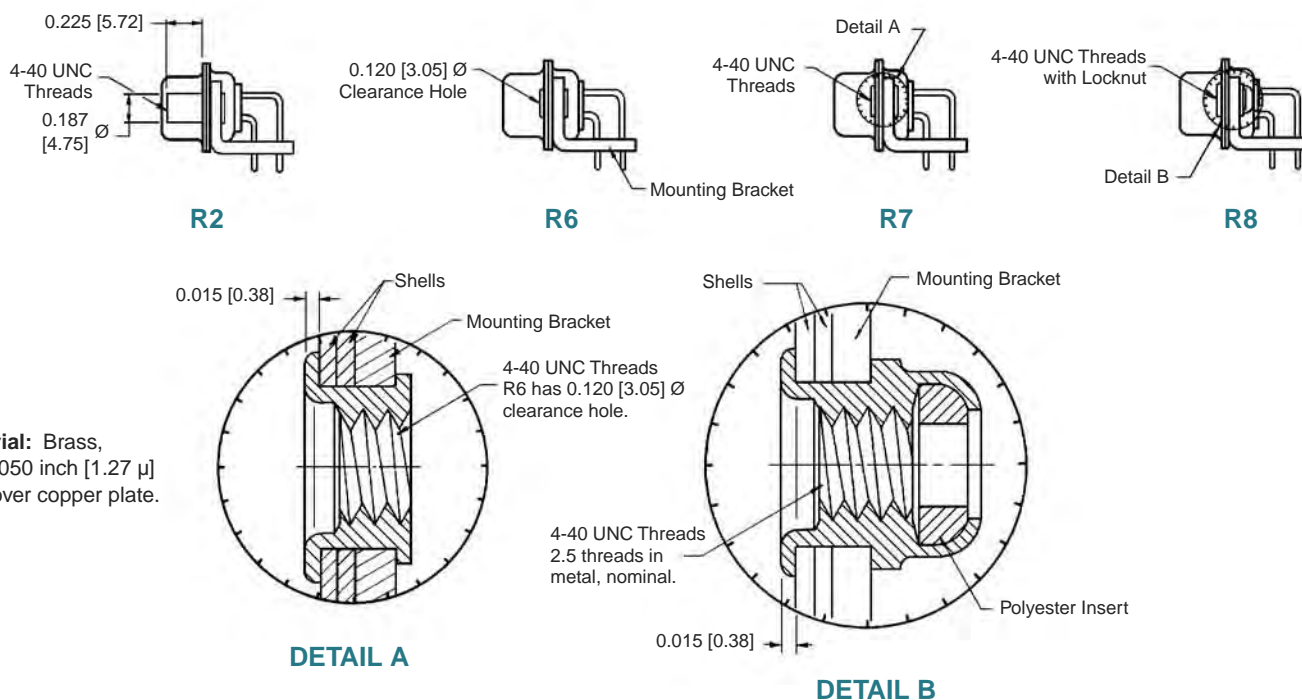
Positronic **recommends** printed board mount contacts be **supplied in connector**.
Contact Technical Sales.

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 96.



RIVETED ON RIGHT ANGLE (90°) MOUNTING BRACKETS WITH CROSS BAR CODE R2, R6, R7 AND R8

CONTACT ALIGNMENT BAR IS SUPPLIED WITH R2, R6, R7, AND R8. EXCEPTION: SCBM2WK2, SCBM3W3, SCBM3WK3, SCBM5W5 AND SCBM8W8 VARIANTS. SEE PAGE 38 FOR MORE INFORMATION.



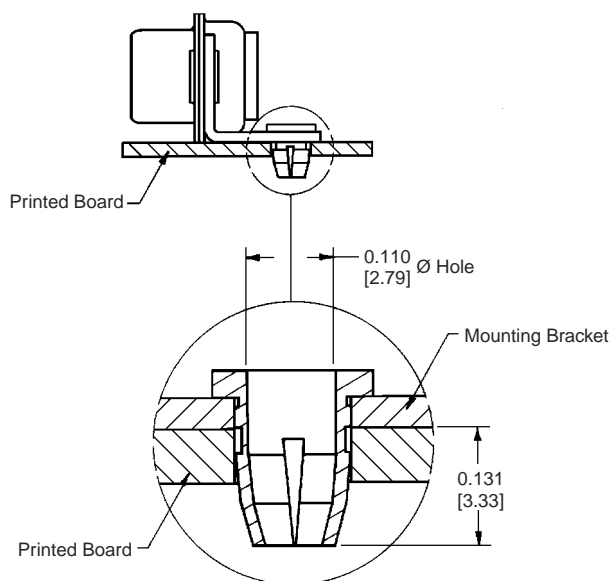
PUSH-ON FASTENER FOR RIVETED ON RIGHT ANGLE (90°) MOUNTING BRACKETS CODE N



SCBM17W2S5R7N0G
(shown left)

SDD26S4R7N0G
(shown right)

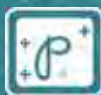
TYPICAL PERFORMANCE EVALUATION DATA			
SAMPLE #	PRINTED BOARD HOLE Ø	INSERTION FORCE [LBS.]	RETENTION FORCE [LBS.]
1	0.120 [3.05]	7-1/4	5-3/4
2	0.123 [3.12]	5-3/4	5-1/2
3	0.125 [3.18]	2-3/4	2-1/2
4	0.128 [3.25]	1-3/4	2-1/4
5	0.126 [3.20] PLATED	1-3/4	2-1/4



Printed board mounting hole to be 0.123 [3.12] Ø ±0.003 for use with push-on fastener.

Material: Beryllium copper, 0.000050 inch [1.27 μ] gold over copper plate.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

ACCESSORIES

MILITARY / SPACE FLIGHT QUALITY

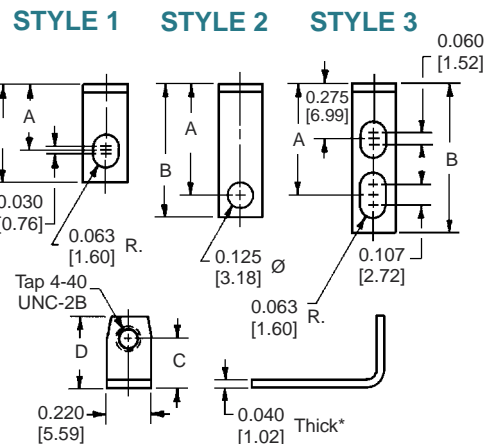
High
Performance
D-sub

RIGHT ANGLE (90°) METAL MOUNTING BRACKET CODE B3

PART NO.	STYLE	A	B	C	D	SIZE	SND	SDD	SCBM	SCBDD
4535-2-0	1	0.324 [8.23]	0.484 [12.29]	0.244 [6.20]	0.358 [9.09]	9-37	5		5, 55, 57	
4535-3-0	1	0.380 [9.65]	0.594 [15.09]	0.303 [7.70]	0.417 [10.59]	50	5		5, 55, 57	
4535-5-0	3	0.554 [14.07]	0.739 [18.77]	0.244 [6.20]	0.358 [9.09]	15-62		4		
4535-6-0	3	0.604 [15.34]	0.800 [20.32]	0.303 [7.70]	0.417 [10.59]	78		4		
4535-8-0	2	0.405 [10.29]	0.522 [13.26]	0.246 [6.25]	0.358 [9.09]	9-37	42		7, 75, 77	
4535-9-0	2	0.455 [11.56]	0.572 [14.53]	0.303 [7.70]	0.414 [10.52]	50	42		7, 75, 77	
4535-32-0	2	0.399 [10.13]	0.516 [13.11]	0.246 [6.25]	0.358 [9.09]	15-62				4
4535-33-0	2	0.399 [10.13]	0.516 [13.11]	0.303 [7.70]	0.414 [10.52]	78				4
4535-62-0	2	0.614 [15.60]	0.731 [18.57]	0.334 [8.48]	0.445 [11.30]	104		4		

NOTE: Sold only as part of a connector assembly.

Note: Contact alignment bar is supplied with B3 option.



***0.062 [1.57] thick for Size 104 SDD series and SCBM46W4 variant.**

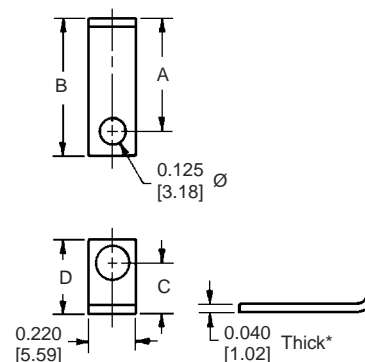
Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

RIGHT ANGLE (90°) METAL MOUNTING BRACKET SUPPLIED WITH R, R2, R3, R4, R5, R6, R7 AND R8 RIVETED-ON BRACKET ASSEMBLIES CODE R, R2, R3, R4, R5, R6, R7 AND R8

PART NO.	A	B	C	D	SIZE	SND	SDD	SCBM	SCBDD
4535-2-1	0.339 [8.61]	0.456 [11.58]	0.246 [6.25]	0.358 [9.09]	9 - 37	5		5, 55, 57	
4535-3-1	0.395 [10.03]	0.512 [13.00]	0.303 [7.70]	0.414 [10.52]	50	5		5, 55, 57	
4535-8-1	0.420 [10.67]	0.537 [13.64]	0.246 [6.25]	0.358 [9.09]	9 - 37	42		7, 75, 77	
4535-9-1	0.470 [11.94]	0.587 [14.91]	0.303 [7.70]	0.414 [10.52]	50	42		7, 75, 77	
4535-32-1	0.414 [10.52]	0.531 [13.49]	0.246 [6.25]	0.358 [9.09]	15-62				4
4535-33-1	0.414 [10.52]	0.531 [13.49]	0.303 [7.70]	0.414 [10.52]	78				4
4535-34-1	0.528 [13.41]	0.645 [16.38]	0.246 [6.25]	0.358 [9.09]	15 - 62		4		
4535-35-1	0.573 [14.55]	0.690 [17.53]	0.303 [7.70]	0.414 [10.52]	78		4		
4535-62-1	0.614 [15.60]	0.731 [18.57]	0.334 [8.48]	0.445 [11.30]	104		4		

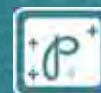
NOTE: Sold only as part of a connector assembly.

Note: Contact alignment bar is supplied with R2, R6, R7 and R8 options only.

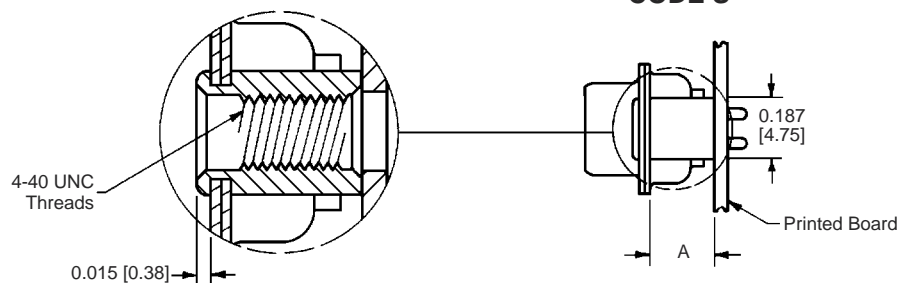


***0.062 [1.57] thick for Size 104 SDD series and SCBM46W4 variant.**

Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.



SWAGED SPACER CODE S



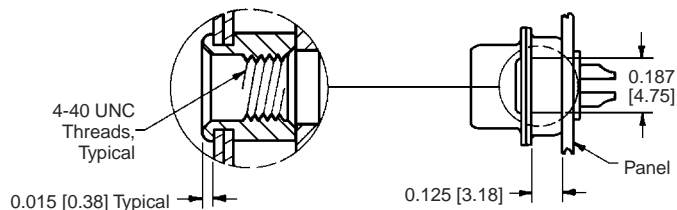
CONNECTOR SERIES	*1 CODE NUMBER	A
SND	0, 1, 12	0.375 [9.53]
	2, 3, 32, 36, 42, 5	0.225 [5.72]
SDD	0, 1, 3, 32, 4	0.375 [9.53]
SCBM	0, 2, 3, 35, 36, 37, 5, 55, 57, 65, 7, 75, 77, 85	0.250 [6.35]
SCBC	0, 1, 12, 13, 14	0.375 [9.53]
SCBDD	21, 3, 35, 36, 37, 4, 45, 47, 65, 84	0.250 [6.35]
SCBCD	0, 1, 12, 13, 14	0.375 [9.53]

NOTE:

*1 Contact termination code as specified in Step 4 of ordering information.

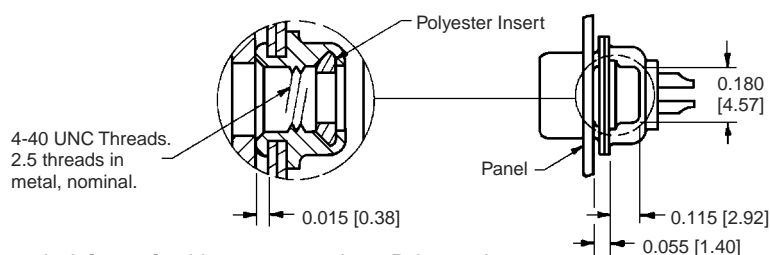
Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

SWAGED SPACER CODE S2



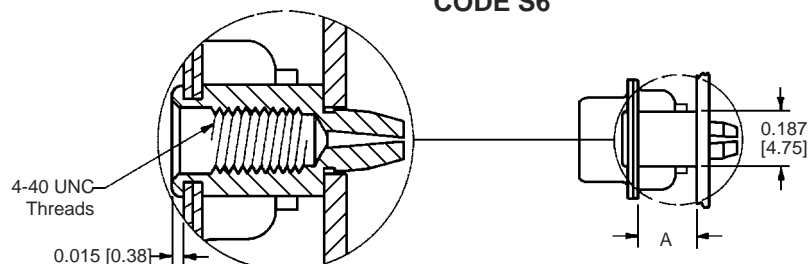
Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

SWAGED LOCKNUT CODE S5



Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate. Polyester insert.

SWAGED SPACER WITH PUSH-ON FASTENER CODE S6



Printed board mounting hole to be 0.123 [3.12] $\varnothing \pm 0.003$ for use with push-on fastener.

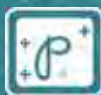
CONNECTOR SERIES	*1 CODE NUMBER	A
SND	0, 1, 12	0.375 [9.53]
	2, 3, 32, 36, 42, 5	0.225 [5.72]
SDD	0, 1, 3, 32, 4	0.375 [9.53]
SCBM	0, 2, 3, 35, 36, 37, 5, 55, 57, 65, 7, 75, 77, 85	0.250 [6.35]
SCBC	0, 1, 12, 13, 14	0.375 [9.53]
SCBDD	21, 3, 35, 36, 37, 4, 45, 47, 65, 84	0.250 [6.35]
SCBCD	0, 1, 12, 13, 14	0.375 [9.53]

NOTE:

*1 Contact termination code as specified in Step 4 of ordering information.

Material: Phosphor bronze, 0.000050 inch [1.27 μ] gold over copper plate.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



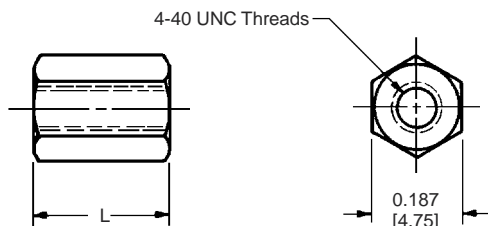
Positronic Industries
connectpositronic.com

ACCESSORIES

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

THREADED POST CODE P



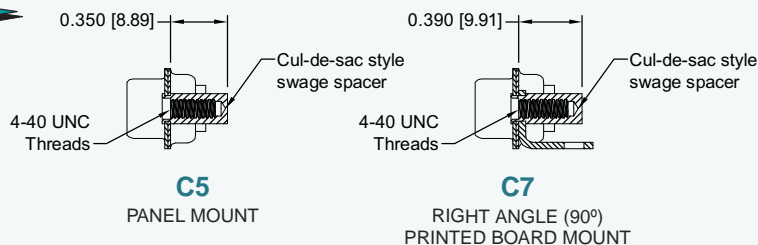
CONNECTOR SERIES	*1 CODE NUMBER	A
SND	0, 1, 12	0.375 [9.53]
	2, 3, 32, 36, 42, 5	0.225 [5.72]
SDD	0, 1, 3, 32, 4	0.375 [9.53]
SCBM	0, 2, 3, 35, 36, 37, 5, 55, 57, 65, 7, 75, 77, 85	0.250 [6.35]
SCBC	0, 1, 12, 13, 14	0.375 [9.53]
SCBDD	21, 3, 35, 36, 37, 4, 45, 47, 65, 84	0.250 [6.35]
SCBCD	0, 1, 12, 13, 14	0.375 [9.53]

NOTE:

*1 Contact termination code as specified in Step 4 of ordering information.

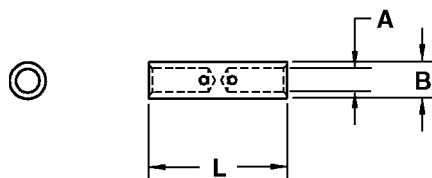
Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

CUL-DE-SAC STYLE MOUNTING ACCESSORIES CODE C5 AND C7



Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

IN-LINE CRIMP SPLICE



Consult Technical Sales for
crimp tool part number.

NOTE:

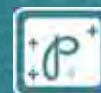
*1 To order crimp splice with insulating sleeve, add "-W" suffix to part number. To order without sleeve, add "-N" suffix.

PART NUMBER	WIRE SIZE AWG / [mm ²]	L	A	B
PSK43636-*1	20-26 [0.5/0.12]	0.500 [12.70]	0.045 [1.14]	0.076 [1.93]
PSK43637-*1	16-20 [1.5/0.5]	0.575 [14.61]	0.066 [1.68]	0.101 [2.57]
PSK43638-*1	12-18 [4.0-1.0]	0.577 [14.66]	0.097 [2.46]	0.150 [3.81]

Materials:

Splice: Copper alloy, 0.000050 [1.27 μ] gold over copper.

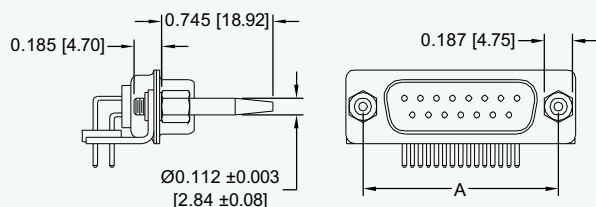
Sleeve: Shrink-fit polyvinylidene fluoride.



BLIND MATING SYSTEM

BLIND MATING GUIDES

TO OBTAIN BLIND MATING GUIDES, ADD THE SUFFIX
"-759.42" TO THE END OF THE PART NUMBER.



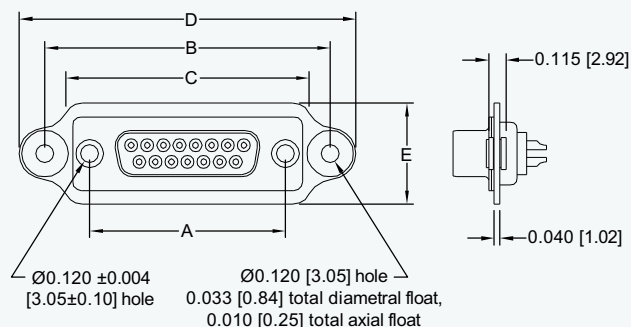
TYPICAL PART NUMBER:
SND15M5R700G-759.42

Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

CONNECTOR VARIANT (SHELL SIZE)	A	B	C	D	E
9/15 (SHELL SIZE 1)	0.984 [24.99]	1.586 [40.28]	1.333 [33.86]	1.930 [49.02]	0.677 [17.20]
15/26 (SHELL SIZE 2)	1.312 [33.32]	1.914 [48.62]	1.661 [42.19]	2.258 [57.35]	0.677 [17.20]
25/44 (SHELL SIZE 3)	1.852 [47.04]	2.461 [62.51]	2.208 [56.08]	2.805 [71.25]	0.677 [17.20]
37/62 (SHELL SIZE 4)	2.500 [63.50]	3.102 [78.79]	2.849 [72.36]	3.446 [87.53]	0.677 [17.20]
50/78 (SHELL SIZE 5)	2.406 [61.11]	3.008 [76.40]	2.755 [69.98]	3.352 [85.14]	0.789 [20.04]

PANEL MOUNTING

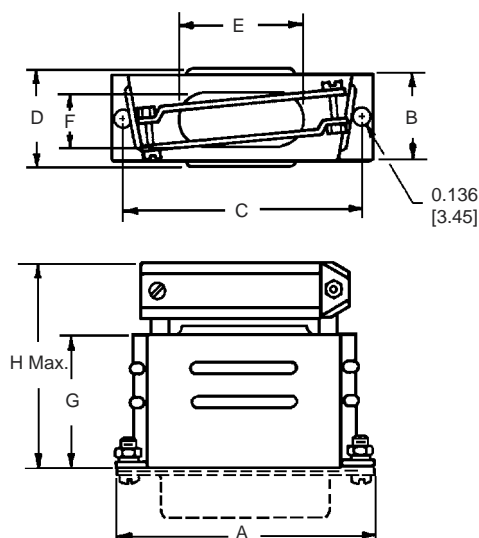
TO OBTAIN PANEL MOUNTING, ADD THE SUFFIX
"-759.43" TO THE END OF THE PART NUMBER.



TYPICAL PART NUMBER:
SND15S2000G-759.43

Material: Aluminum, yellow anodize standard.

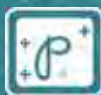
METAL CABLE ADAPTER (HOOD) CODE H



TYPICAL PART NUMBER:
SND15M00H0G

CONNECTOR VARIANT (SHELL SIZE)	PART NO.	A	B	C	D MAX.	E	F	G	H MAX.
15/26 (SHELL SIZE 2)	SND15000H0G	1.531 [38.88]	0.492 [12.50]	1.312 [33.32]	0.578 [14.68]	0.713 [18.11]	0.312 [7.92]	0.750 [19.05]	1.219 [30.96]
25/44 (SHELL SIZE 3)	SND25000H0G	2.078 [52.78]	0.492 [12.50]	1.852 [47.04]	0.578 [14.68]	1.000 [25.40]	0.312 [7.92]	1.000 [25.40]	1.532 [38.91]
37/62 (SHELL SIZE 4)	SND37000H0G	2.718 [69.03]	0.492 [12.50]	2.500 [63.50]	0.578 [14.68]	1.375 [34.93]	0.312 [7.92]	1.000 [25.40]	1.532 [38.91]
50/78 (SHELL SIZE 5)	SND50000H0G	2.625 [66.68]	0.601 [15.27]	2.406 [61.11]	0.687 [17.45]	1.406 [35.71]	0.406 [10.31]	1.125 [28.58]	1.657 [42.09]

Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.



Positronic Industries
connectpositronic.com

ACCESSORIES

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub



LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD) CODE AN

TECHNICAL CHARACTERISTICS

MATERIAL AND FINISHES:

Hood & Cable Clamps: Aluminum with electroless nickel plate. Zinc content is 1% maximum.

Jackscrews & Screws: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

Other plating and finishes are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Ground Screws: Can accept up to 0.250 inch [6.35mm] diameter ring terminal.

Locking System: Jackscrews, see below and page 92 for more information.

CLIMATIC CHARACTERISTICS:

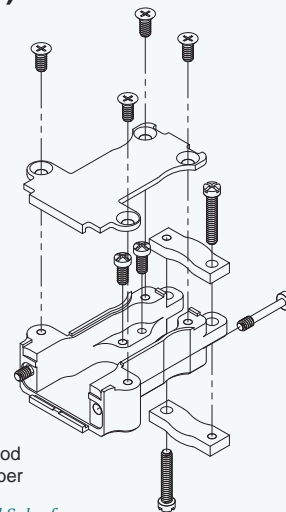
Temperature Range: -55°C to +125°C

ELECTRICAL CHARACTERISTICS:

Range of Operation, Calculated Method: 2 GHz minimum.

WEIGHT CHART:

HOOD SIZE	D*1000ANE ounces [grams]
9	1.08 [30.54]
15	1.32 [37.44]
25	1.62 [45.92]
37	2.19 [62.06]
50	2.26 [63.94]
104	2.41 [68.44]
All hardware in a hood assembly including cable clamps, screws, etc.	



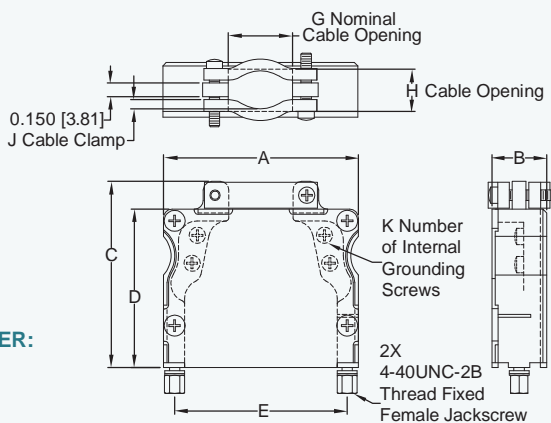
NOTE:

*1 designates hood size in part number

Contact Technical Sales for weights on T2, E6, and E7 hardware options.

LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD) WITH FIXED FEMALE JACKSCREWS CODE ANT2

Also available with Polarized Fixed Jackscrews. Contact Technical Sales for details.



TYPICAL PART NUMBER:
D25000ANT2G



D15000ANT2G- Lightweight aluminum hood with fixed female jackscrews, pictured above with connector installed.

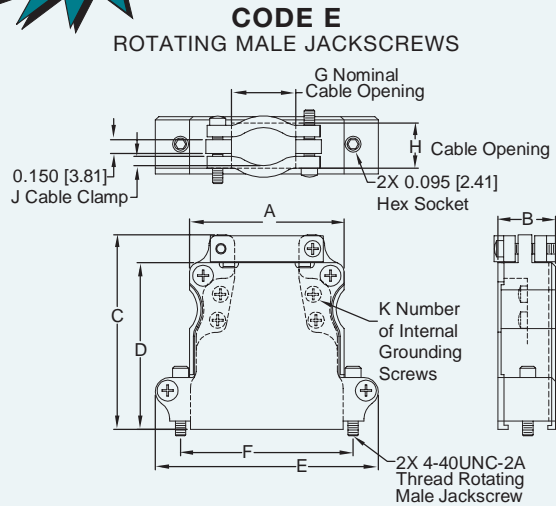
SHELL SIZE	CONNECTOR / CONTACT VARIANT COMPATIBILITY		PART NUMBER	A	B	C	D	E	G	H		J	K
										Min.*2	Max.		
1	Std-D: 9 High-D: 15	Combo-D: 5W1, 2WK2 Combo-D High-D: 8W2	D9000ANT2G	1.219 [30.96]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	0.984 [24.99]	0.362 [9.19]	0.240 [6.10]	0.453 [11.51]	0.050 [1.27]	4
2	Std-D: 15 High-D: 26	Combo-D: 3W3, 3WK3, 7W2, 11W1 Combo-D High-D: 19W1	D15000ANT2G	1.547 [39.29]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	1.312 [33.32]	0.690 [17.53]	0.350 [8.89]	0.453 [11.51]	0.100 [2.54]	4
3	Std-D: 25 High-D: 44	Combo-D: 5W5, 9W4, 13W3, 17W2, 21W1 Combo-D High-D: 15W4	D25000ANT2G	2.094 [53.19]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	1.852 [47.04]	0.690 [17.53]	0.350 [8.89]	0.453 [11.51]	0.100 [2.54]	4
4	Std-D: 37 High-D: 62	Combo-D: 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2 Combo-D High-D: 45W2	D37000ANT2G	2.736 [69.49]	0.586 [14.88]	2.250 [57.15]	1.950 [49.53]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.453 [11.51]	0.130 [3.30]	6
5	Std-D: 50 High-D: 78	Combo-D: 24W7, 36W4, 43W2, 47W1 Combo-D High-D: n/a	D50000ANT2G	2.642 [67.11]	0.689 [17.73]	2.250 [57.15]	1.950 [49.53]	2.406 [61.11]	1.242 [31.55]	0.410 [10.41]	0.564 [14.33]	0.130 [3.30]	6
6	Std-D: n/a High-D: 104	Combo-D: 46W4 Combo-D High-D: n/a	D104000ANT2G	2.736 [69.49]	0.760 [19.30]	2.250 [57.15]	1.950 [49.53]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.627 [15.93]	0.130 [3.30]	6

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

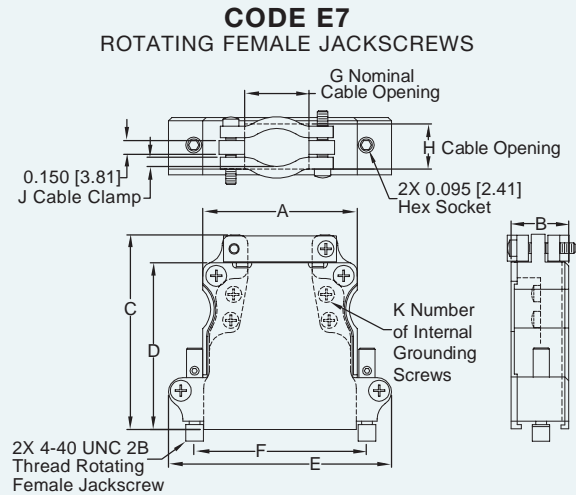
NOTE: *1 Smaller cable openings may be achieved by inverting one or both cable clamps.



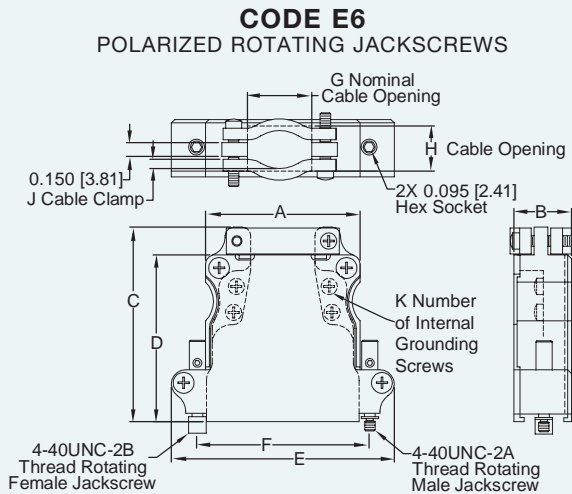
LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD)
WITH ROTATING JACKSCREWS
CODE ANE, ANE6, AND ANE7



TYPICAL PART NUMBER: D25000ANE^G

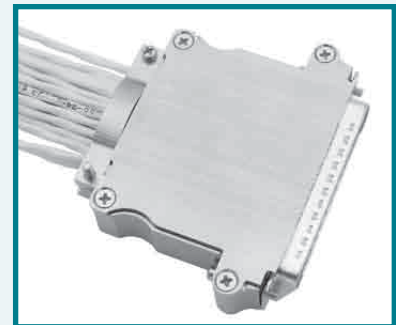


TYPICAL PART NUMBER: D25000ANE7^G



TYPICAL PART NUMBER: D25000ANE6^G

*For Technical
Characteristics,
see page 91
for details.*

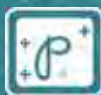


D37000ANE^G- Lightweight aluminum hood with rotating male jackscrews, pictured above with connector installed.

SHELL SIZE	CONNECTOR / CONTACT VARIANT COMPATIBILITY		PART NUMBER	A	B	C	D	E	F	G	H		J	K
											Min.*2	Max.		
1	Std-D: 9 High-D: 15	Combo-D: 5W1, 2WK2 Combo-D High-D: 8W2	D9000AN*1 ^G	0.908 [23.06]	0.616 [15.65]	2.090 [53.09]	1.790 [45.47]	1.524 [38.71]	0.984 [24.99]	0.362 [9.19]	0.240 [6.10]	0.483 [12.27]	0.050 [1.27]	4
2	Std-D: 15 High-D: 26	Combo-D: 3W3, 3WK3, 7W2, 11W1 Combo-D High-D: 19W1	D15000AN*1 ^G	1.236 [31.39]	0.616 [15.65]	2.090 [53.09]	1.790 [45.47]	1.852 [47.04]	1.312 [33.32]	0.690 [17.53]	0.350 [8.89]	0.483 [12.27]	0.100 [2.54]	4
3	Std-D: 25 High-D: 44	Combo-D: 5W5, 9W4, 13W3, 17W2, 21W1 Combo-D High-D: 15W4	D25000AN*1 ^G	1.656 [42.06]	0.616 [15.65]	2.090 [53.09]	1.790 [45.47]	2.392 [60.76]	1.852 [47.04]	0.690 [17.53]	0.350 [8.89]	0.483 [12.27]	0.100 [2.54]	4
4	Std-D: 37 High-D: 62	Combo-D: 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2 Combo-D High-D: 45W2	D37000AN*1 ^G	2.304 [58.52]	0.616 [15.65]	2.340 [59.44]	2.040 [51.82]	3.040 [77.22]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.483 [12.27]	0.130 [3.30]	6
5	Std-D: 50 High-D: 78	Combo-D: 24W7, 36W4, 43W2, 47W1 Combo-D High-D: n/a	D50000AN*1 ^G	2.210 [56.13]	0.727 [18.47]	2.340 [59.44]	2.040 [51.82]	2.946 [74.83]	2.406 [61.11]	1.242 [31.55]	0.410 [10.41]	0.594 [15.09]	0.130 [3.30]	6
6	Std-D: n/a High-D: 104	Combo-D: 46W4 Combo-D High-D: n/a	D104000AN*1 ^G	2.304 [58.52]	0.790 [20.07]	2.340 [59.44]	2.040 [51.82]	3.040 [77.22]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.657 [16.69]	0.130 [3.30]	6

NOTES: *1 For completed part number, insert the desired code (E, E6 or E7) for required jackscrew option.
*2 Smaller cable openings may be achieved by inverting one or both cable clamps.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



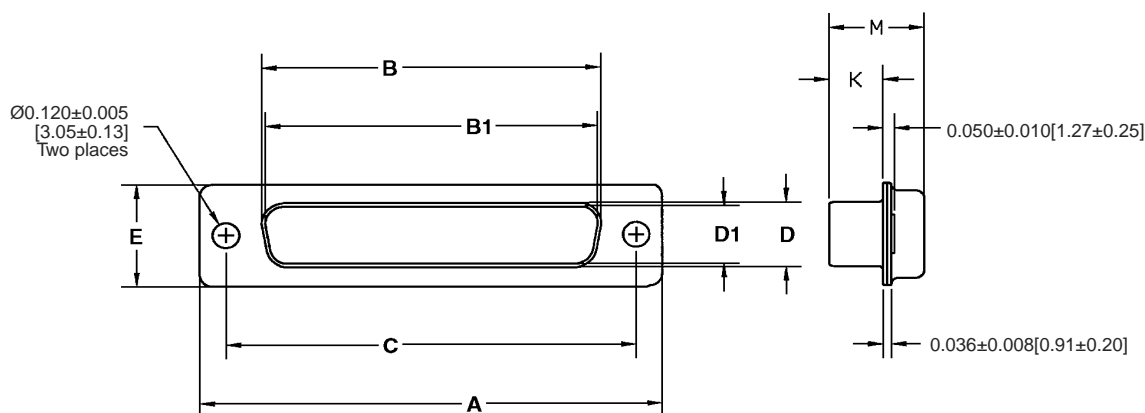
Positronic Industries
connectpositronic.com

ACCESSORIES

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

EMI/RFI PROTECTIVE COVER



COVER PART NUMBER	COVER MATES TO	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	K ±0.005 [0.13]	M ±0.010 [0.25]
PSK633-9MG*1	Female 9 / 15	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.233 [5.92]	0.422 [10.72]
PSK633-9FG*1	Male 9 / 15	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	0.429 [10.90]
PSK633-15MG*1	Female 15 / 26	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	0.233 [5.92]	0.422 [10.72]
PSK633-15FG*1	Male 15 / 26	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	0.429 [10.90]
PSK633-25MG*1	Female 25 / 44	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	0.230 [5.84]	0.426 [10.82]
PSK633-25FG*1	Male 25 / 44	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	0.429 [10.90]
PSK633-37MG*1	Female 37 / 62	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	0.230 [5.84]	0.426 [10.82]
PSK633-37FG*1	Male 37 / 62	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	0.243 [6.17]	0.429 [10.90]
PSK633-50MG*1	Female 50 / 78	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	0.230 [5.84]	0.426 [10.82]
PSK633-50FG*1	Male 50 / 78	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	0.243 [6.17]	0.429 [10.90]
PSK633-104MG*1	Female - / 104	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		0.503 [12.78]	0.668 [16.97]	0.230 [5.84]	0.426 [10.82]
PSK633-104FG*1	Male - / 104	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	0.485 [12.32]		0.668 [16.97]	0.243 [6.17]	0.429 [10.90]

Material: Brass, 0.000050 [1.27 µ] gold over copper.

NOTE:

*1 To order protective cover with E2 rotating male screw locks (see page 94), insert "N" into the last digit of part number. Omit this digit if thread locks are not required.



SND25M1000G with PSK633-25FGN installed.



JACKSCREW SYSTEMS

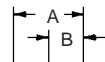
CODE T*1, T2*1, E, E2 AND E3

Note:

***1** T or T2 jackscrew supplied on connectors *in combination with other accessories may differ dimensionally*, contact Technical Sales for more information.

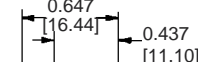
CODE	A	B
T*1	0.437 [11.10]	0.250 [6.35]
T2*1	0.500 [12.70]	0.198 [5.03]

T*1/T2*1



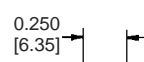
FIXED FEMALE JACKSCREWS

E/E3



ROTATING MALE JACKSCREWS

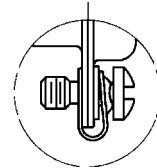
E2



ROTATING MALE SCREW LOCKS

Jackscrew Material: Brass, 0.000050 inch [1.27 μ] gold over copper plate.

E = slotted for screw driver
E3 = internal hex for 3/32 hex drives



NOTE: Stainless steel jackscrews are available.
Consult Technical Sales for ordering information.

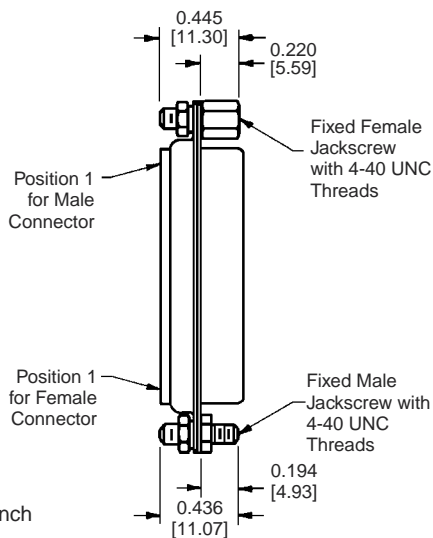
Material: Screw - Brass, 0.000050 inch [1.27 μ] gold over copper plate.

U-Clip - Copper alloy, 0.000050 inch [1.27 μ] gold over copper plate.

POLARIZED JACKSCREW SYSTEMS

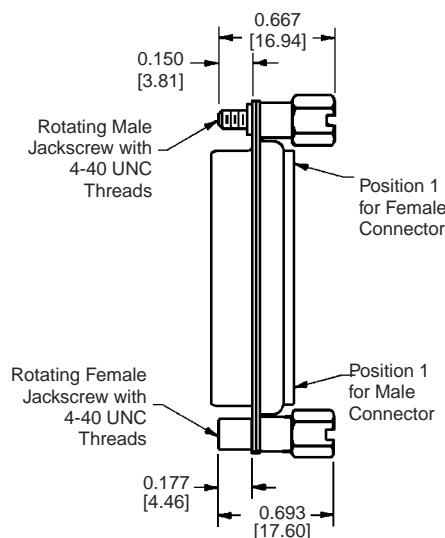
CODE T6 AND E6

T6



FIXED MALE AND FEMALE JACKSCREWS

E6*2



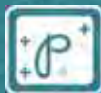
ROTATING MALE AND FEMALE JACKSCREWS

Note:

***1** For customer installation of knobs onto jackscrews, **set screw torque value of 16 in/oz is recommended.** Recommend application of thread lock to set screw.

Material:
Brass, 0.000050 inch [1.27 μ] gold over copper plate.

Material:
Brass, 0.000050 inch [1.27 μ] gold over copper plate.



Positronic Industries
connectpositronic.com



SPECIAL OPTIONS MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

MODIFICATION (MOS) SUFFIXES

Specify complete connector by selecting a base part number from the desired series [Ordering Information Page](#).

Once base part number is selected, add desired modifications (MOS) number below to the end of the part number.

Example part number: SND9M5R7SNT2G-1768.33

(Ordering information pages can be found at the end of each series)

SERIES	CONNECTOR VARIANT	GENDER	TERMINATION TYPE AVAILABLE	MODIFICATION OF STANDARD (MOS) SUFFIXES	DESCRIPTION OF MODIFICATION
SND, SDD, SCBM, SCBC, SCBDD, SCBCD, SAD, SADD, SACBMP	ALL	MALE FEMALE	ALL	-54	Allows connector with contacts installed, for size 22, size 20 and size 16 contacts only to be plated 0.0000100 [2.54 µ] gold over copper.
SND, SDD, SCBM, SCBDD	ALL	MALE FEMALE	4, 5	-367.9	Allows connector to be supplied with contacts inverted.
SND, SDD, SCBC, SCBM, SCBDD, SCBCD	ALL	MALE FEMALE	ALL	-759.42	Allows connector to be supplied with blind mate guides, lockwashers and hexnuts installed. For connectors with a 4-40 threaded mounting style install blind mate guides only. For connectors with a R3/R6 mounting style install special blind mate guides with lockwashers and hexnuts. See page 90 in accessories section for more information.
SND, SDD, SCBM, SCBC, SCBDD, SCBCD, SAD, SADD	ALL	MALE FEMALE	ALL	-759.43	Allows connector, with any contacts to include blind mate mounting plate. See page 90 in accessories section for more information.
SND, SDD, SCBC, SCBM, SCBDD, SCBCD	ALL	MALE FEMALE	ALL	-1144.8	Allows connector to have Group A inspection per Goddard Spec GSFC-S-311-P-4 performed. Certifications included with shipment.
SCBM	3W3, 8W8	MALE FEMALE	0	-1570.4	Integral stabilizing feature used to minimize size 8 contacts from floating in the molding. Use tool number 4311-0-1-0 to removed contact if necessary. See page 74 in unique feature section for more information.
SCBC	36W4, 43W3				
SND, SDD	ALL	MALE FEMALE	ALL	-1768.33	Allows connector to be permanently marked with single lot/date code. Individual package and label per MIL-C-5530. Inspect per GSFC-S-311-P-4. Failure analysis reports. Certifications included with shipment.
MANY OTHER SPECIAL OPTIONS ARE AVAILABLE CONSULT TECHNICAL SALES OR VISIT OUR WEB SITE AT WWW.CONNECTPOSITRONIC.COM					

Connectors Designed To Customer Specifications

Positronic High Performance D-subminiature connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware; sealing for water resistance.

Contact Technical Sales with your particular requirements.



A P P L I C A T I O N T O O L S S E C T I O N

High Performance D-subminiature connectors are
offered with **removable crimp contacts**.

Positronic Industries recognizes the **importance of**
supplying **application tooling** to support our
customers' use of our products.

Information on application tooling is
available on our web site at

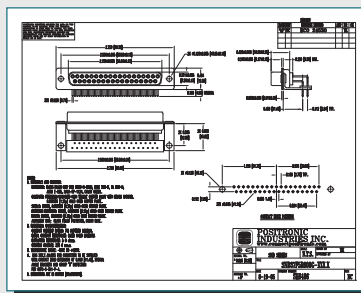
<http://www.connectpositronic.com/products/157/ApplicationTooling>

There you will find **downloadable PDF** cross reference
charts for removable contacts. These charts will
supply part numbers for insertion, removal and crimping tools,
along with **information regarding use** of tools and techniques.

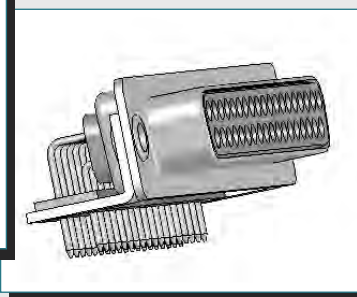


Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



2-D Drawing



3-D Model



Positronic Industries
connectpositronic.com

APPLICATION TOOLS

MILITARY / SPACE FLIGHT QUALITY

High
Performance
D-sub

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Positronic Contact P/N	Contact Size	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv	Insertion Tool	Mfg. Cross	Mil Equiv	Removal Tool	Mfg. Cross	Mil Equiv	Automatic Crimp Tool
FC117NA-50	16		9501-0-0-0	AF8	M2520/1-01	9502-39-0-0	TH713		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
FC120N4-50	16		9501-0-0-0	AF8	M2520/1-01	9502-39-0-0	TH713		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
FC4008M		9504-19-0-0	9504-1-0-0	HX4	M2520/5-05	9504-19-1-0	Y524		N/A			4311-0-0-0	P+		9550-2-0-0
FC4017M	8	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+		9550-2-0-0
FC4107M		9504-0-0-0	9504-1-0-0	HX4	M2520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+		
FC6018M2		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-11-0-0	K774		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6020M2	20	9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6026M2		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC8020M2	22	9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-29-0-0	K1665		N/A			N/A			
FC8022M2		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-3-0-0	K-41		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	9550-1-0-0
FCC4101M		9504-14-0-0	9504-1-0-0	HX4	M2520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+		
FCC4102M		9504-13-0-0	9504-1-0-0	HX4	M2520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
FCC4103M		9504-13-0-0	9504-1-0-0	HX4	M2520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
FCC4104M		9504-15-0-0	9504-1-0-0	HX4	M2520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
FDS4**M	8								N/A			4311-0-0-0	P+		
FRT4**M									N/A			4311-0-0-0	P+		
FS4008M									N/A			4311-0-0-0	P+		
FS4017M									N/A			4311-0-0-0	P+		
FS4107M									N/A			4311-0-0-0	P+		
FS420M									N/A			4311-0-0-0	P+		
FS6020M2	20								4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	
FS8022M2									4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	
G08P1	22		9507-0-0-0	AFM8	M2520/2-01	9502-4-0-0	K-42		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	
G08S1, G08S2		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-3-0-0	K-41		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	
G10P1	20		9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	
G10S1, G10S2		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	
M39029S7-354	22		9507-0-0-0	AFM8	M2520/2-01	9502-3-0-0	K-41		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	
M39029S5-360		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-4-0-0	K-42		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	
M39029S6-368	20		9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	
M39029S6-369		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	
MC11N-50-133.0	16		9502-1-0-0	AF8	M2520/1-01	9502-17-0-0	TP1110		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC120N-133.0		9501-0-0-0	9501-0-0-0	AF8	M2520/1-01	9502-17-0-0	TP1110		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC4008M		9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+		9550-2-0-0
MC4017M	8	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+		9550-2-0-0
MC4107M		9504-0-0-0	9504-1-0-0	HX4	M2520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+		
MC6018M		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-11-0-0	K774		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6020M	20		9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6026M		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-5-0-0	K13-1		4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC8020M	22		9507-0-0-0	AFM8	M2520/2-01	9502-29-0-0	K1665		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	9550-1-0-0
MC8022M		9507-0-0-0	9507-0-0-0	AFM8	M2520/2-01	9502-4-0-0	K-42		4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	9550-1-0-0
MCC4101M		9504-14-0-0	9504-1-0-0	HX4	M2520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+		
MCC4102M		9504-13-0-0	9504-1-0-0	HX4	M2520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
MCC4103M		9504-13-0-0	9504-1-0-0	HX4	M2520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
MCC4104M		9504-15-0-0	9504-1-0-0	HX4	M2520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
MDS4**M	8								N/A			4311-0-0-0	P+		
MRT4**M									N/A			4311-0-0-0	P+		
MS4008M									N/A			4311-0-0-0	P+		
MS4017M									N/A			4311-0-0-0	P+		
MS420M									N/A			4311-0-0-0	P+		
MS6020M2	20								4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MS8022M2	22								4811-2-0-0	91067-1	M81969/1-04	4811-2-0-0	91067-1	M81969/1-04	9550-1-0-0
PSK43363*		9504-18-0-0	9504-1-0-0	HX4	M2520/5-01	9504-18-1-0	Y516		N/A			N/A			
PSK4363*		9504-18-0-0	9504-1-0-0	HX4	M2520/5-01	9504-18-1-0	Y516		N/A			N/A			
PSK4363B*		9504-18-0-0	9504-1-0-0	HX4	M2520/5-01	9504-18-1-0	Y516		N/A			N/A			
PSK4363B*		9504-18-0-0	9504-1-0-0	HX4	M2520/5-01	9504-18-1-0	Y516		N/A			N/A			

To download a PDF file, visit our web site at http://www.connectpositronic.com/pdf_view/178/

* For complete listing of contact part numbers, see removable contact section pages 77-85.

APPLICATION TOOLS

*1 All male and female crimp contacts can be ordered on reels in quantities of 2,000 by adding letter "R" after the contact part number, see page 60 for more information.



Positronic® offers a variety of QPL connector products

D-SUBMINIATURE CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/1	HDC
MIL-DTL-24308/2	RD, DD
MIL-DTL-24308/3	HDC
MIL-DTL-24308/4	RD, DD
MIL-DTL-24308/5	HDC
MIL-DTL-24308/6	RD, DD
MIL-DTL-24308/7	HDC
MIL-DTL-24308/8	RD, DD
MIL-DTL-24308/23	HDC, DD

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/24	HDC, DD
MIL-DTL-24308/25	HDC, RD, DD
MIL-DTL-24308/26	HDC, RD, DD
GSFC S-311-P4	SND, SDD, SCBC, SCBM
GSFC S-311-P10	SND, SCBM
SAE AS39029/57	DD
SAE AS39029/58	DD
SAE AS39029/63	RD
SAE AS39029/64	RD

RECTANGULAR CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/3	GMCT
MIL-DTL-28748/4	GMCT
MIL-DTL-28748/5	GM
MIL-DTL-28748/6	GM
MIL-DTL-28748/7	SGM

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/8	SGM
MIL-C-28748/13	SGMC
MIL-C-28748/14	SGMC
SAE AS39029/34	SGMC, GMCT
SAE AS39029/35	SGMC, GMCT

For a complete QPL listing available to download in PDF format, visit the desired connector family home page and click on link "Qualified Product Listing (PDF)" on our website at:

www.connectpositronic.com

or enter the URL link below to download the QPL PDF file immediately!

http://www.connectpositronic.com/pdf_view/222/

Positronic Hermetic Connector Assemblies



- **Leakage Rate:** 5×10^{-9} mbar.l/s
@ vacuum 1.5×10^{-5} atm
- **Shock and vibration resistant**
- **Application Specific Design**



Positronic Industries can supply hermetic connector assemblies for use in vacuum applications. All Positronic hermetic connectors are designed to act as feedthroughs through the bulkhead/chamber wall. Typically both sides of the connector have mating faces, but certain contact terminations are also available per customer requirement. Typical configurations include:

- **Standard Density D-subminiature** (Contact size 20)
- **High Density D-subminiature** (Contact size 22)
- **Mixed Density D-subminiature** (Contact sizes 8 and 20 in a single package)
- **Circular** (Variety of contact sizes and configurations)

In addition to simply providing the hermetic connector itself, Positronic can provide a fully-assembled flange/plate according to customer specification (see above).

For more information on Positronic hermetic capabilities, please call (800) 641-4054 and request to speak to someone about the Positronic hermetic product line.

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
To 200 amperes per contact

Current Ratings: Crimp and panel mount, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Terminations: Multiple variants in a variety of package sizes
Configurations: MIL-DTL 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4,
Compliance: GSFC S-311-P-10

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven shell sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact variants and package sizes
- Connector keying options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cabled connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Leakage rate: 5 x 10⁻⁹ mbar.l/s @ vacuum 1.5 x 10⁻⁵ atm
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices 800 641 4054 info@connectpositronic.com

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices 800 641 4054 info@connectpositronic.com

MEXICO

Factory Sales and Engineering Offices 800 872 7674 info@connectpositronic.com

CANADA

Factory Sales and Engineering Offices 800 327 8272 info@connectpositronic.com

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices 65 6842 1419 singapore@connectpositronic.com

ASIA, Direct Sales Offices

China -Zhuhai Factory and Sales Office	86 756 3626 466	zhuhai@connectpositronic.com
China -Shenzhen Sales Office	86 755 2643 7578	shenzhen@connectpositronic.com
China -Shanghai Sales Office	86 158 2907 9779	shanghai@connectpositronic.com
China -Xian/Beijing Sales Office	86 29 8839 5306	xian@connectpositronic.com
Korea Sales Office	82 31 909 8047	korea@connectpositronic.com
Taiwan Sales Office	886 2 2937 8775	taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices 81 3 5619 8072 japan@connectpositronic.com

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices	91 20 2439 4810	india@connectpositronic.com
Bangalore Sales Office	91 94 4907 3251	bangalore@connectpositronic.com
New Delhi Sales Office	91 80 1071 1175	delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines, Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 5 6263 4491 contact@connectpositronic.com

EUROPE, Direct Sales Offices

Northern France Sales Office	33 1 4588 1388	jchalaux@connectpositronic.com
Southern France Sales Office	33 5 6263 4491	plafon@connectpositronic.com
Eire + Northern Ireland	33 5 6263 4557	tauvin@connectpositronic.com
Italy Sales Office	39 02 5411 6106	rmagni@connectpositronic.com
Germany Sales Office	49 23 5163 4739	cbouche@connectpositronic.com
UK Sales Office	44 7975 682 488	lbridwell@connectpositronic.com

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Russia, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC
GLOBAL *Connector* SOLUTIONS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel 417 866 2322 • Fax 417 866 4115 • Toll Free 800 641 4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 5 6263 4491 • Fax 33 5 6263 5117
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone 65 6842 1419 • Fax 65 6842 1421
singapore@connectpositronic.com

LOCATIONS

ENVIRONMENTAL-D

D-subminiature Connectors



Positronic®
global connector solutions

**WATER & DUST
INGRESS PROTECTION
NEMA 250-1991
MIL-STD 1344
IEC 60529**

LOOK
FOR OUR
NEW PRODUCTS!

NEW!



Catalog C-006 Rev A

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.



WIN-D STANDARD DENSITY SEALED D-SUBMINIATURE, IMPROVED UNIBODY DESIGN



The WD Unibody design provides a one piece connector body providing superior sealing performance. Solder cup, straight and right angle (90°) printed board mount terminations. Five connector variants, 9-50 contacts. Size 20 contacts, professional level performance, IP67.



WIN-DD HIGH DENSITY SEALED D-SUBMINIATURE, IMPROVED UNIBODY DESIGN



The WDD Unibody design provides a one piece connector body providing superior sealing performance. Solder cup, straight and right angle (90°) printed board mount terminations. Three connector variants, 15, 26 and 44 contacts, with more variants being tooled. Size 22 contacts, professional level performance, IP67.



WIN-D STANDARD DENSITY SEALED D-SUBMINIATURE, LEGACY DESIGN

The WD legacy design uses high quality material and manufacturing techniques to provide sealing. Solder cup, straight and right angle (90°) printed board mount terminations. Two connector variants: 25 (male) and 50 (male) contacts. All other standard density connector variants are supplied as Unibody, see description above. Size 20 contacts, professional level performance, IP67.



WIN-DD HIGH DENSITY SEALED D-SUBMINIATURE, LEGACY DESIGN

The WDD legacy design uses high quality material and manufacturing techniques to provide sealing. Solder cup, straight and right angle (90°) printed board mount terminations. Three connector variants: 44 (male), 62 and 78 contacts. All other high density connector variants are supplied as Unibody, see description above. Size 22 contacts, professional level performance, IP67.



WIN-D AND WIN-DD PRE-WIRED, SEALED FREE CABLE, D-SUBMINIATURE

WD and WDD series connectors can be supplied pre-wired to provide a sealed, free cable connector option. Ten connector variants - standard density 9, 15, 25, 37, and 50; high density 15, 26, 44, 62 and 78. Can be used as a cable to cable or cable to fixed connector system.

ENVIRO-D, STANDARD DENSITY SEALED, CABLE CONNECTOR, REMOVABLE CRIMP CONTACTS, D-SUBMINIATURE

The EVD series utilizes rear connector grommets to provide a sealed connector for use with removable crimp contacts. Five connector variants, 9 through 50. Size 20 contacts; standard and thermocouple crimp contacts. Immersion per MIL-STD 810. Performance conforms to IP67, and applicable requirements of MIL-DTL-24308 and SAE AS39029.



Positronic
connectpositronic.com

TABLE OF CONTENTS

Environmental
D-Sub

GENERAL INFORMATION

Ingress Protection Connection Systems 1, 2 and 3	1-5
Unibody and Legacy Design Environmental Sealing Features	6
Connector Sealing Plate	7
Information Relative to Coupling of WD, WDD and EVD Series Connectors.	8

WD SERIES - IMPROVED UNIBODY DESIGN

Technical Characteristics	9-10
Contact Variants	11
Code 2 Solder Cup	11
Code 3 Straight Printed Board Mount Terminations	11
Code 5 Right Angle (90°) Printed Board Mount Termination	12
Right Angle (90°) and Straight Printed Board Mount Contact Hole Pattern.	12
Ordering Information	13



WDD SERIES - IMPROVED UNIBODY DESIGN

Technical Characteristics	14-15
Contact Variants	16
Code 2 Solder Cup	16
Code 3 Straight Printed Board Mount Terminations	16
Code 4 Right Angle (90°) Printed Board Mount Termination	17
Right Angle (90°) and Straight Printed Board Mount Contact Hole Pattern	17
Ordering Information	18



WD SERIES

Technical Characteristics	19-20
Contact Variants	21
Code 2 Solder Cup	21
Code 3 Straight Printed Board Mount Terminations	21
Code 5 Right Angle (90°) Printed Board Mount Termination	22
Right Angle (90°) and Straight Printed Board Mount Contact Hole Pattern	22
Ordering Information	23

WDD SERIES

Technical Characteristics	24-25
Contact Variants	26
Code 2 Solder Cup	26
Code 3 Straight Printed Board Mount Terminations	26
Code 4 Right Angle (90°) Printed Board Mount Termination	27
Right Angle (90°) and Straight Printed Board Mount Contact Hole Pattern	27
Ordering Information	28



P R E - W I R E D W D / W D D S E R I E S

Technical Characteristics	29-30
Standard Density Contact Variants; Code 22 Solder Cup Termination Free Connector with Flying Leads and Code 23 Solder Cup Termination Panel Mounted Connector with Flying Leads	31
High Density Contact Variants; Code 22 Solder Cup Termination Free Connector with Flying Leads and Code 23 Solder Cup Termination Panel Mounted Connector with Flying Leads	32
Ordering Information	33
Special Options - Ordering Information	34

E V D S E R I E S

Technical Characteristics	35-36
Contact Variants	36
Standard Shell Assembly	37
EVD Series Design Environmental Sealing Features	38
Sealing Plug	38
Interfacial Seals and Rear Grommets	38
Removable Crimp Contacts	39-40
Contact Reels For Automatic Pneumatic Crimp Tools	40
Ordering Information	41

A C C E S S O R I E S

Cul-de-sac Mounting Accessories	42
Enclosure Wall Mount Sealing Plate	42
Interfacial Seal	42
Composite Hoods	43
Molded Cable Assembly	43
Enclosure Wall Cutout	44
Protective Cover	44

U N I Q U E F E A T U R E S

Introduction	45
Other Sealed D-subminiature Connectors Options	45
Machined Aluminum Mounting Plate with Conductive O-ring	46
Outside Wall Enclosure Mount	46
Lightweight Aluminum Hood	46
Other Environmental Connector Offerings	47

A P P L I C A T I O N T O O L S

Introduction	47
Application Tool Cross Reference List	48

A P P E N D I X

Explanation of Ingress Protection (IP) System for Enclosures	49
Description of NEMA Enclosure Types	50
Comparison between NEMA Enclosure Type Numbers and IEC Enclosure Classification Designations	51

POSITRONIC CABLIZED CONNECTORS

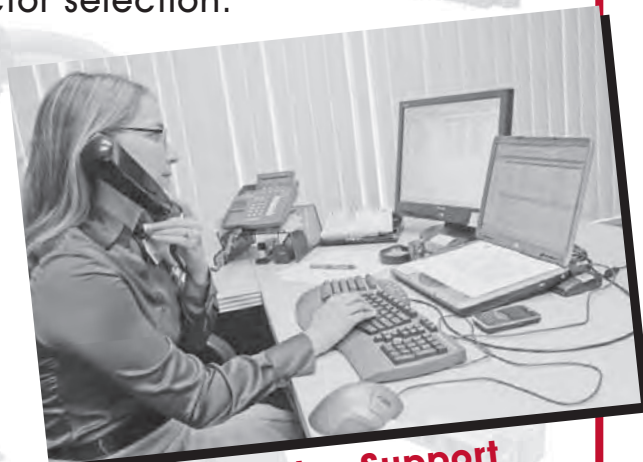
SAVE TIME AND MONEY!

Let Positronic support you by cablizing your
WD / WDD / EVD connector selection.

Cable Assembly Design Support

We work closely with customers to:

1. Design assemblies in accordance with customer specifications.
2. Prepare cablized connector configuration and performance specifications.
3. Design each system in accordance with applicable customer, domestic, and international standards.
4. Define and conduct performance and verification testing.



Technical Sales Support



Engineering Support



Puerto Rico Cable Assembly



Quality Assurance

FOR MORE DETAILS CONTACT **TECHNICAL SALES**

OR VISIT OUR **WEB SITE** AT:

CONNECTPOSITRONIC.COM/CABLE-ASSEMBLIES

INGRESS PROTECTION CONNECTION SYSTEMS

Electronic equipment is frequently used for outdoor or other applications requiring environmental protection. To answer industry's demand for affordable connection systems compatible with environmental protection to IEC 60529 and NEMA 250-1991 performance requirements for electrical enclosures, Positronic has introduced three dust and water ingress protection connection systems.

SYSTEM 1 is an enclosure mounted connector assembly. The connection system is designed for periodic electrical operation after being exposed to a variety of environmental conditions.

SYSTEM 2 is an enclosure mounted connector assembly, which is coupled to a compatible free cable connector. The connection system is designed for continuous electrical operation while being subjected to varying environmental conditions.

SYSTEM 3 is a cable to cable connection system designed for continuous electrical operation while subjected to varying environmental conditions.

An explanation of the dust and water ingress protection requirements as defined by IEC 60529 Degrees of Protection Provided by Enclosures, and NEMA 250-1991 Enclosures for Electrical Equipment, may be found in the Appendix section of this catalog. (See section beginning on page 49)

It is recommended that readers familiarize themselves with the technical information and ingress protection rating systems contained in the Appendix so that a better understanding of dust and water ingress protection connection systems can be achieved.





Positronic
connectpositronic.com

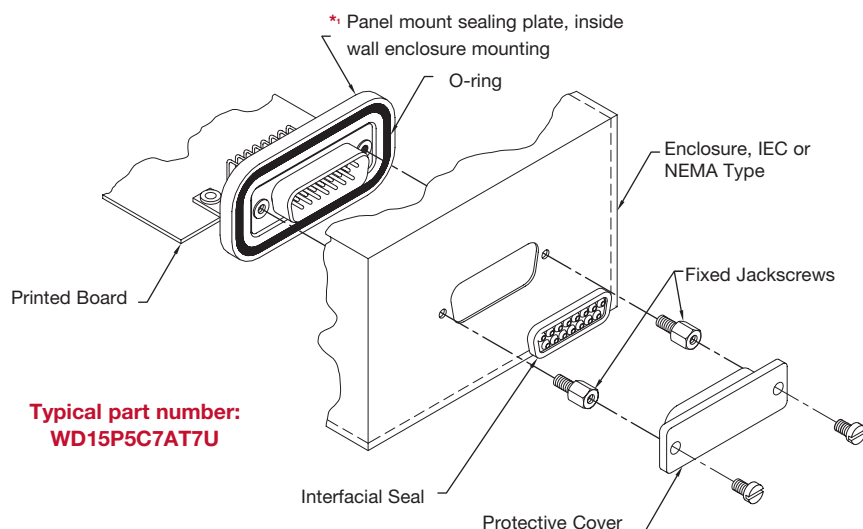
GENERAL INFORMATION

Environmental
D-Sub

CONNECTION SYSTEM 1

FIXED ENCLOSURE MOUNTED CONNECTOR

Provides ingress protection in an unmated condition.



Typical part number:
WD15P5C7AT7U

This type of ingress protection can be achieved by selecting:

WD Series (page 13)

OR

WDD Series (page 18)

Note:

* Outside enclosure wall panel mount sealing plate also available. See Unique Features section, page 46.

SYSTEM 1

System 1 consists of an input/output connector mechanically mounted and sealed to an enclosure. The connector and enclosure together provide a degree of protection from dust and moisture in accordance with IEC or NEMA ingress protection requirements. The enclosure and connector may be exposed to dust, splashing water, rain, or limited water immersion during its use.

“Corrosion Protection” option is standard. When “Corrosion Resistance” is a requirement, the connector is equipped with stainless steel shells and jackscrews, and contacts plated 0.000030 inch [0.76 µ] gold over nickel.

CONNECTOR/ENCLOSURE ENVIRONMENTAL RATINGS

IEC 60529 Classification
Designations Rated to
IP67 Degree of Protection
(See Appendix for detail)

IP67, “Corrosion Protected”

Dust tight and limited effects of water immersion, 0.5 meters for 30 minutes. Corrosion protected with zinc plated chromate sealed shells and jackscrews. Contacts plated gold flash over nickel.

IP67, “Corrosion Resistance”

Dust tight and limited effects of water immersion 0.5 meters for 30 minutes. Corrosion resistant with stainless steel shells and jackscrews. Contacts plated 0.000030 inch [0.76 µ] gold over nickel.

NEMA Enclosure Types
Approximate Equivalents of
IP67 Degree of Protection
(See Appendix page 49 for details)

NEMA Types 3, 3R, 4 and 6

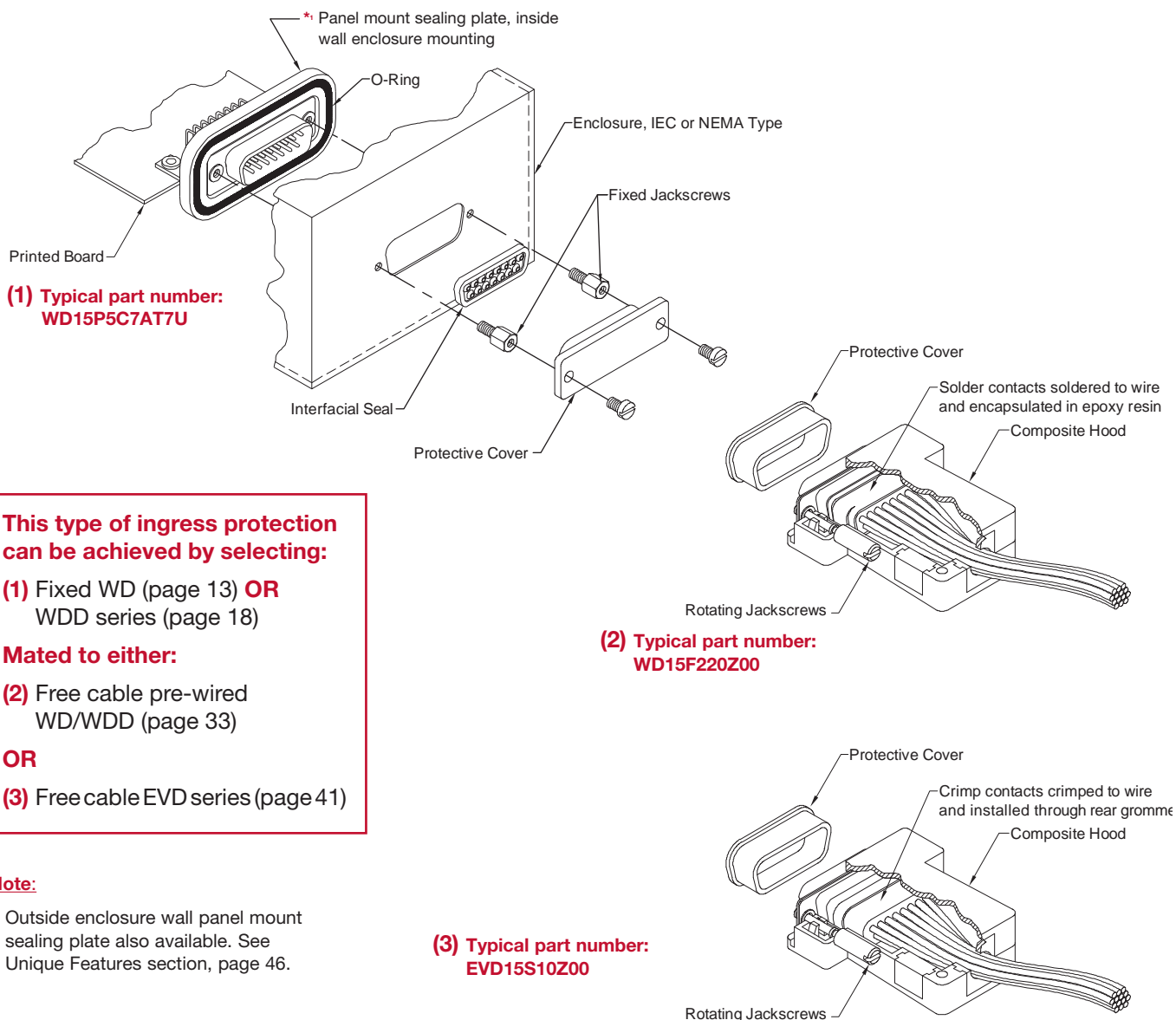
NEMA Type 4X

For information regarding IEC 60529 and NEMA 250-1991, see Appendix, page 49.

CONNECTION SYSTEM 2

FIXED ENCLOSURE MOUNTED CONNECTOR MATED TO FREE CABLE CONNECTOR

Provides ingress protection of connector system for continuous electrical operation.



This type of ingress protection can be achieved by selecting:

(1) Fixed WD (page 13) OR WDD series (page 18)

Mated to either:

(2) Free cable pre-wired WD/WDD (page 33)

OR

(3) Free cable EVD series (page 41)

Note:

* Outside enclosure wall panel mount sealing plate also available. See Unique Features section, page 46.

SYSTEM 2

System 2 consists of a fixed input/output connector and a compatible free cable connector. The system is normally in operation and may be exposed to dust, splashing water, rain, limited water immersion or hose directed water.

The fixed connector is selected from the connectors offered in System 1. The mating (free or cable) connector must be electrically, mechanically, and chemically compatible with

the fixed connector. This requirement enables System 2 to provide the desired **“Corrosion Resistance”** or **“Corrosion Protection”** and maintain the degree of ingress protection IP67 as specified in IEC 60529.

The male connector of System 2 is always equipped with an interfacial seal.



Positronic
connectpositronic.com

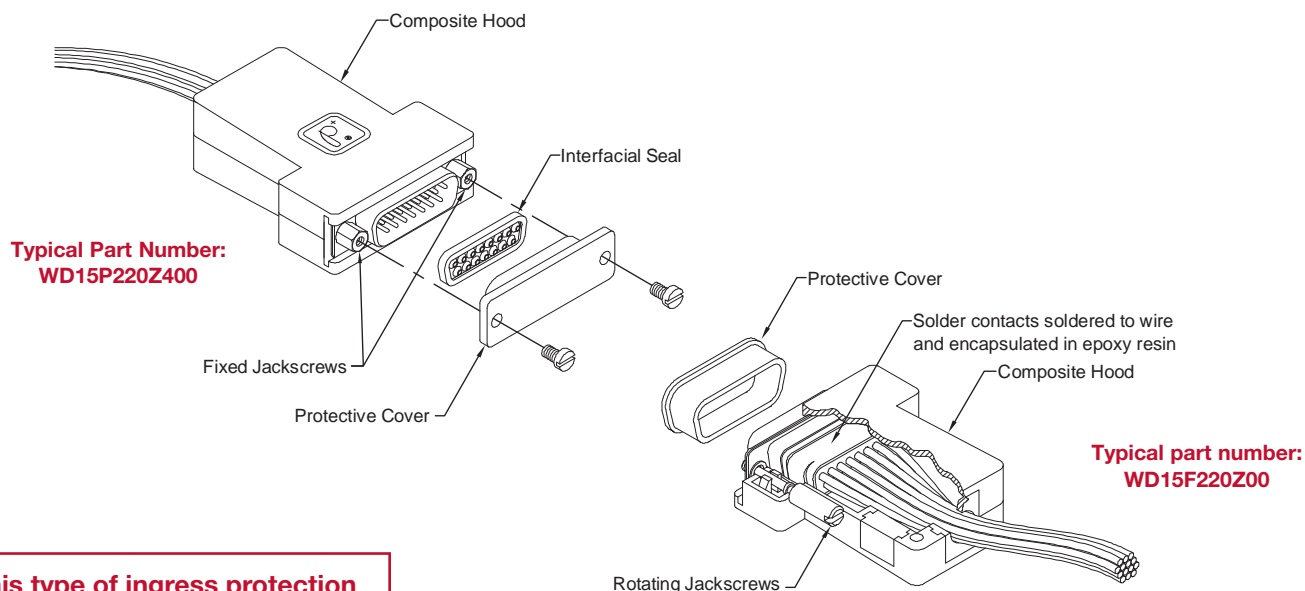
GENERAL INFORMATION

E_{nvironmental}
D-S_{ub}

CONNECTION SYSTEM 3

FREE CABLE-TO-CABLE PRE-WIRED CONNECTORS

Provides ingress protection of connector system for continuous electrical operation.



This type of ingress protection can be achieved by selecting:

Free cable pre-wired
WD/WDD (page 33)

Note:

Shell sizes 3, 4 & 5 only: heat shrink is provided in cable clamp area over wiring bundle.

SYSTEM 3

System 3 is a cable-to-cable interconnection system consisting of two free cable connectors. The system is normally in operation and may be exposed to dust, splashing water, rain, limited water immersion or hose directed water.

The connectors must be electrically, mechanically, and chemically compatible with each other. This requirement

enables System 3 to provide the desired level of “**Corrosion Resistance**” or “**Corrosion Protection**” and maintain the degree of ingress protection IP67 as specified in IEC 60529.

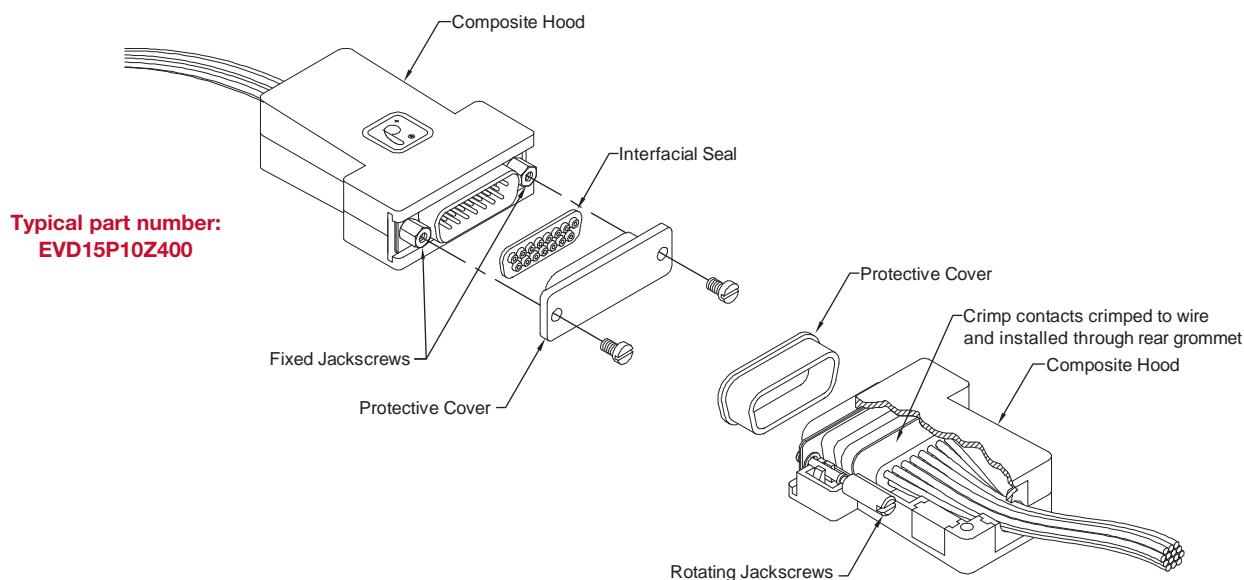
The male connector of System 3 is always equipped with an interfacial seal.

For information regarding IEC 60529 and NEMA 250-1991, see Appendix, page 49.

CONNECTION SYSTEM 3

FREE CABLE-TO-CABLE CONNECTORS WITH CRIMP REMOVABLE CONTACTS

Provides ingress protection of connector system for continuous electrical operation.



Typical part number:
EVD15P10Z400

**This type of ingress protection
can be achieved by selecting:**

Free cable EVD series (page 41)

Typical part number:
EVD15S10Z00

SYSTEM 3

System 3 is a cable-to-cable interconnection system consisting of two free cable connectors. The system is normally in operation and may be exposed to dust, splashing water, rain, limited water immersion or hose directed water.

The connectors must be electrically, mechanically, and chemically compatible with each other. This requirement

enables System 3 to provide the desired level of **“Corrosion Resistance”** or **“Corrosion Protection”** and maintain the degree of ingress protection IP67 as specified in IEC 60529.

The male connector of System 3 is always equipped with an interfacial seal.

*For information regarding **IEC 60529** and **NEMA 250-1991**, see Appendix, page 49.*



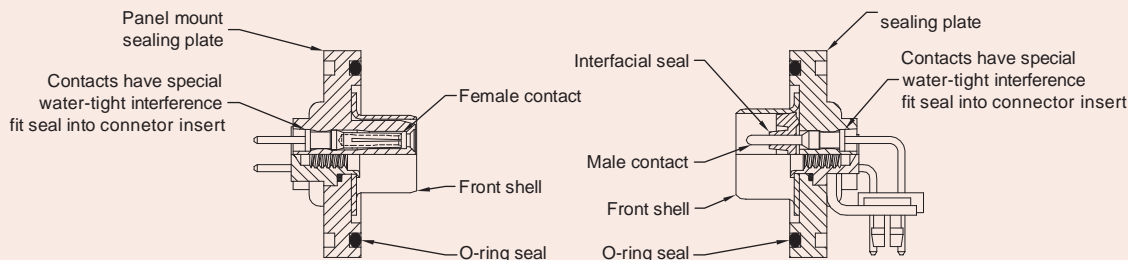
Positronic
connectpositronic.com

GENERAL INFORMATION

Environmental
D-Sub

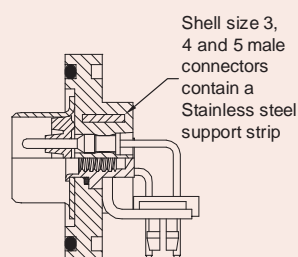


WD SERIES UNIBODY DESIGN ENVIRONMENTAL SEALING FEATURES



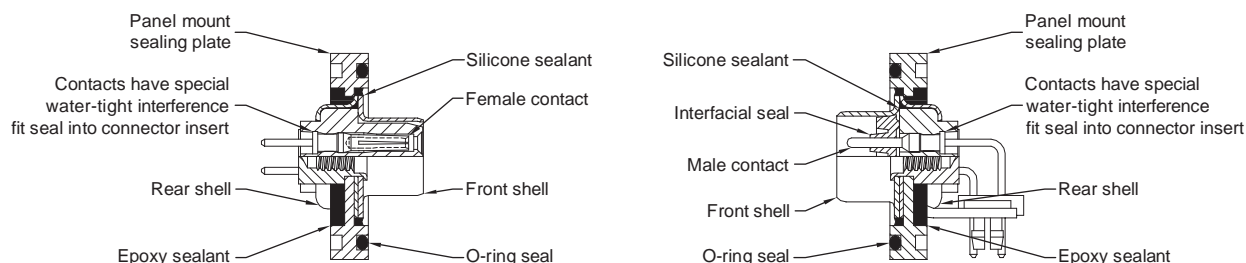
FEATURES:

- Popular, economical option for applications requiring **sealed** connectors.
- One piece **Unibody** connector insert eliminates need for secondary sealing processes.
- Improved temperature range, increased performance, and lower cost.

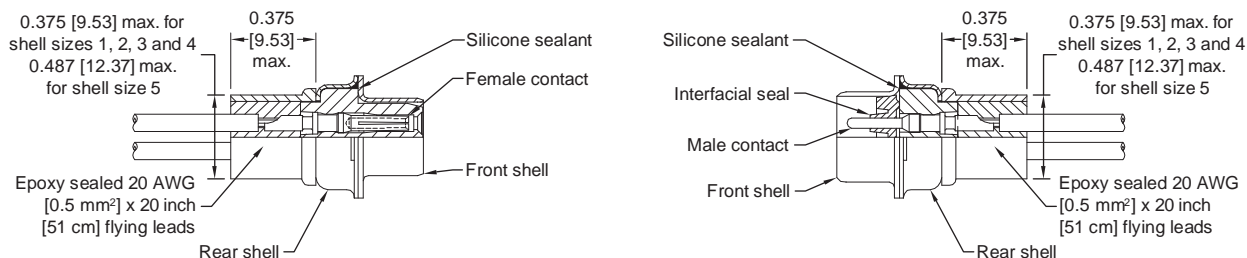


WD SERIES LEGACY DESIGN ENVIRONMENTAL SEALING FEATURES

ENCLOSURE MOUNTED CONNECTORS SYSTEMS 1 AND 2

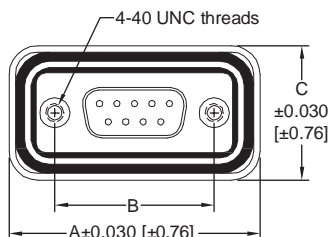


PRE-WIRED CABLE CONNECTORS SYSTEMS 2 AND 3



Information regarding the **SEALING DESIGN FEATURES** of the EVD series on page 38.

CONNECTOR SEALING PLATE



SHELL SIZE	CONNECTOR VARIANT		A	B	C
	WD SERIES STANDARD DENSITY	WDD SERIES HIGH DENSITY			
1	9	15	1.550 [39.37]	0.984 [24.99]	0.830 [21.08]
2	15	26	1.878 [47.70]	1.312 [33.32]	0.830 [21.08]
3	25	44	2.418 [61.42]	1.852 [47.04]	0.830 [21.08]
4	37	62	3.066 [77.88]	2.500 [63.50]	0.830 [21.08]
5	50	78	2.972 [75.49]	2.406 [61.11]	0.941 [23.90]
6	--	104	Contact Technical Sales For Availability		

Connectors Designed To Customer Specifications

Positronic's WD / WDD / EVD connectors can be modified to customers specifications.

*Examples: select loading of contacts for cost savings or to gain creepage and clearance distances;
longer printed circuit board terminations; customer specified hardware.*

Contact Technical Sales with your particular requirements.



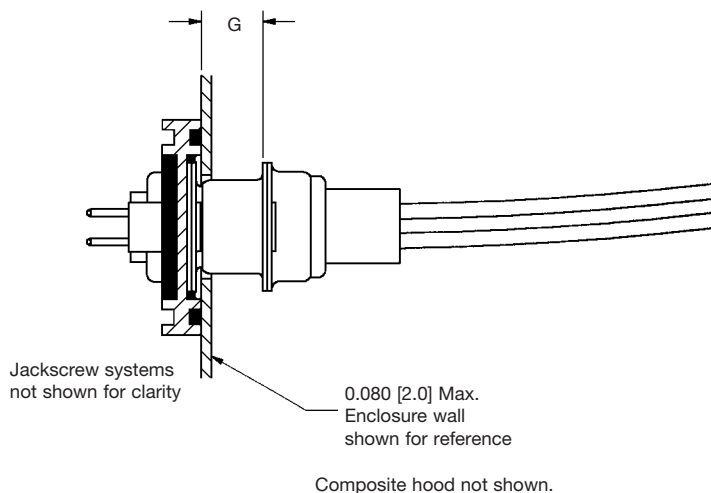
Positronic
connectpositronic.com

GENERAL INFORMATION

E_{nvironmental}
D-S_{ub}

INFORMATION RELATIVE TO COUPLING OF WD, WDD AND EVD SERIES CONNECTORS RECOMMENDED COUPLING DIMENSION TO ENSURE WATER AND DUST INGRESS PROTECTION

SHELL SIZE	SERIES		G	
	WD, EVD	WDD	MIN.	MAX.
1	9	15	$\frac{0.230}{[5.84]}$	$\frac{0.260}{[6.60]}$
2	15	26	$\frac{0.230}{[5.84]}$	$\frac{0.260}{[6.60]}$
3	25	44	$\frac{0.221}{[5.61]}$	$\frac{0.251}{[6.38]}$
4	37	62	$\frac{0.221}{[5.61]}$	$\frac{0.251}{[6.38]}$
5	50	78	$\frac{0.221}{[5.61]}$	$\frac{0.251}{[6.38]}$



WD25P5C7AT7S

WDD15F220Z40



WD UNIBODY SERIES

IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
STANDARD DENSITY FIXED CONTACTS



Popular, economical option for applications requiring **sealed** connectors.



One piece **Unibody** connector insert eliminates need for secondary sealing processes.
See page 6 for details.



Improved temperature range, increased performance, and lower cost.



Fixed, size 20 contacts



Terminations include solder cup, straight and right angle (90°) printed board mount.
See pre-wired ordering information (page 33) for free/cable connectors.



Five connector variants with 9, 15, 25, 37, and 50.



Corrosion protected and corrosion resistant options.



A wide variety of options and accessories.



Connectors Conforms to:

- IP 67 per IEC 60529
- IEC 60807-2, Performance Level 2
- UL File # E49351
- CSA File # LR 54219

Telecommunication:

- UL File # E140980

TECHNICAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS:

WIN-D series connectors mounted on IEC 60529 or NEMA 250-1991 enclosures.

WIN-D Connector Panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosure on which they are mounted. WIN-D connector enclosure assemblies provide dust and water ingress protection to IP67. Refer to Appendix A for details of IP 67 ratings and NEMA enclosure types 6 and 4X, as well as other IEC and NEMA enclosures having less stringent environmental requirements.

ENVIRONMENTAL TEST SPECIFICATIONS:

Applicable IEC Moisture Tests:

IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. **Requirements:** No water to have penetrated enclosure through connector.

continued on next page. . . .



Positronic
connectpositronic.com



WD UNIBODY SERIES

IMPROVED UNIBODY DESIGN PROFESSIONAL QUALITY STANDARD DENSITY FIXED CONTACTS

Environmental
D-Sub

TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . . .

IP67 IEC 60529, Test 14.2.7: Temporary immersion, 1.0 meter for 30 minutes. **Requirements:** No water to have penetrated enclosure through connector.

Applicable IEC Connector Tests After Moisture Conditioning Has Been Performed:

IEC 60512-2, Test 3a: Insulation Resistance
IEC 60512-2, Test 4a: Voltage proof
Requirements: Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.

- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

Connector Insert: Nylon resin, UL 94V-0 black color.
Contacts: Precision machined copper alloy.
Contact Plating:
Corrosion Protection: Gold flash over nickel plate.
Corrosion Resistant: Gold plate 0.000030 inch [0.76 µ] over nickel plate.

Shells, Jackscrew Systems and

Cul-de-sac Mounting Accessories:

Corrosion Protection: Steel, zinc plated with chromate seal.
Corrosion Resistant: Stainless steel passivated.

Push-on Fasteners: Phosphor bronze with tin plate.
Angle Brackets: Brass, zinc plate with chromate seal.
Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.

Panel Mount Sealing

Plate Assembly: Glass filled thermoplastic with elastomer O-ring. Shell size 3, 4, and 5 male connectors contain stainless steel support strip.

Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed Contacts: Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact - rugged open entry design.

Contact Retention in Insulator: 6 lbs. [27N]

Contact Terminations: Solder cup contacts - 0.042 inch [1.06 mm] minimum hole diameter for 20 AWG [0.5 mm²] wire maximum.

Straight printed board mount - 0.028 inch [0.71 mm] termination diameter.

Right angle (90°) printed board mount - 0.028 inch [0.71 mm] termination diameter for all printed board contact footprints.

Coding (keying): Trapezoidally shaped shells.

Enclosure Mounting Accessories:

Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.

Inside Wall Enclosure Mount:

Minimum thickness 0.040 inch [1.02 mm]. Maximum thickness 0.080 inch [2.03 mm].

Locking Systems: Jackscrews.
Mechanical Operations: 500 operations minimum per IEC 60512-5.
Required Sealing
Plate Mounting Torque:

1.75 in-lb. [0.20 Nm] minimum.
2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes nominal,
Initial Contact Resistance: 0.008 ohms maximum.
Insulator Resistance: 5 G ohms.
Clearance and Creepage
Distance Minimum: 0.039 inch [1.0mm].
Proof Voltage: 1000 V r.m.s.
Working Voltage: 300 V r.m.s.

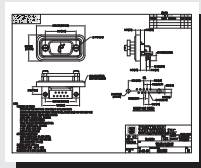
CLIMATIC CHARACTERISTICS:

Temperature Range: -40°C to +125°C

Visit our web site for the latest catalog updates and supplements at
www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog

Do you need 2-D drawings or 3-D models?

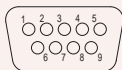
Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.





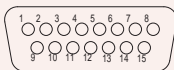
CONTACT VARIANTS *

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



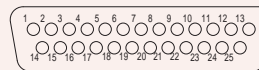
WD 9

Available with male and female contacts



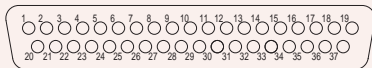
WD 15

Available with male and female contacts



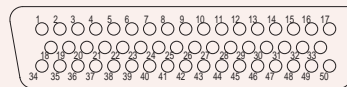
WD 25

Currently available with female contacts.
For male contact variants, see page 21.



WD 37

Available with male and female contacts

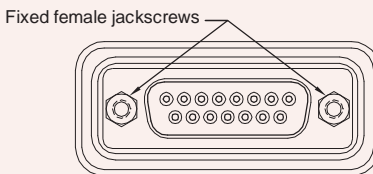
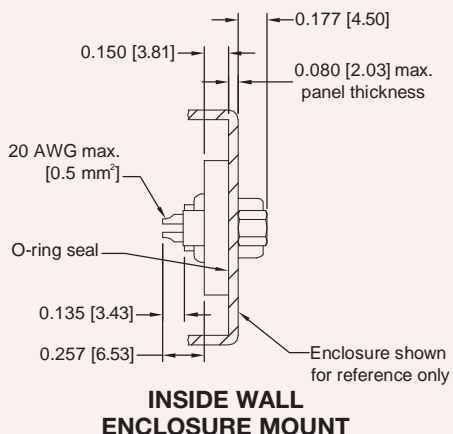


WD 50

Currently available with female contacts.
For male contact variants, see page 21.

* If a variant is not listed above, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 21.
For sealing plate dimensions see page 7.

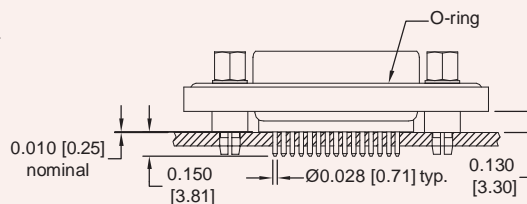
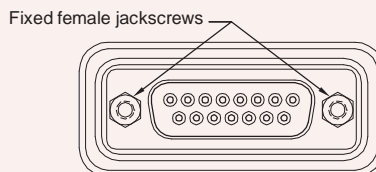
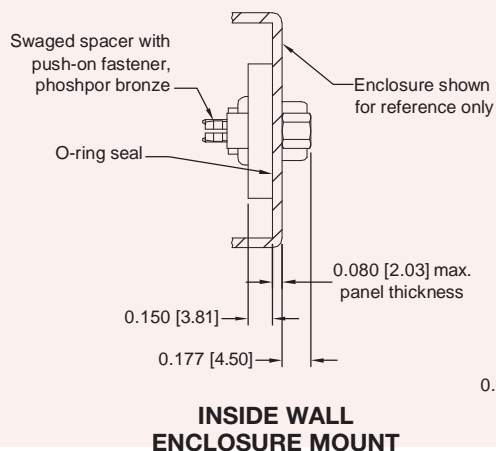
SOLDER CUP TERMINATION WITH ENCLOSURE WALL MOUNT SEALING PLATE CODE 2



Typical part number:
WD15F2C5AT7U

**OUTSIDE WALL
ENCLOSURE MOUNT**
Not available in Unibody design.
See Unique Feature
section, page 46.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION WITH ENCLOSURE WALL MOUNT SEALING PLATE CODE 3, 0.150 [3.81] CONTACT EXTENSION



**OUTSIDE WALL
ENCLOSURE MOUNT**
Not available in Unibody design.
See Unique Feature
section, page 46.

Typical part number:
WD15F3C8AT7U



Positronic
connectpositronic.com



WD UNIBODY SERIES

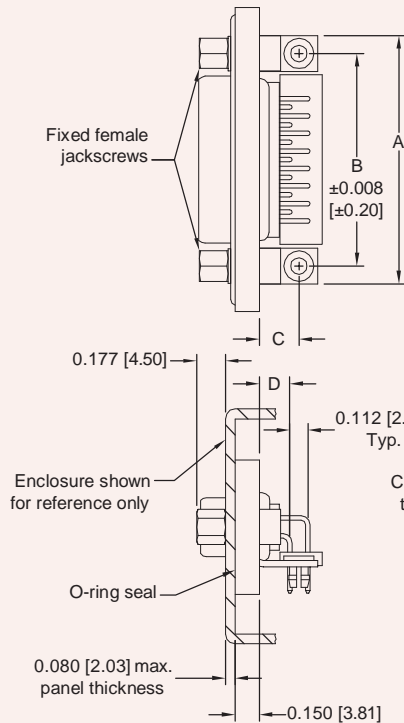
IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
STANDARD DENSITY FIXED CONTACTS

Environmental
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

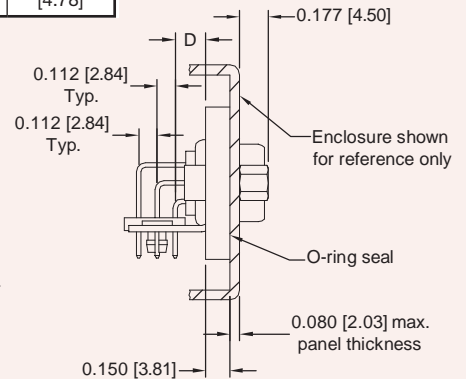
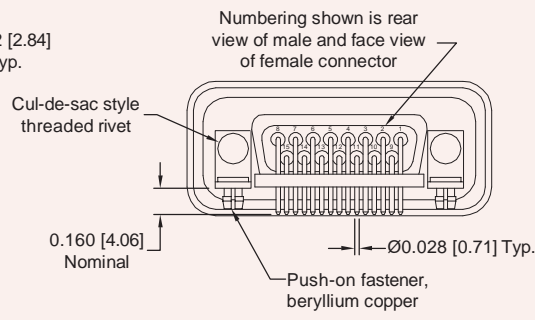
WITH ENCLOSURE MOUNT SEALING PLATE
CODE 5, 0.188 [4.78] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT



Typical Part Number:
WD15P5C7AT7U

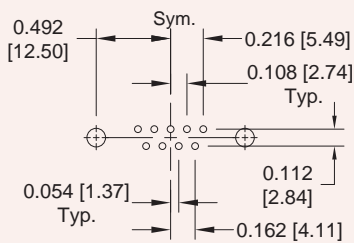
WD**5***U 0.188 [4.78] CONTACT EXTENSION				
PART NUMBER	A	B	C	D
WD9*5***U	1.204 [30.58]	0.984 [24.99]	0.244 [6.20]	0.188 [4.78]
WD15*5***U	1.532 [38.91]	1.312 [33.32]	0.244 [6.20]	0.188 [4.78]
WD25F5***U	2.072 [52.63]	1.852 [47.04]	0.244 [6.20]	0.188 [4.78]
WD37*5***U	2.720 [69.09]	2.500 [63.50]	0.244 [6.20]	0.188 [4.78]
WD50F5***U	2.626 [66.70]	2.406 [61.11]	0.300 [7.62]	0.188 [4.78]



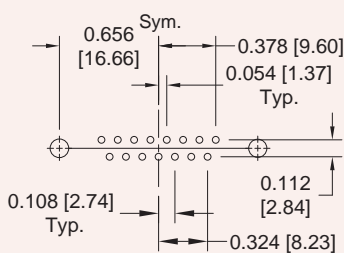
Typical Part Number:
WD50F5C7AT7U

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

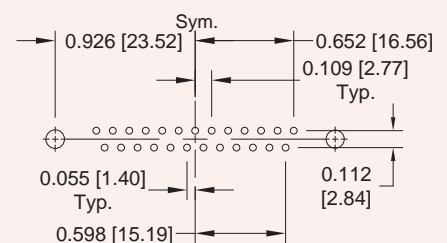
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



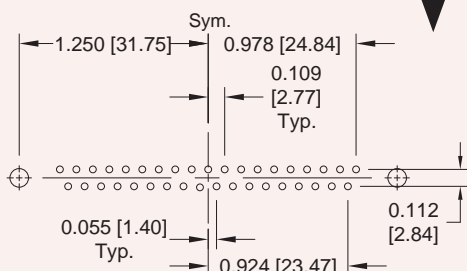
WD 9



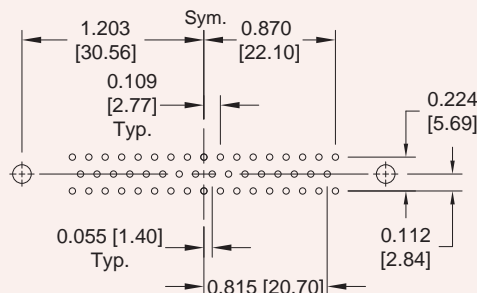
WD 15



WD 25



WD 37



WD 50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners.

Suggest 0.045 [1.14] Ø hole for contact termination positions.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† **Unibody is the preferred design.** If a variant is not listed in Step 2, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 21.

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	WD	9	F	2	C5	A	T7	SU	/AA	

STEP 1 - BASIC SERIES

WD - WD Unibody series

† STEP 2 - CONNECTOR VARIANTS

- 9 - Male and Female
- 15 - Male and Female
- † 25 - Female only
- 37 - Male and Female
- † 50 - Female only

STEP 3 - CONNECTOR GENDER

- P - Male with interfacial seal
- F - Female

*2 STEP 4 - CONTACT TERMINATION TYPE

- 2 - Solder cup
- 3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
- 5 - Solder, right angle (90°) printed board mount, contact extension 0.188 [4.78].

*1 STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES

- C5 - Inside wall mounting for Code 2 and 3 (step 4) only.
- C7 - Inside wall mounting for Code 5 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener.
- C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener.

NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.

STEP 10 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive
2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WD9F2C5AT7SU



STEP 8 - SHELLS AND ACCESSORY OPTIONS

- U - **Corrosion Protected Unibody Design**
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.
- SU- **Corrosion Resistant Unibody Design**
Stainless steel shells and jackscrews
Contacts 0.000030 inch [0.76μ] gold plated over nickel.

*1 STEP 7 - FEMALE FIXED JACKSCREWS

T7 - Always used when ordering C5, C7 and C8 (Step 5).

*1 STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE

A - Inside wall enclosure mounted connector.

NOTE:

- *1 For additional information listed in Steps 5, 6, and 7, see the Accessories section, page 42.
- *2 See pre-wired ordering information, page 33, for free/cable connectors.

Do you need 2-D drawings or 3-D models?

See page 10 for more information



Positronic
connectpositronic.com



WDD UNIBODY SERIES

IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
HIGH DENSITY FIXED CONTACTS

Environmental
D-Sub



Popular, economical, high density option for applications requiring **sealed** connectors.



One piece **Unibody** connector insert eliminates need for secondary sealing processes.
See page 6 for details.



Improved temperature range, increased performance, and lower cost.



Fixed, size 22 contacts



Terminations include solder cup, straight and right angle (90°) printed board mount.
See pre-wired ordering information (page 33) for free/cable connectors.



Three connector variants include 15, 26 and 44, with more being tooled.
See WDD section (page 26) for all other high density sizes.



Corrosion protected and corrosion resistant options.



A wide variety of options and accessories.



Connectors Conforms to:

- IP 67 per IEC 60529
- UL File # E49351
- CSA File # LR 54219

Telecommunication:

- UL File # E140980

TECHNICAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS:

WIN-DD series connectors mounted on IEC 60529 or NEMA 250-1991 enclosures.

WIN-DD connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosure on which they are mounted. WIN-DD connector enclosure assemblies provide dust and water ingress protection to IP67. Refer to Appendix A for detail of IP 67 ratings and NEMA enclosure types 6 and 4X, as well as other enclosures having less stringent environmental requirements.

ENVIRONMENTAL TEST SPECIFICATIONS:

Applicable IEC Moisture Tests:

IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. **Requirements:** No water to have penetrated enclosure through connector.

continued on next page. . .



TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . . .

IP67 IEC 60529 Test 14.2.7: Temporary immersion, 1.0 meter for 30 minutes. **Requirements:** No water to have penetrated enclosure through connector.

Applicable IEC Connector Tests After Moisture Conditioning Has Been Performed:

- IEC 60512-2, Test 3a:** Insulation Resistance
- IEC 60512-2, Test 4a:** Voltage proof
- Requirements:** Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.
- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

- Connector Insert:** Nylon resin, UL 94V-0 black color.
- Contacts:** Precision machined copper alloy
- Contact Plating:**
- Corrosion Protection:** Gold flash over nickel plate.
- Corrosion Resistant:** Gold plate 0.000030 inch [0.76 µ] over nickel plate.

Shell, Jackscrew Systems and Cul-de-sac Mounting Accessories:

- Corrosion Protection:** Steel, zinc plated with chromate seal.
- Corrosion Resistant:** Stainless steel passivated.
- Push-on Fasteners:** Phosphor bronze with tin plate.
- Angle Brackets:** Brass, zinc plate with chromate seal.
- Interfacial Seal:** Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.
- Panel Mount Sealing Plate Assembly:** Glass filled thermoplastic with elastomer O-ring.
- Protective Cover Over Connector Shell:** Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:

- Size 22 Fixed Contacts:** Male contact - 0.030 inch [0.75 mm] mating diameter. Female contact - rugged open entry design.
- Contact Retention in Connector insert:** 6 lbs. [27N]
- Contact Terminations:** Solder cup contacts - 0.035 inch [0.89 mm] minimum hole diameter for 22 AWG [0.3 mm²] wire maximum. Straight printed board mount - 0.020 inch [0.51 mm] termination diameter. Right angle (90°) printed board mount contact terminations 0.030 inch [0.76 mm] termination diameter. Trapezoidally shaped shells.
- Coding (keying):**
- Enclosure Mounting Accessories:** Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.
- Inside Wall Enclosure Mount:** Minimum thickness 0.040 inch [1.02 mm]. Maximum thickness 0.080 inch [2.03 mm]. Jackscrews.
- Locking Systems:** 500 operations minimum per IEC 60512-5.
- Mechanical Operations:** 1.75 in-lb. [0.20 Nm] minimum.
- Required Sealing**
- Plate Mounting Torque:** 2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:

- Contact Current Rating:** 5 amperes nominal
- Initial Contact Resistance:** 0.010 ohms maximum.
- Insulator Resistance:** 5 G ohms.
- Clearance and Creepage Distance Minimum:** 0.039 inch [1.0mm].
- Proof Voltage:** 1000 V r.m.s.
- Working Voltage:** 300 V r.m.s.

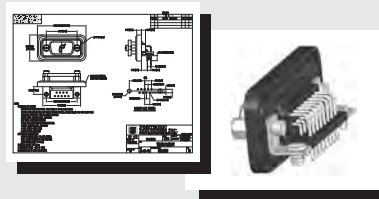
CLIMATIC CHARACTERISTICS:

- Temperature Range:** -40°C to +125°C

Visit our web site for the latest catalog updates and supplements at www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.





Positronic
connectpositronic.com



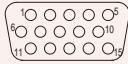
WDD UNIBODY SERIES

IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
HIGH DENSITY FIXED CONTACTS

Environmental
D-Sub

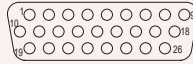
CONTACT VARIANTS *

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



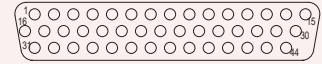
WDD 15

Available with male and female contacts



WDD 26

Available with male and female contacts



WDD 44

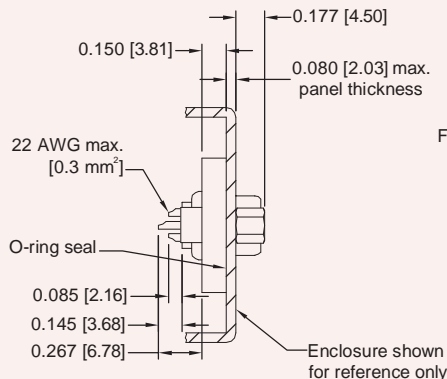
Currently available with female contacts.
For male contact variants, see page 26.

* If a variant is not listed above, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 26.

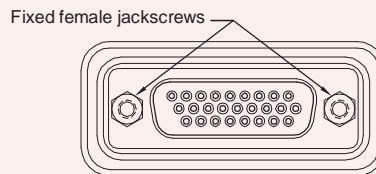
For sealing plate dimensions see page 7.

SOLDER CUP TERMINATION

WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 2



**INSIDE WALL
ENCLOSURE MOUNT**



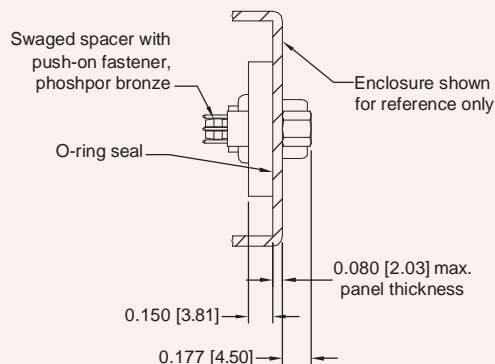
Typical part number:
WDD26P2C5AT7U

OUTSIDE WALL ENCLOSURE MOUNT

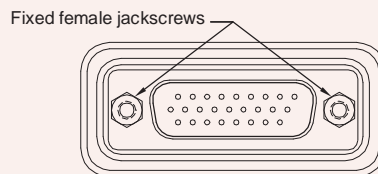
Not available in Unibody design.
See Unique Feature
section, page 46.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION

WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 3, 0.150 [3.81] CONTACT EXTENSION



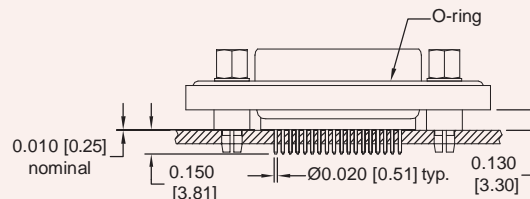
**INSIDE WALL
ENCLOSURE MOUNT**



Typical part number:
WDD26P3C8AT7U

OUTSIDE WALL ENCLOSURE MOUNT

Not available in Unibody design.
See Unique Feature
section, page 46.

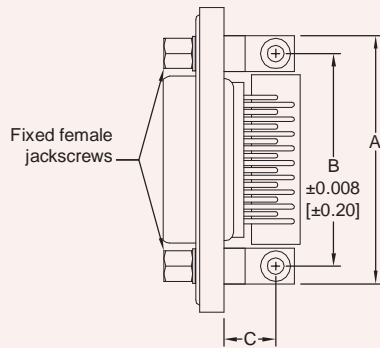




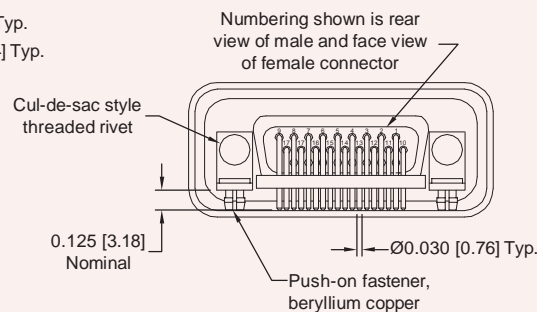
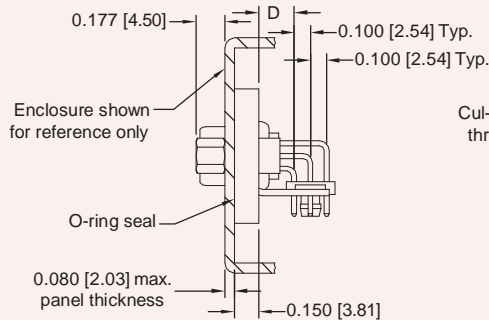
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

WITH ENCLOSURE MOUNT SEALING PLATE
CODE 4, 0.219 [5.56] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT



WDD26*4**** 0.219 [5.56] CONTACT EXTENSION				
PART NUMBER	A	B	C	D
WDD15*4****	1.204 [30.58]	0.984 [24.99]	0.319 [8.10]	0.219 [5.56]
WDD26*4****	1.532 [38.91]	1.312 [33.32]	0.319 [8.10]	0.219 [5.56]
WDD44F4****	2.072 [52.63]	1.852 [47.04]	0.319 [8.10]	0.219 [5.56]

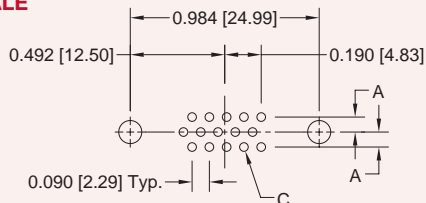


Typical part number:
WDD26P4C7AT7U

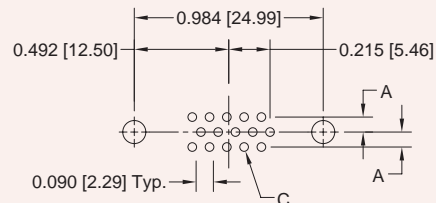
RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

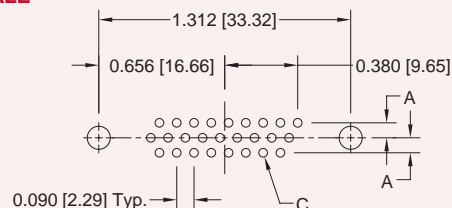
WDD15 MALE



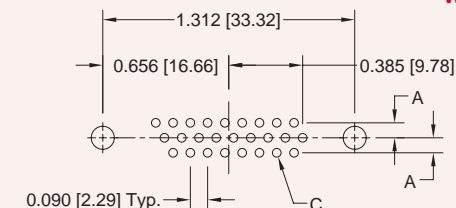
WDD15 FEMALE



WDD26 MALE

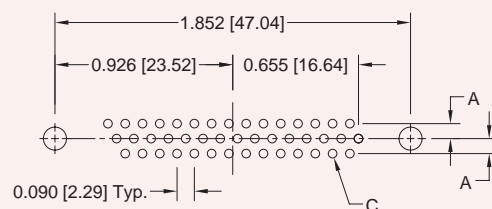


WDD26 FEMALE



CODE NUMBER	A	C
3	0.078 [1.98]	0.035 [0.89]
4	0.100 [2.54]	0.045 [1.14]

WDD44 FEMALE



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com



WDD UNIBODY SERIES

IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
HIGH DENSITY FIXED CONTACTS

Environmental
D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† **Unibody is the preferred design.** If a variant is not listed in Step 2, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 26.

STEP	1	2	3	4	5	6	7	8	9	—	10
EXAMPLE	WDD	26	F	2	C5	A	T7	SU	/AA		

STEP 1 - BASIC SERIES

WDD - WDD Unibody series

† STEP 2 - CONNECTOR VARIANTS

- 15 - Male and Female
- 26 - Male and Female
- † 44 - Female only

STEP 3 - CONNECTOR GENDER

- P - Male with interfacial seal
- F - Female

*2 STEP 4 - CONTACT TERMINATION TYPE

- 2 - Solder cup.
- 3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
- 4 - Solder, right angle (90°) printed board mount, contact extension 0.219 [5.56].

*1 STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES

- C5 - Inside wall mounting for Code 2 and 3 (step 4) only.
- C7 - Inside wall mounting for Code 4 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener.
- C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener.

NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.

NOTE:

- *1 For additional information listed in Steps 5, 6, and 7, see the Accessories section, page 42.
- *2 See pre-wired section, page 33, for free/cable connectors.

STEP 10 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive
2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WDD26F2C5AT7SU

STEP 8 - SHELLS AND ACCESSORY OPTIONS

- U - **Corrosion Protected Unibody Design**
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.
- SU - **Corrosion Resistant Unibody Design**
Stainless steel shells and jackscrews
Contacts 0.000030 inch [0.76 µ] gold plated over nickel.

*1 STEP 7 - FEMALE FIXED JACKSCREWS

T7 - Always used when ordering C5, C7 and C8 (step 5).

*1 STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE

A - Inside wall enclosure mounted connector.

Do you need 2-D drawings or 3-D models?

See page 10 for more information



Popular, economical option for applications requiring **sealed** connectors.



Precision sealing process ensures environmental performance.
See page 6 for details.



Fixed, size 20 contacts



Terminations include solder cup, straight and right angle (90°) printed board mount.
See pre-wired ordering information (page 33) for free/cable connectors.



Five connector variants with 9, 15, 25, 37, and 50 contacts.
See WD Unibody section (page 11) for variants supplied in Unibody design.



Corrosion protected and corrosion resistant options.



A wide variety of options and accessories.

Connectors Conforms to:

- IP 67 per IEC 60529
- IEC 60807-2, performance level 2
- UL File # E49351
- CSA File # LR 54219

Telecommunication:

- UL File # E140980

TECHNICAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS:

WIN-D series connectors mounted on IEC 60529 or NEMA 250-1991 enclosures for electrical equipment.

WIN-D connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosure on which they are mounted. WIN-D connector enclosure assemblies provide dust and water ingress protection to IP67 which allows temporary immersion in water to a depth of 0.5 meters for 30 minutes without ingress of water or dust to the enclosure. Refer to Appendix A for details of IP67 ratings and NEMA enclosure types 6 and 4X, as well as other IEC and NEMA enclosures having less stringent environmental requirements.

WIN-D series cable connector with cable support WIN-D cable connectors meet all the requirement of IEC 60807-2 Performance Level 2, plus the ingress protection requirement of IP67 thereby maintaining the electrical integrity and the ingress protection level of the connection system.

ENVIRONMENTAL TEST SPECIFICATIONS

Applicable IEC Moisture Tests

IP65 IEC 60529 Test 14.2.5 Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on System 1 – Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. **Requirements:** No water to have penetrated enclosure through connector.

IP67 IEC 60529 Test 14.2.7 Temporary immersion, 0.5 meters for 30 minutes. **Requirements:** No water to have penetrated enclosure through connector.

continued on next page. . . .



Positronic
connectpositronic.com

WD SERIES

PROFESSIONAL QUALITY STANDARD DENSITY FIXED CONTACTS

Environmental
D-Sub

TECHNICAL CHARACTERISTICS

... continued from previous page.

Applicable IEC Connector Tests After Moisture Exposure Tests Have Been Performed

IEC 60512-2, Test 3a: Insulation Resistance
IEC 60512-2, Test 4a: Voltage proof

Requirements:

- System 1 –** Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.
- System 2 –** Enclosure mounted connector to cable connector. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.
- System 3 –** Cable to cable connection systems. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.

- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

Connector Insert: Nylon resin, UL 94V-0 black color.
Contacts: Precision machined copper alloy.
Contact Plating:
Corrosion Protection: Gold flash over nickel plate.
Corrosion Resistant: Gold plate 0.000030 inch [0.76 µ] over nickel plate.

Shells, Jackscrew Systems and

Cul-de-sac Mounting Accessories:

Corrosion Protection: Steel, zinc plated with chromate seal.
Corrosion Resistant: Stainless steel passivated.
Push-on Fasteners: Phosphor bronze with tin plate.
Angle Brackets: Brass, zinc plate with chromate seal.
Hoods (Cable supports): Composite.
Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.

Panel Mount Sealing Plate Assembly: Glass filled thermoplastic with elastomer O-ring.

Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed Contacts: Male contact – 0.040 inch [1.02 mm] mating diameter. Female contact – rugged open entry design.

Contact Retention in Connector insert: 6 lbs. [27N]

Resistance to Solder Iron Heat:

500°F (260°C) for 10 seconds duration per IEC 60512-6.

Contact Terminations:

Solder cup contacts – 0.042 inch [1.06 mm] minimum hole diameter for 20 AWG [0.5 mm²] wire maximum.

Straight printed board mount – 0.028 inch [0.71 mm] termination diameter.

Right angle (90°) printed board mount – 0.028 inch [0.71 mm] termination diameter for all printed board contact footprints.

Trapezoidally shaped shells.

Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.

Coding (keying):

Enclosure Mounting Accessories:

Inside Wall

Enclosure Mount:

Minimum thickness 0.040 inch [1.0 mm]. Maximum thickness 0.080 inch [2.0 mm].

Locking Systems:

Mechanical Operations:

Jackscrews.

250 operations minimum per IEC 60512-5 IP67 immersion rated.

500 operations minimum per IEC 60512-5 IP65 spray nozzle rated.

Required Sealing

Plate Mounting Torque:

1.75 in-lb. [0.20 Nm] minimum.

2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes nominal.

Initial Contact Resistance: 0.008 ohms maximum.

Insulator Resistance: 5 G ohms.

Clearance and Creepage

Distance Minimum: 0.039 inch [1.0mm].

Proof Voltage: 1000 V r.m.s.

Working Voltage: 300 V r.m.s.

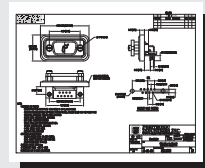
CLIMATIC CHARACTERISTICS:

Temperature Range: -25°C to +85°C

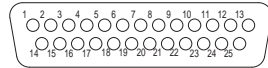
Visit our web site for the latest catalog updates and supplements at
www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog

Do you need 2-D drawings or 3-D models?

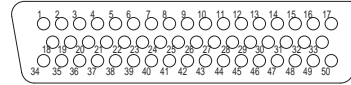
Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



CONTACT VARIANTS *
FACE VIEW OF MALE



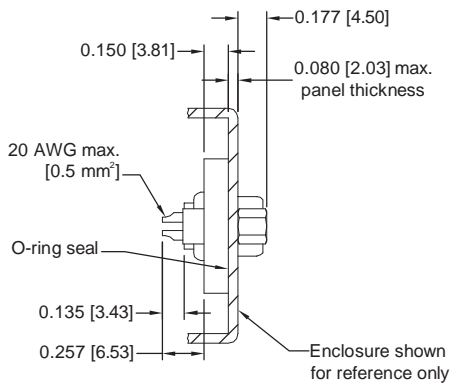
WD 25 *
Currently available with male contacts



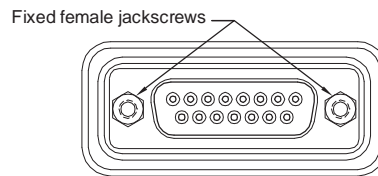
WD 50 *
Currently available with male contacts

* Contact variants for size 9, 15, 37, 25 (female) and 50 (female) are available in the **IMPROVED Unibody Design**. See page 11 for details.
For sealing plate dimensions see page 7.

SOLDER CUP TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 2

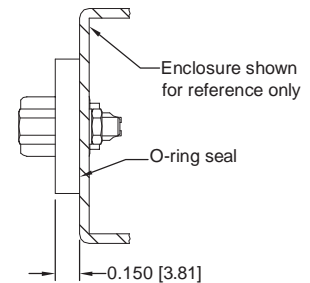


INSIDE WALL ENCLOSURE MOUNT



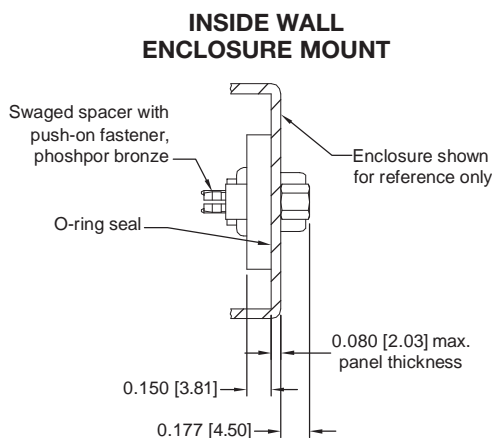
Typical part number:
WD9P2C5AT70

OUTSIDE WALL ENCLOSURE MOUNT

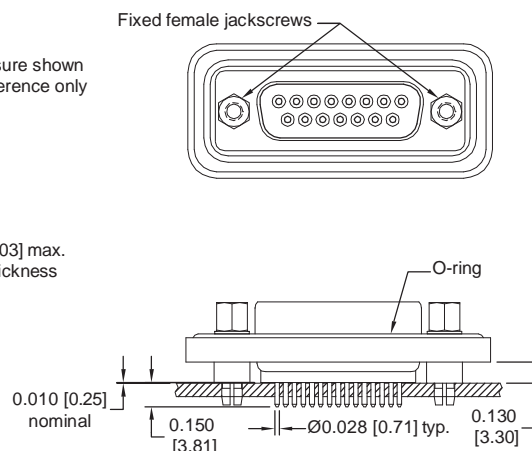


For more information, see Unique Features section, page 46.

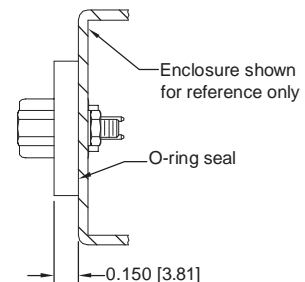
STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 3, 0.150 [3.81] CONTACT EXTENSION



Typical part number:
WD15P3C8AT70



OUTSIDE WALL ENCLOSURE MOUNT



For more information, see Unique Features section, page 46.



Positronic
connectpositronic.com

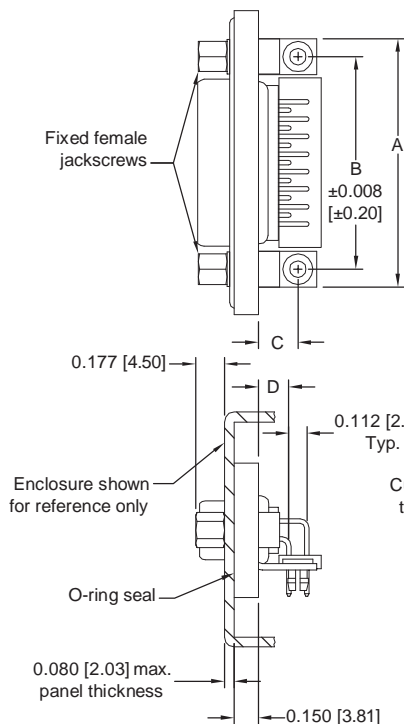
WD SERIES

PROFESSIONAL QUALITY STANDARD DENSITY FIXED CONTACTS

Environmental
D-S_{ub}

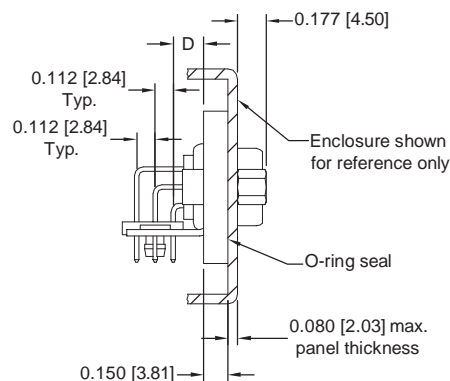
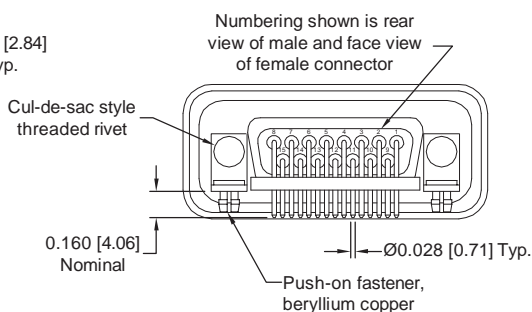
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION WITH ENCLOSURE MOUNT SEALING PLATE CODE 5, 0.188 [4.78] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT



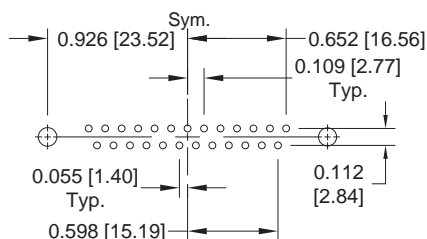
Typical part number:
WD25P5C7AT70

WD**5*** 0.188 [4.78] CONTACT EXTENSION				
PART NUMBER	A	B	C	D
WD25P5***	2.072 [52.63]	1.852 [47.04]	0.244 [6.20]	0.188 [4.78]
WD50P5***	2.626 [66.70]	2.406 [61.11]	0.300 [7.62]	0.188 [4.78]

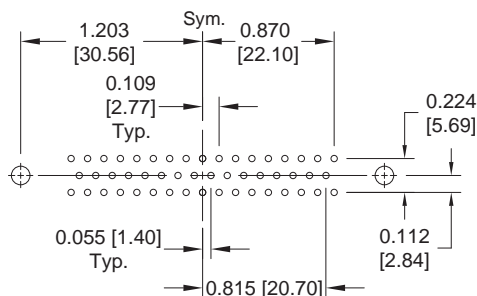


Typical part number:
WD50P5C7AT70

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF THE ARROW.



WD 25



WD 50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners.
Suggest 0.045 [1.14] hole for contact termination positions.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† Contact variants for size 9, 15, 37, 25 (female) and 50 (female) have been **transitioned** to the preferred **Unibody** design. For WD Unibody Ordering Information, see page 13.

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	WD	25	P	2	C5	A	T7	S	/AA	
STEP 1 - BASIC SERIES WD Series										STEP 10 - SPECIAL OPTIONS CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS
† STEP 2 - CONNECTOR VARIANTS † 25 - Male only. † 50 - Male only.										STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS) NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WD25P2C5AT7S
STEP 3 - CONNECTOR GENDER P - Male with interfacial seal F - Female										STEP 8 - SHELLS AND ACCESSORY OPTIONS 0 - Corrosion Protected Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate. S - Corrosion Resistant Stainless steel shells and jackscrews Contacts 0.000030 inch [0.76µ] gold plated over nickel.
STEP 4 - CONTACT TERMINATION TYPE 2 - Solder cup. 3 - Solder, straight printed board mount with 0.150 [3.81] tail length. 5 - Solder, right angle (90°) printed board mount, contact extension 0.188 [4.78].										STEP 7 - FEMALE FIXED JACKSCREWS T7 - Always used when ordering C5, C7 and C8 (step 5).
STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES C5 - Inside wall mounting for Code 2 and 3 (step 4) only. Available for sizes: 25 male, and 50 male. C7 - Inside wall mounting for Code 5 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener. Available for sizes: 25 male, and 50 male. C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener. Available for sizes: 25 male, and 50 male. NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.										STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE A - Inside wall enclosure mounted connector.

Do you need 2-D drawings or 3-D models?
See page 10 for more information



Positronic
connectpositronic.com

WDD SERIES

PROFESSIONAL QUALITY HIGH DENSITY FIXED CONTACTS

E_{nvironmental}
D-S_{ub}



- ✓ Popular, economical, high density option for applications requiring **sealed** connectors.
- ✓ Precision sealing process ensures environmental performance.
See page 6 for details.
- ✓ **Fixed**, size 22 contacts
- ✓ Terminations include solder cup, straight and right angle (90°) printed board mount.
See pre-wired ordering information (page 33) for free/cable connectors.
- ✓ Five connector variants with 15, 26, 44, 62, and 78 contacts.
See WDD Unibody section (page 16) for variants supplied in Unibody design.
- ✓ Corrosion protected and corrosion resistant options.
- ✓ A wide variety of options and accessories.

Connectors Conforms to:

- IP 67 per IEC 60529
- UL File # E49351
- CSA File # LR 54219

Telecommunication:

- UL File # E140980

T E C H N I C A L C H A R A C T E R I S T I C S

ENVIRONMENTAL CHARACTERISTICS:

WIN-DD series connectors mounted on IEC 60529 or NEMA 250 enclosures for electrical equipment.

WIN-DD connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosures on which they are mounted. WIN-DD connector-enclosure assemblies provide dust and water ingress protection to IP67 which allows temporary immersion in water to a depth of 0.5 meters for 30 minutes without ingress of water or dust to the enclosure. Refer to Appendix A for details of IP67 ratings and NEMA enclosure types 6 and 4X, as well as other enclosures having less stringent environmental requirements.

WIN-DD series cable connectors with cable support WIN-DD cable connectors meet the requirements of IEC 60807-2 Performance Level 2, where applicable, plus the ingress protection requirements of IP67 thereby maintaining the electrical integrity and the ingress protection level of the connection system.

ENVIRONMENTAL TEST SPECIFICATIONS

Applicable IEC Moisture Tests

IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on System 1 – Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. **Requirements:** No water to have penetrated enclosure through connector.

IP67 IEC 60529 Test 14.2.7: Temporary immersion, 0.5 meters for 30 minutes. **Requirements:** No water to have penetrated enclosure through connector.

continued on next page. . . .

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . . .

Applicable IEC Connector Tests After Moisture Exposure Tests Have Been Performed

IEC 60512-2, Test 3a: Insulation Resistance

IEC 60512-2, Test 4a: Voltage proof

Requirements:

- System 1 –** Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.
- System 2 –** Enclosure mounted connector to cable connector. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.
- System 3 –** Cable to cable connection systems. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.
- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

Connector insert: Glass filled polyester per ASTM D5927 , UL 94V-0, black color.

Contacts: Precision machined copper alloy.

Contact Plating:

Corrosion Protection: Gold flash over nickel plate.

Corrosion Resistant: Gold plate 0.000030 inch [0.76 µ] over nickel plate.

Shells, Jackscrew Systems and

Cul-de-sac Mounting Accessories:

Corrosion Protection: Steel, zinc plated with chromate seal.

Corrosion Resistant: Stainless steel passivated.

Push-on Fasteners: Phosphor bronze with tin plate.

Angle Brackets: Brass, zinc plate with chromate seal.

Hoods (Cable supports): Composite.

Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.

Panel Mount Sealing

Plate Assembly: Glass filled thermoplastic with elastomer O-ring.

Protective Cover Over

Connector Shell: Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:

Size 22 Fixed Contacts:

Male contact – 0.030 inch [0.75 mm] mating diameter. Female contacts - rugged “Robi-D” open entry design. Closed entry design available, contact technical sales.

Contact Retention in Insulator:

9 lbs. [40N]

Resistance to Solder Iron Heat:

500°F [260°C] for 10 seconds duration per IEC 60512-6.

Contact Terminations:

Solder cup contacts – 0.035 inch [0.89 mm] minimum hole diameter for 22 AWG [0.3 mm²] wire maximum.

Straight printed board mount – 0.020 inch [0.5 mm] termination diameter.

Right angle (90°) printed board mount - 0.030 inch [0.76 mm] termination diameter.

Trapezoidally shaped shells.

Coding (keying):

Enclosure Mounting

Accessories:

Inside Wall

Enclosure Mount:

Locking Systems:

Mechanical Operations:

Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.

Minimum thickness 0.040 inch [1.0 mm]. Maximum thickness 0.080 inch [2.0 mm].

Jackscrews.

250 operations minimum per IEC 60512-5 IP67 immersion rated.

500 operations minimum per IEC 60512-5 IP65 spray nozzle rated.

1.75 in-lb. [0.20 Nm] minimum.

2.25 in-lb. [0.25 Nm] maximum.

Required Sealing

Plate Mounting Torque:

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes nominal.

Initial Contact Resistance: 0.010 ohms maximum.

Insulator Resistance: 5 G ohms.

Clearance and Creepage

Distance (minimum): 0.042 inch [1.06 mm].

Proof Voltage: 1000 V r.m.s.

Working Voltage: 300 V r.m.s.

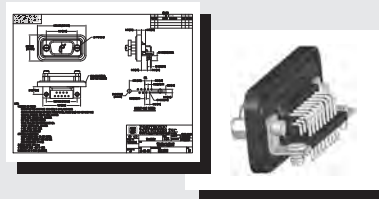
CLIMATIC CHARACTERISTICS:

Temperature Range: -25°C to +85°C

*Visit our web site for the latest catalog updates and supplements at
www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog*

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.





Positronic
connectpositronic.com

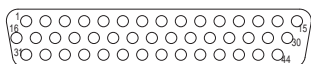
WDD SERIES

PROFESSIONAL QUALITY HIGH DENSITY FIXED CONTACTS

E_{nvironmental}
D-S_{ub}

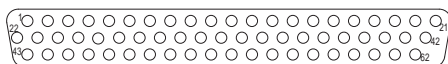
CONTACT VARIANTS*

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



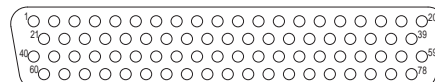
WDD 44

Currently available with male contacts.
For female contact variants,
see page 16.



WDD 62

Currently available with male and female contacts.

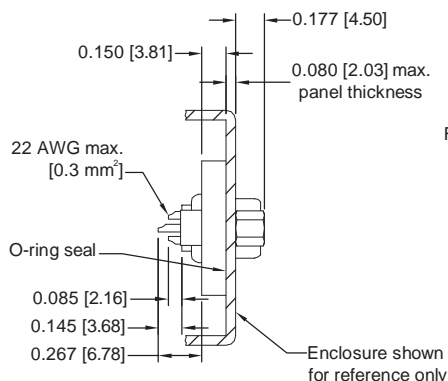


WDD 78

Currently available with male and female contacts.

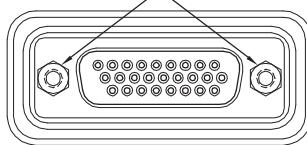
* Contact variants for size 15, 26 and 44 (female) are available in the **IMPROVED Unibody design**. See page 16 for details.
For sealing plate dimensions see page 7.

SOLDER CUP TERMINATION WITH ENCLOSURE WALL MOUNT SEALING PLATE CODE 2



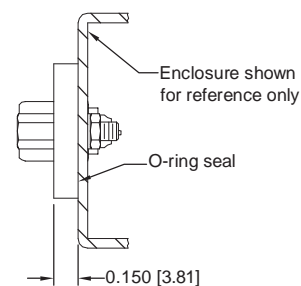
INSIDE WALL ENCLOSURE MOUNT

Fixed female jackscrews



Typical part number:
WDD62F2C5AT70

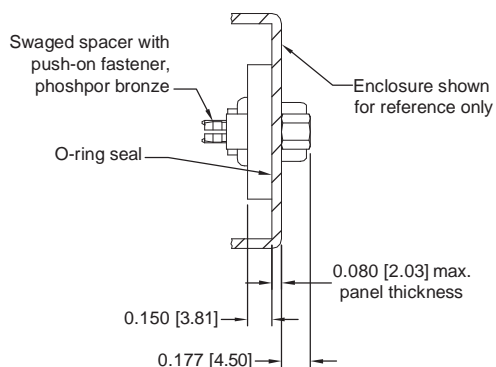
OUTSIDE WALL ENCLOSURE MOUNT



For more information, see Unique
Features section, page 46.

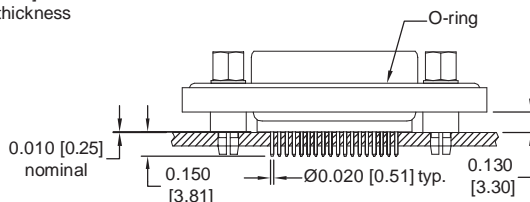
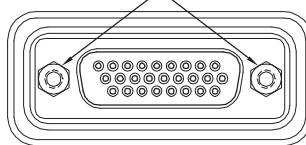
STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION WITH ENCLOSURE WALL MOUNT SEALING PLATE CODE 3, 0.150 [3.81] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT

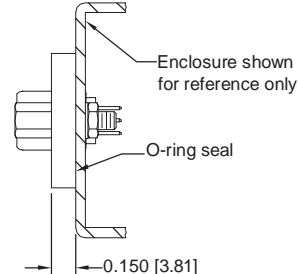


Typical part number:
WDD62F3C8AT70

Fixed female jackscrews



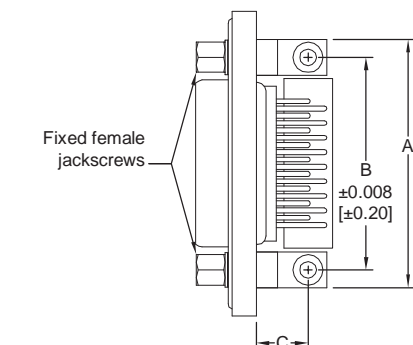
OUTSIDE WALL ENCLOSURE MOUNT



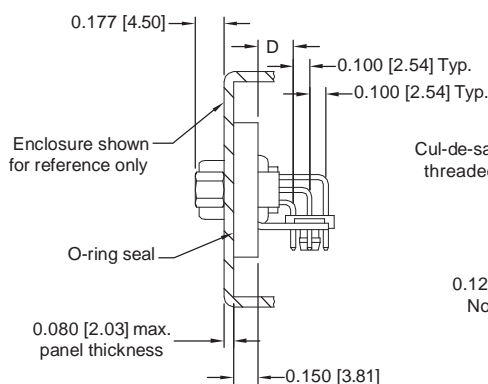
For more information, see Unique
Features section, page 46.

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION

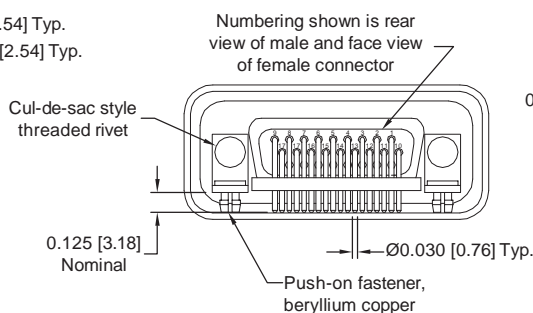
WITH ENCLOSURE MOUNT SEALING PLATE
CODE 4, 0.219 [5.56] CONTACT EXTENSION



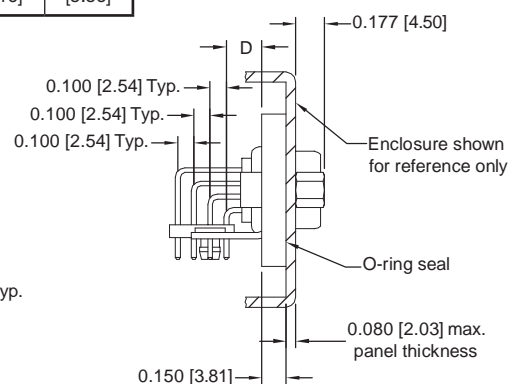
WDD**4**** 0.219 [5.56] CONTACT EXTENSION				
PART NUMBER	A	B	C	D
WDD44M4****	2.072 [52.63]	1.852 [47.04]	0.319 [8.10]	0.219 [5.56]
WDD62*4****	2.720 [69.09]	2.500 [63.50]	0.319 [8.10]	0.219 [5.56]
WDD78*4****	2.626 [66.70]	2.406 [61.11]	0.319 [8.10]	0.219 [5.56]



**INSIDE WALL
ENCLOSURE MOUNT**



Typical part number:
WDD62P4C7AT70

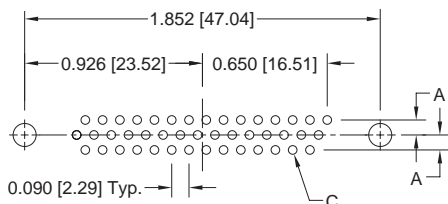


Typical part number:
WDD78P4C7AT70

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

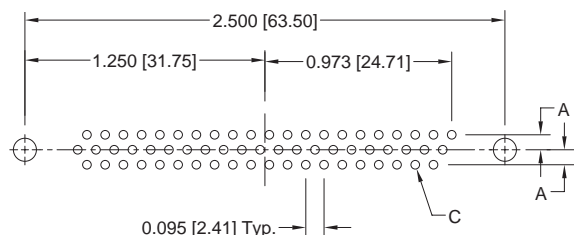
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

WDD44 MALE

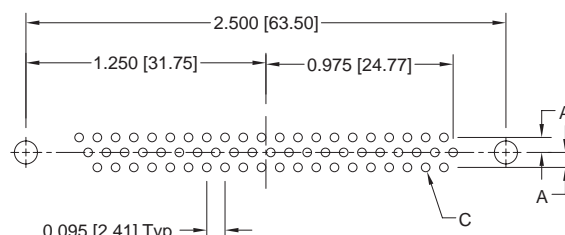


CODE NUMBER	A	B	C	D
3	0.078 [1.98]	0.082 [2.08]	0.035 [0.89]	0.123 [3.12]
4	0.100 [2.54]	0.100 [2.54]	0.045 [1.14]	0.100 [2.54]

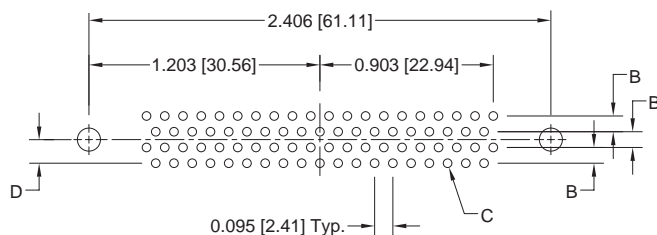
WDD62 MALE



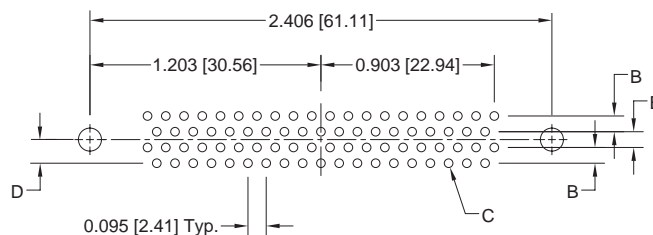
WDD62 FEMALE



WDD78 MALE



WDD78 FEMALE



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

WDD SERIES

PROFESSIONAL QUALITY HIGH DENSITY FIXED CONTACTS

Environmental
D-Sub

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† Contact variants for size 15, 26 and 44 (female) have been **transitioned** to the preferred **Unibody** design. For WDD Unibody Ordering Information, see page 18

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	WDD	62	F	2	C5	A	T7	S	/AA	

STEP 1 - BASIC SERIES

WDD series

† STEP 2 - CONNECTOR VARIANTS

† 44 - Male only.
62 - Male and Female
78 - Male and Female

STEP 3 - CONNECTOR GENDER

P - Male with interfacial seal
F - Female

STEP 4 - CONTACT TERMINATION TYPE

- 2 - Solder cup
- 3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
- 4 - Solder, right angle (90°) printed board mount, contact extension 0.219 [5.56].

STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES

- C5 - Inside wall mounting for Code 2 and 3 (step 4) only. Available for sizes: 62 and 78.
- C7 - Inside wall mounting for Code 4 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener. Available for sizes: 62 and 78.
- C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener. Available for sizes: 62 and 78.

NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.

STEP 10 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive
2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WDD62F2C5AT7S

STEP 8 - SHELLS AND ACCESSORY OPTIONS

- 0 - **Corrosion Protected**
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.
- S - **Corrosion Resistant**
Stainless steel shells and jackscrews
Contacts 0.000030 inch [0.76 µ] gold plated over nickel.

STEP 7 - FEMALE FIXED JACKSCREWS

T7 - Always used when ordering C5, C7 and C8 (step 5).

STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE

A - Inside wall enclosure mounted connector.

Do you need 2-D drawings or 3-D models?

See page 10 for more information



Popular, economical option for applications requiring **sealed** connectors.



Precision sealing process ensures environmental performance.

See page 6 for details.



Pre-wired, size 20 and size 22 contacts



Ten connector variants include 9, 15, 25, 37, and 50 (*standard density*); 15, 26, 44, 62, and 78 (*high density*) contacts.



Corrosion protected and corrosion resistant options.

Connectors Conforms to:

- IP 67 per IEC 60529
- IEC 60807-2, performance level 2
- UL File # E49351
- CSA File #LR 54219

Telecommunication:

- UL File # E140980

TECHNICAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS:

WIN-D and WIN-DD series connectors mounted on IEC 60529 or NEMA 250 enclosures for electrical equipment.

WIN-D and WIN-DD connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosures on which they are mounted. WIN-DD connector-enclosure assemblies provide dust and water ingress protection to IP67 which allows temporary immersion in water to a depth of 0.5 meters for 30 minutes without ingress of water or dust to the enclosure. Refer to Appendix A for details of IP67 ratings and NEMA enclosure types 6 and 4X, as well as other enclosures having less stringent environmental requirements.

WIN-D and WIN-DD series cable connectors with cable support
WIN-D and WIN-DD cable connectors meet the requirements of IEC 60807-2 Performance Level 2, where applicable, plus the ingress protection requirements of IP67 thereby maintaining the electrical integrity and the ingress protection level of the connection system.

ENVIRONMENTAL TEST SPECIFICATIONS

Applicable IEC Moisture Tests

IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on System 1 – Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector.
Requirements: No water to have penetrated enclosure through connector.

IP67 IEC 60529 Test 14.2.7: Temporary immersion, 0.5 meters for 30 minutes. **Requirements:** No water to have penetrated enclosure through connector.

continued on next page. . . .



Positronic
connectpositronic.com



PRE-WIRED WD / WDD SERIES

PROFESSIONAL QUALITY
SEALED FREE CABLE CONNECTOR
STANDARD OR HIGH DENSITY

Environmental
D-Sub

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . . .

Applicable IEC Connector Tests After Moisture Exposure Tests Have Been Performed

IEC 60512-2, Test 3a: Insulation Resistance
IEC 60512-2, Test 4a: Voltage proof

Requirements:

- System 1** – Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.
- System 2** – Enclosure mounted connector to cable connector. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.
- System 3** – Cable to cable connection systems. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.

- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

Connector Insert: **WD:** Nylon resin, UL 94V-0, black color.
WDD: Glass filled polyester per ASTM D5927 UL 94V-0, black color.
Contacts: Precision machined copper alloy.

Contact Plating:
Corrosion Protection: Gold flash over nickel plate.
Corrosion Resistant: Gold plate 0.000030 inch [0.76 µ] over nickel plate.

Shells, Jackscrew Systems and

Cul-de-sac Mounting Accessories:

Corrosion Protection : Steel, zinc plated with chromate seal.
Corrosion Resistant: Stainless steel passivated.
Push-on Fasteners: Phosphor bronze with tin plate.
Angle Brackets: Brass, zinc plate with chromate seal.
Hoods (Cable supports): Composite.
Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.

Panel Mount Sealing Plate Assembly: Glass filled thermoplastic with elastomer O-ring.

Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:

WD Size 20:

Male contact – 0.040 inch [1.02 mm] mating diameter. Female contacts - rugged open entry design.

WDD Size 22:

Male contact – 0.030 inch [0.75 mm] mating diameter. Female contacts - rugged “Robi-D” open entry design.

Closed entry design available, contact technical sales.

Contact Retention in

Connector Insert:

6 lbs. [27N]

Resistance to Solder

Iron Heat:

500°F [260°C] for 10 seconds duration per IEC 60512-6.

Contact Terminations:

Solder cup contacts - soldered to wire with 20 in [50 cm] flying leads.

Coding (keying):

Trapezoidally shaped shells.

Enclosure Mounting

Accessories:

Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.

Inside Wall Enclosure Mount:

Minimum thickness 0.040 inch [1.0 mm].
Maximum thickness 0.080 inch [2.0 mm].

Locking Systems:

Jackscrews.

Mechanical Operations:

250 operations minimum per IEC 60512-5 IP67 immersion rated.
500 operations minimum per IEC 60512-5 IP65 spray nozzle rated.

Required Sealing

Plate Mounting Torque:

1.75 in-lb. [0.20 Nm] minimum.
2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

WD: 7.5 amperes nominal.

WDD: 5 amperes nominal.

Initial Contact

WD: 0.008 ohms maximum.

WDD: 0.010 ohms maximum.

Insulator Resistance:

5 G ohms.

Clearance and Creepage

Distance (minimum):

WD: 0.039 inch [1 mm].

WDD: 0.042 inch [1.06 mm].

Proof Voltage:

1000 V r.m.s.

Working Voltage:

300 V r.m.s.

CLIMATIC CHARACTERISTICS:

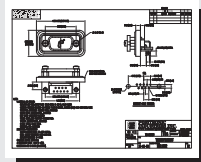
Temperature Range:

-25°C to +85°C

Visit our web site for the latest catalog updates and supplements at
www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog

Do you need 2-D drawings or 3-D models?

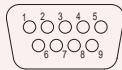
Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



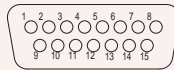


STANDARD DENSITY CONTACT VARIANTS

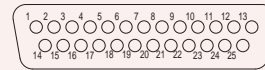
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



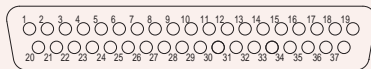
WD 9



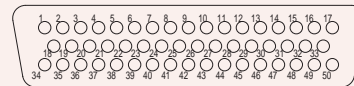
WD 15



WD 25



WD 37



WD 50

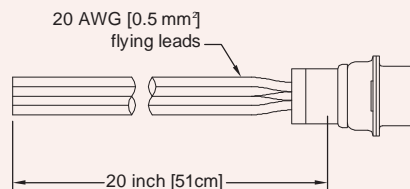
SOLDER CUP TERMINATION

SOLDERED TO WIRE AND ENCAPSULATED IN EPOXY RESIN

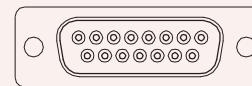
20 INCH [50 CM] FLYING LEADS

FOR USE WITH WD SERIES

CODE 22



Note: Z hood not shown for clarity.



Typical part number:
WD15F220Z0S

SOLDER CUP TERMINATION

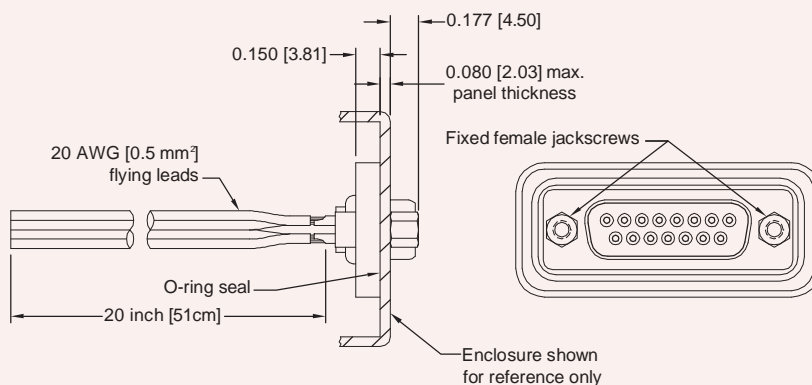
SOLDERED TO WIRE FOR USE WITH ENCLOSURE MOUNTED CONNECTORS

20 INCH [50 CM] FLYING LEADS

FOR USE WITH WD SERIES

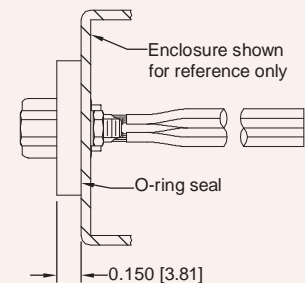
CODE 23

INSIDE WALL ENCLOSURE MOUNT



Typical part number:
WD15F23C5AT70

OUTSIDE WALL ENCLOSURE MOUNT



For more information, see Unique Features section, page 46.



Positronic
connectpositronic.com

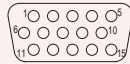


PRE-WIRED WD / WDD SERIES

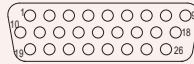
PROFESSIONAL QUALITY
SEALED FREE CABLE CONNECTOR
STANDARD OR HIGH DENSITY

Environmental
D-S_{ub}

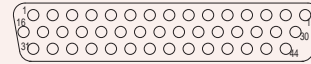
HIGH DENSITY CONTACT VARIANTS FACE VIEW OF MALE OR REAR VIEW OF FEMALE



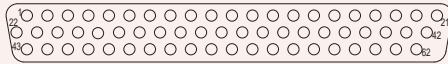
WDD 15



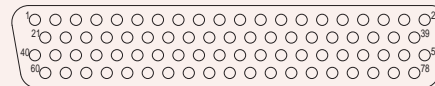
WDD 26



WDD 44



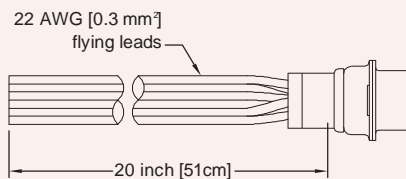
WDD 62



WDD 78

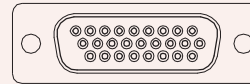
SOLDER CUP TERMINATION

SOLDERED TO WIRE AND ENCAPSULATED IN EPOXY RESIN
20 INCH [50 CM] FLYING LEADS
FOR USE WITH WDD SERIES
CODE 22



Note: Z hood not shown for clarity.

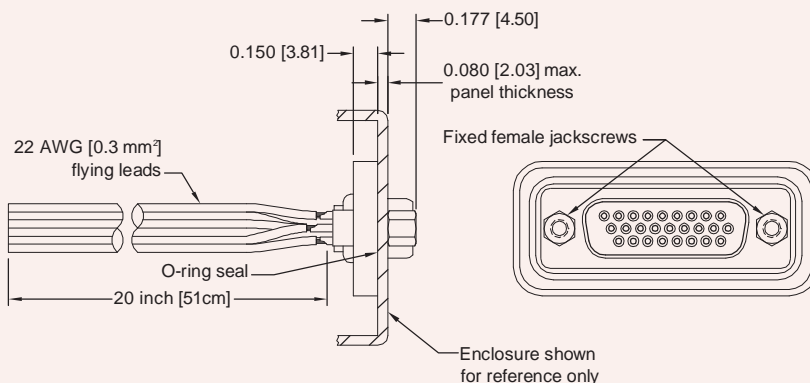
Typical part number:
WDD15F220Z0S



SOLDER CUP TERMINATION

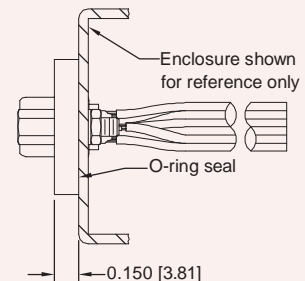
SOLDERED TO WIRE FOR USE WITH ENCLOSURE MOUNTED CONNECTORS
20 INCH [50 CM] FLYING LEADS
FOR USE WITH WDD SERIES
CODE 23

INSIDE WALL ENCLOSURE MOUNT



Typical part number:
WDD15F23C5AT70

OUTSIDE WALL ENCLOSURE MOUNT



For more information, see Unique
Features section, page 46.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	WDD	9	F	22	0	Z	0	S	/AA	

STEP 1 - BASIC SERIES

WD Series - Size 20 contacts
WDD Series - Size 22 contacts

STEP 2 - CONNECTOR VARIANTS

WD Series Connector Variants
9, 15, 25, 37, and 50

WDD Series Connector Variants
15, 26, 44, 62, and 78

STEP 3 - CONNECTOR GENDER

P - Male with interfacial seal
F - Female

STEP 4 - CONTACT TERMINATION TYPE

- 22 - Solder cup, soldered to wire and encapsulated in epoxy resin with 20 inch [51 cm] flying leads. Other lengths available by special order (See page 34).
- 23 - Solder cup, soldered to wire with 20 inch [51 cm] flying leads. Not encapsulated. For use with enclosure mounted connectors.

STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES

- 0 - No mounting plate or accessories. Available only with Code 22 (step 4).
- C5 - Inside wall mounting.

NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.

STEP 10 - SPECIAL OPTIONS

See page 34 for additional options.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WDD9F220Z0S

STEP 8 - SHELLS AND ACCESSORY OPTIONS

- 0 - **Corrosion Protected**
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.
- S - **Corrosion Resistant**
Stainless steel shells and jackscrews
Contacts 0.000030 inch [0.76μ] gold plated over nickel.

STEP 7 - FEMALE FIXED JACKSCREWS

- 0 - None. Use only with Code 0 (step 5).
- T7 - Always used when ordering C5 (step 5).

STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE OR HOODS

- 0 - None Use only with Code 0 (step 5).
- A - Inside wall enclosure mounted connector. Available with C5 (step 5) only.
- Z - Composite hood with rotating male jackscrews. Available with Code 22 (step 4) only.
- Z4 - Composite hood with fixed female jackscrews. Available with Code 22 (step 4) only.

Do you need 2-D drawings or 3-D models?

See page 10 for more information



Positronic
connectpositronic.com



PRE-WIRED WD / WDD SERIES

PROFESSIONAL QUALITY
SEALED FREE CABLE CONNECTOR
STANDARD OR HIGH DENSITY

Environmental
D-Sub

SPECIAL OPTIONS PART NUMBER SUFFIX (STEP 10) FOR PRE-WIRED CABLE ASSEMBLIES ORDERING INFORMATION- CODE NUMBERING SYSTEM

Specify Special Options for Completed Connector By Selecting Options Below

STEP 10	PLATING	COLOR	GAUGE	LENGTH	TOLERANCE
EXAMPLE	14	C	24G	3.05	T20

PLATING

Omit if standard plating is required.

- 14 - Contacts to be plated 0.000030 [0.76µ] gold over nickel.
- 15 - Contacts to be plated 0.000050 [1.27µ] gold over nickel.
- 50 - Contacts to be plated 0.000050 [1.27µ] gold over copper.

Contact technical sales for additional plating options.

COLOR

Omit if standard (black) is required for all wires.

C - Colored wire option, consists of up to 10 different wire insulation colors pre-wired in the following configuration:

Contact Position Number *	Insulation Color	Contact Position Number *	Insulation Color
1	Brown	6	Blue
2	Red	7	Violet
3	Orange	8	Gray
4	Yellow	9	White
5	Green	0	Black

* The contact position number indicated represents the last digit of the contact position number. (I.E.: position 37 will be Violet)

TOLERANCE

Omit if standard tolerance (refer to Table 1 below) is required.
TXX - XX = ± tolerance in mm.

LENGTH

Omit if standard 20 in [0.51 mm] length is required.
Insert length in meters (0.3048 x length in feet) to two decimal places. Use leading 0 if less than one.

GAUGE

Omit if standard wire is required - Standard for WD series is 20 AWG.
Standard for WDD series is 22 AWG.

22G - 22 AWG wire
24G - 24 AWG wire

TABLE 1. CABLE LENGTH TOLERANCE

Cable Length [meters]	≤1 m	>1 m, ≤8 m	>8 m, ≤16 m	> 16 m
Tolerance [millimeters]	±25	±50	±75	±100



WDD15F22Z0X-1422G3.05T20

STANDARD WIRE CHARACTERISTICS

Materials:

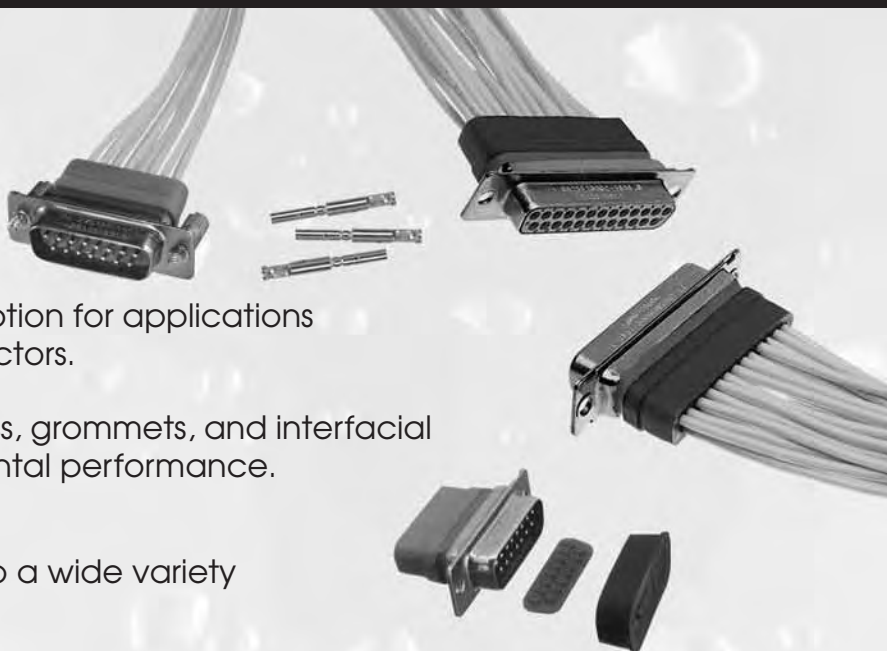
Wire: Stranded tinned copper
7/30-22 AWG and
7/28-20 AWG

Insulation: PVC

Specification: per Mil-W-16878/1-PVC

Temperature Rating: -55° TO +105°C

Voltage Rating: 600 Volts



- ✓ Popular, economical option for applications requiring **sealed** connectors.
- ✓ Precision sealing process, grommets, and interfacial seals ensure environmental performance. *See page 38 for details.*
- ✓ Materials are resistant to a wide variety of harsh liquids.
- ✓ **Crimp removable**, size 20 contacts
- ✓ Five connector variants include 9, 15, 25, 37, and 50 contacts.
- ✓ Corrosion protected and corrosion resistant options.
- ✓ A wide variety of options and accessories.

Connectors Conforms to:

- IP 67 per IEC 60529
- Performance conforms to applicable requirements of MIL-DTL-24308 and SAE AS39029

TECHNICAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS:

EVD connectors, having crimp contacts, meet all of the applicable requirements of MIL-DTL-24308 in addition to the requirements shown below:

Test IP67

Requirements

Temporary immersion, 0.5 meters for 30 minutes. Mated condition. No water to have penetrated enclosure through connector.

Humidity per EIA 364-31 method IV, Method 1002.2, Type II

- 1) No deterioration of performance.
- 2) Insulation resistance greater than 100 mega ohms.
- 3) Withstand a potential of 1000 VAC (rms) without evidence of flashover or breakdown.

Fluid Immersion per ANSI/EIA-364-10 Test Conditions A and D

- 1) No detrimental damage.
- 2) Meet mating and unmating requirements of MIL-DTL-24308.

Immersion, 2 hours at a depth of 36 inch [914.4 mm] in mated condition per MIL-STD 810 Method 512.3. Procedure 1.

While Immersed:

- 1) Insulation resistance greater than 100 mega ohms.
- 2) Withstand a potential of 1000 VAC (rms) without evidence of flashover or breakdown.

MATERIALS AND FINISHES:

Connector Insert:

Glass-filled DAP per ASTM-D-5948 type SDG-F, UL 94V-0, green color.

Contacts:

Precision machined cooper alloy.

Contact Plating:

Military performance - 0.000050 inch [1.27 µ] gold over nickle plate.

Industrial performance - 0.000030 inch [0.76 µ] gold over nickel.

Shells:

Steel with zinc plate with chromate seal and stainless steel, passivated.



Positronic
connectpositronic.com

EVD SERIES

MILITARY / INDUSTRIAL QUALITY

FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

STANDARD DENSITY REMOVABLE CONTACTS

Environmental

D-Sub

TECHNICAL CHARACTERISTICS, continued

continued from previous page. . . .

Mounting Spacers:	Steel or brass, zinc plate with chromate seal.
Jackscrew Systems:	Steel with zinc plate and chromate seal; and stainless steel, passivated.
Hoods:	Composite.
Grommet and Interfacial Seal:	Fluorosilicone Rubber per MIL-DTL-25988.
Bonding Material:	Fluorosilicone based sealant/adhesive.
Protective Cover Over Connector Shell:	Conductive polyethylene or conductive polyester.
Sealing Plug:	Teflon.

MECHANICAL CHARACTERISTICS:

Size 20 Removable Contacts:	Install contact to rear face of connector insert and release from rear face of connector insert. Male - 0.040 inch [1.02 mm] diameter. Female - PosiBand closed entry design
Contact Retention in Insulator:	9 lbs. [40 N].
Contact Terminations:	Closed barrel crimp, wire sizes 20 AWG [0.5 mm ²] through 24 AWG [0.25 mm ²]; Solder contacts - 0.042 inch [1.06 mm] minimum hole diameter for 20 AWG [0.5 mm ²] through 24 AWG [0.25 mm ²] wire size.
Coding (keying):	Trapezoidally shaped shells.
Locking Systems:	Jackscrews.
Mechanical Operations:	500 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Dry Conditions, Basic Connector Body:

Contact Current Rating, Tested per UL 1977:

18 amperes, 2 contacts energized.
14 amperes, 6 contacts energized.
11 amperes, 15 contacts energized.
10 amperes, 25 contacts energized.
9 amperes, 50 contacts energized.

Visit <http://www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/technical-specifications/> to view temperature rise curves.

Initial Contact Resistance: 0.004 ohms maximum.

Proof Voltage: 1,000 V r.m.s.

Insulation Resistance: 5 G ohms.

Clearance and Creepage

Distance (minimum): 0.039 inch [1.0 mm].

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

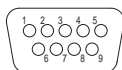
THERMOCOUPLE CONTACTS:

Size 20 crimp contacts are available, see page 40 for details.

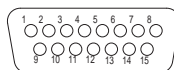
Visit our web site for the latest catalog updates and supplements at www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog

CONTACT VARIANTS

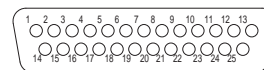
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



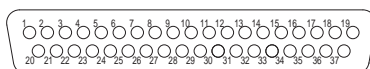
EVD 9



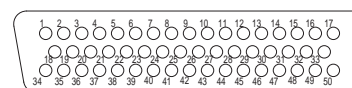
EVD 15



EVD 25



EVD 37



EVD 50

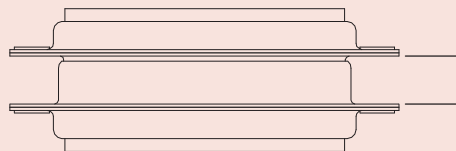
For information regarding **REMOVABLE CONTACTS**, see illustration/drawing and charts on pages 39 & 40.

STANDARD SHELL ASSEMBLY

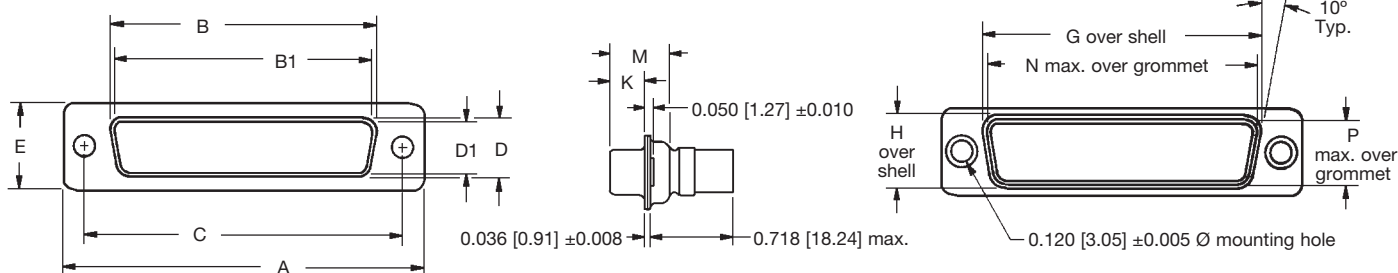


EVD25P000E20 (upper left), **EVD15P00000** (middle) and **EVD15P1000** (upper right).

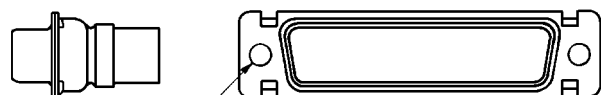
RECOMMENDED MATING DIMENSIONS



Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]

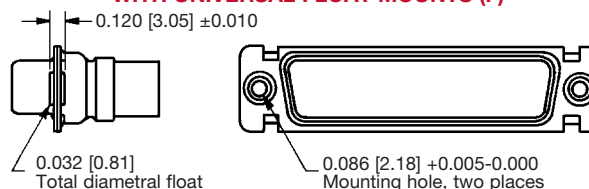


OPTIONAL SHELL ASSEMBLY (0)



Ø0.120±0.005 [3.05±0.13]
Mounting hole, two places for
stainless steel shell (0 option)

OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



CONNECTOR VARIANT SIZES	GENDER	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C ±0.005 [0.13]	D ±0.005 [0.13]	D1 ±0.005 [0.13]	E ±0.015 [0.38]	G ±0.010 [0.25]	H ±0.010 [0.25]	K ±0.005 [0.13]	M ±0.010 [0.25]
EVD 9 (SHELL SIZE 1)	MALE	1.213 [30.81]		0.666 [16.92]	0.984 [24.99]		0.329 [8.36]	0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.213 [30.81]	0.643 [16.33]		0.984 [24.99]	0.311 [7.90]		0.494 [12.55]	0.759 [19.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
EVD 15 (SHELL SIZE 2)	MALE	1.541 [39.14]		0.994 [25.25]	1.312 [33.32]		0.329 [8.36]	0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.233 [5.92]	0.422 [10.72]
	FEMALE	1.541 [39.14]	0.971 [24.66]		1.312 [33.32]	0.311 [7.90]		0.494 [12.55]	1.083 [27.51]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
EVD 25 (SHELL SIZE 3)	MALE	2.088 [53.04]		1.534 [38.96]	1.852 [47.04]		0.329 [8.36]	0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.088 [53.04]	1.511 [38.38]		1.852 [47.04]	0.311 [7.90]		0.494 [12.55]	1.625 [41.28]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
EVD 37 (SHELL SIZE 4)	MALE	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		0.329 [8.36]	0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	0.311 [7.90]		0.494 [12.55]	2.272 [57.71]	0.422 [10.72]	0.243 [6.17]	0.429 [10.90]
EVD 50 (SHELL SIZE 5)	MALE	2.635 [66.93]		2.079 [52.81]	2.406 [61.11]		0.441 [11.20]	0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.230 [5.84]	0.426 [10.82]
	FEMALE	2.635 [66.93]	2.064 [52.43]		2.406 [61.11]	0.423 [10.74]		0.605 [15.37]	2.178 [55.32]	0.534 [13.56]	0.243 [6.17]	0.429 [10.90]



Positronic
connectpositronic.com

EVD SERIES

MILITARY / INDUSTRIAL QUALITY

FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

STANDARD DENSITY REMOVABLE CONTACTS

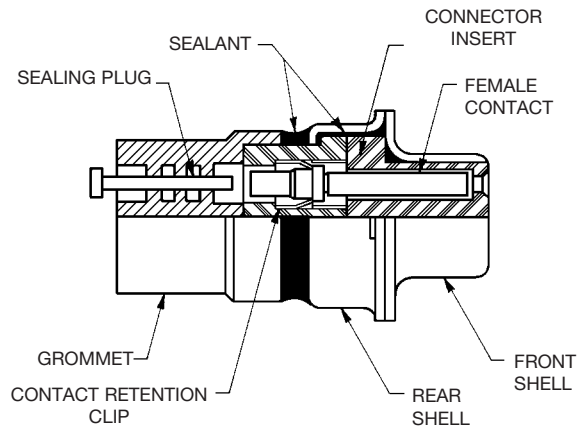
Environmental

D-Sub

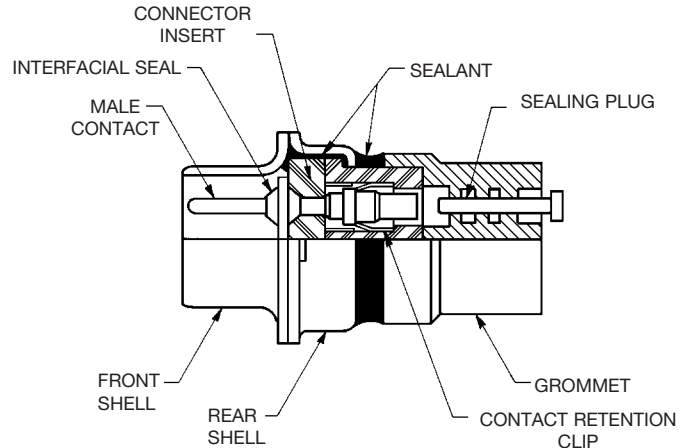
EVD SERIES DESIGN

ENVIRONMENTAL SEALING FEATURES

FEMALE CONNECTOR



MALE CONNECTOR



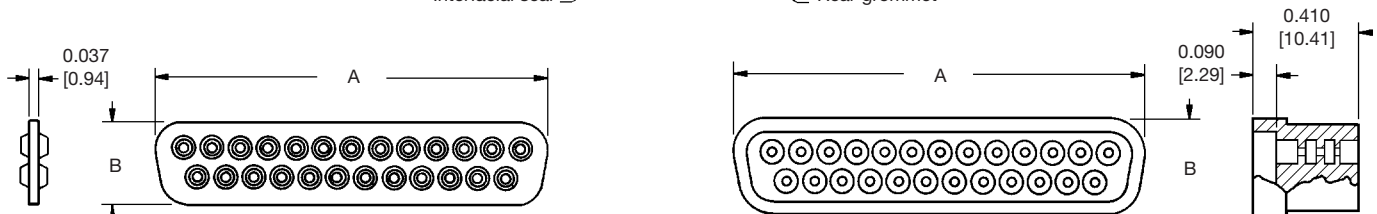
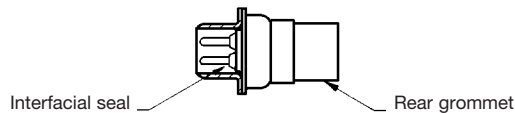
SEALING PLUG

ORDER SEPARATELY, PART NUMBER 4737-37-0-0



INTERFACIAL SEALS AND REAR GROMMETS

FOR USE WITH EVD SERIES



INTERFACIAL SEAL		
CONNECTOR VARIANT	A	B
9	0.650 [16.51]	0.318 [8.08]
15	0.978 [24.84]	0.318 [8.08]
25	1.513 [38.43]	0.318 [8.08]
37	2.156 [54.76]	0.318 [8.08]
50	2.058 [52.27]	0.425 [10.80]

REAR GROMMET		
CONNECTOR VARIANT	A	B
9	0.725 [18.42]	0.375 [9.53]
15	1.051 [26.70]	0.375 [9.53]
25	1.595 [40.51]	0.375 [9.53]
37	2.247 [57.07]	0.375 [9.53]
50	2.147 [54.53]	0.490 [12.45]

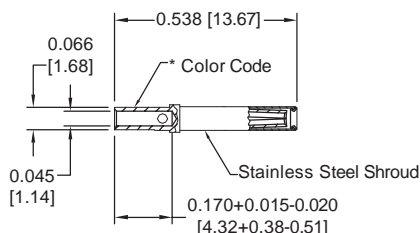
Material: Fluorosilicone and silicone blend.
Contact technical sales for ordering information.

MILITARY LEVEL REMOVABLE CRIMP CONTACT

FOR USE WITH EVD SERIES CONNECTORS

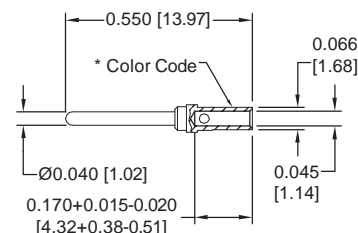
SIZE 20

FEMALE CONTACT "CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
*M39029/63-368	20 / 22 / 24 [0.5/0.3/0.25]

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]
*M39029/64-369	20 / 22 / 24 [0.5/0.3/0.25]

Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.

*MILITARY SPECIFICATION CONTACTS

STANDARD FINISH:
0.000050 inch [1.27μ] gold over nickel

COLOR CODE:

MALE CONTACT:
ORANGE/BLUE/WHITE

FEMALE CONTACT:
ORANGE/BLUE/GRAY

EVD SERIES

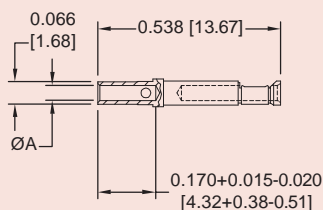


INDUSTRIAL / MILITARY LEVEL REMOVABLE CRIMP CONTACT

FOR USE WITH EVD SERIES CONNECTORS

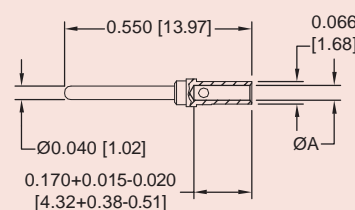
SIZE 20

FEMALE CONTACT "CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
FC6020D2-14	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA
MC6020D-14	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]



Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.

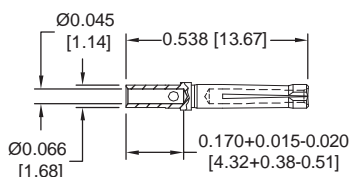
PROFESSIONAL LEVEL REMOVABLE CRIMP CONTACT

FOR USE WITH EVD SERIES CONNECTORS

SIZE 20

FEMALE CONTACT

"ROBI-D" OPEN ENTRY DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]
FC6520D-14	20 / 22 / 24 [0.5/0.3/0.25]

Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.

For information regarding **CRIMP TOOL AND CRIMPING TOOL TECHNIQUES**, see page 47.



Positronic
connectpositronic.com

EVD SERIES

MILITARY / INDUSTRIAL QUALITY
FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS
STANDARD DENSITY REMOVABLE CONTACTS

Environmental
D-Sub



REMOVABLE THERMOCOUPLE CRIMP CONTACT

FOR USE WITH EVD SERIES CONNECTORS

SIZE 20

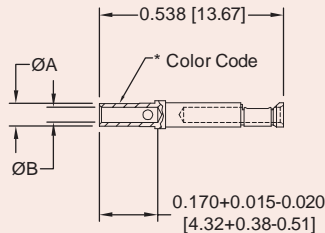
Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.



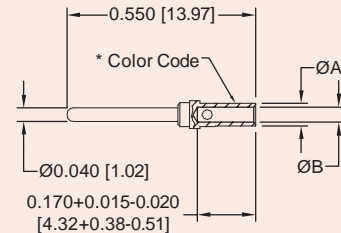
Authentic **POSITRONIC**
PosiBand

These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

FEMALE CONTACT “CLOSED ENTRY” DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]	ØA	ØB
K	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
	ALUMEL (-)	FC6020D2AL ^{††}	MC6020DAL [†]	GREEN	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
T	COPPER (+)	FC6020D2CU ^{††}	MC6020DCU [†]	RED	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
	CONSTANTAN (-)	FC6020D2CO ^{††}	MC6020DCO [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
E	CHROMEL (+)	FC6020D2CH ^{††}	MC6020DCH [†]	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]
	CONSTANTAN (-)	FC6020D2CO ^{††}	MC6020DCO [†]	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.066 [1.68]	0.045 [1.14]

For more information on the availability of Type J thermocouple contacts, and information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company.

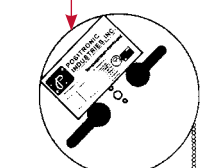
[†]Dimensionally equivalent to M39029/64-369

^{††}Dimensionally equivalent to M39029/63-368

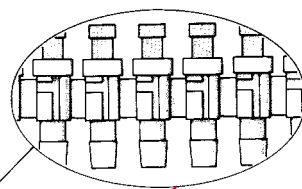
For information regarding **CRIMP TOOL AND CRIMPING TOOL TECHNIQUES**, see page 47.

CONTACT REELS FOR AUTOMATIC PNEUMATIC CRIMP TOOLS

Reel for holding plastic contact carriers



Plastic contact carriers



Enlarged section of plastic contact carriers

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part numbers 9550-0 and 9550-1; packaged in reels holding 1,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9555-0-2. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter “R” after the contact part number, such as MC6020DR for a male contact and FC6026D2R for a female contact.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	EVD	25	P	1	0	Z	0	S	/AA	

STEP 1 - BASIC SERIES

EVD Series

STEP 2 - EVD Connector Variants

9, 15, 25, 37, 50

STEP 3 - CONNECTOR GENDER

P - Male with interfacial seal
S - Female - PosiBand closed entry contact design

STEP 4 - Type of Contacts

- 0 - Contacts ordered separately. See pages 39 & 40 .
- 1 - Crimp, 20 AWG - 24 AWG [0.5 mm² - 0.25 mm²] kitted with connector.
- 2 - Solder, 20 AWG - 24 AWG [0.5 mm² - 0.25 mm²] kitted with connector.

*1 STEP 5 - MOUNTING STYLE

- 0 - Mounting hole, 0.120 [3.05] diameter.
- F - Float mounts, universal.
- S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length.
- S5 - Swaged locknut, 4-40 threads.

*1 STEP 6 - HOODS

- 0 - None.
- Z - Composite hood with rotating male jackscrews.
- Z4 - Composite hood with fixed female jackscrews.

*1 STEP 7 - LOCKING SYSTEMS

- 0 - None. Use only with 'Z' or 'Z4' (step 6).
- T2 - Fixed female jackscrews.
- E - Rotating male jackscrews.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: EVD25P10Z0S

STEP 10 - SPECIAL OPTIONS

Consult Technical Sales

NOTES:

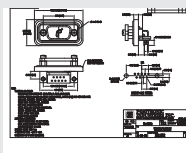
*1 For additional information listed in Steps 5, 6, and 7, see the Accessories section, page 42.

*2 For stainless steel dimpled male versions, contact Technical Sales.

For information regarding **REMOVABLE CONTACTS**, see illustration/drawing and charts on pages 39 & 40 .

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.





Positronic
connectpositronic.com



ACCESSORIES

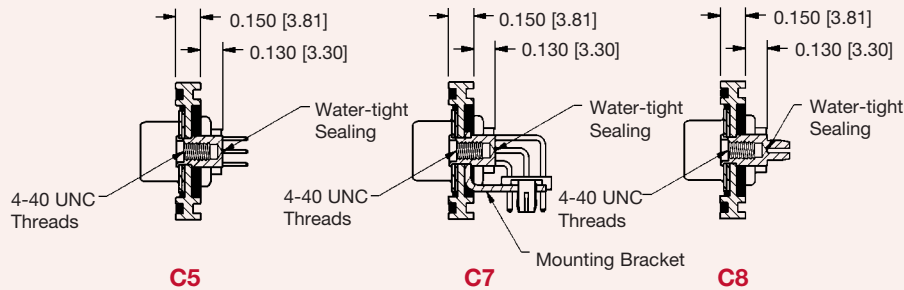
Environmental
D-S_{ub}

CUL-DE-SAC STYLE MOUNTING ACCESSORIES

FOR USE WITH WD AND WDD SERIES

CODE C5, C7 AND C8 (STEP 5)

INSIDE WALL



C5

STEEL, ZINC PLATE
WITH CHROMATE SEAL
OR STAINLESS STEEL,
PASSIVATED

C7

STEEL, ZINC PLATE
WITH CHROMATE SEAL,
OR STAINLESS STEEL,
PASSIVATED

C8

PHOSPHOR BRONZE,
TIN PLATE

OUTSIDE WALL ENCLOSURE MOUNT

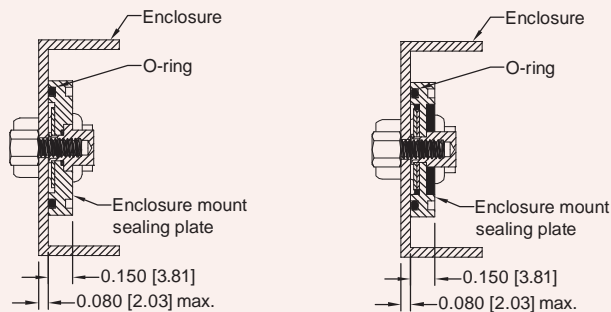
Not available in Unibody design.
See Unique Feature
section, page 46.

ENCLOSURE WALL MOUNT SEALING PLATE

FOR USE WITH WD AND WDD SERIES

CODE A (STEP 6)

INSIDE WALL ENCLOSURE MOUNT



UNIBODY DESIGN

LEGACY DESIGN

OUTSIDE WALL ENCLOSURE MOUNT

Not available in Unibody design.
See Unique Feature
section, page 46.

Sealing Plate Material:

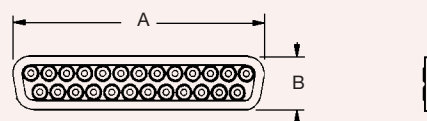
Glass filled thermoplastic

Note: Sealing plate is mounted to enclosure wall with jackscrews torqued to a value of 1.75 in-lb [0.20 Nm] minimum, 2.25 in-lb [0.25 Nm] maximum.

CONNECTOR VARIANT		A	B
WD	WDD		
9	15	0.67 [17.02]	0.34 [8.64]
15	26	1.00 [25.40]	0.34 [8.64]
25	44	1.53 [38.86]	0.34 [8.64]
37	62	2.18 [55.37]	0.34 [8.64]
50	78	2.08 [52.83]	0.45 [11.43]

INTERFACIAL SEAL

FOR USE WITH WD, AND WDD SERIES*
FURNISHED ON ALL MALE CONNECTORS



Material: Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.

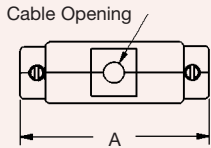
*NOTE:

For information on the interfacial seal supplied with EVD Series, see page 38.

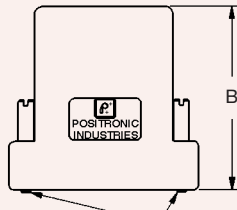


COMPOSITE HOODS

FOR USE WITH WD, WDD OR EVD SERIES
CODE Z OR Z4 (STEP 6)

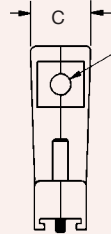


CODE Z: Composite hood with rotating male jackscrews.

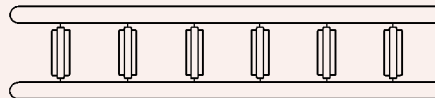


Rotating Male Jackscrews
4-40 UNC Threads, Steel, Zinc plated
or Stainless Steel, passivated

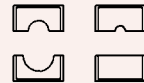
Typical part number:
D25000Z00



Cable Opening
(Side cable opening not
available for size 50 hood)

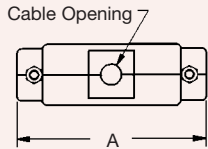


Insert Tree Assembly

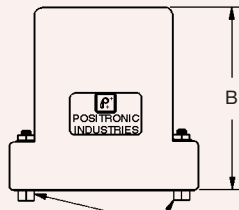


Typical Inserts

Various inserts are
provided to accommodate
different cable sizes

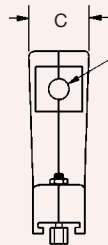


CODE Z4: Composite hood with fixed female jackscrews.



Fixed Female Jackscrews
4-40 UNC Threads, Steel, Zinc plated
or Stainless Steel, passivated

Typical part number:
D25000Z400



Cable Opening
(Side cable opening not
available for size 50 hood)

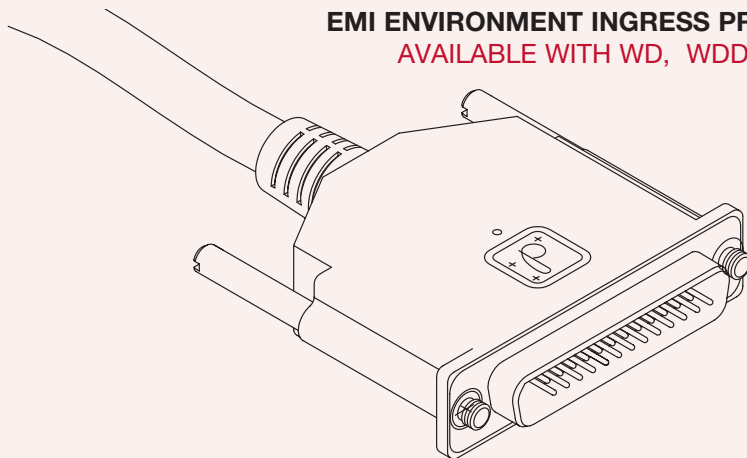
PART NUMBER	A	B	C	Cable Opening	
				MIN.	MAXIMUM
D9000Z00 D9000Z400	1.387 [35.23]	1.935 [49.15]	0.735 [18.67]	0.100 [2.54]	0.400 [10.16] x 0.570 [14.48]
D15000Z00 D15000Z400	1.715 [43.56]	1.935 [49.15]	0.735 [18.67]	0.100 [2.54]	0.400 [10.16] x 0.570 [14.48]
D25000Z00 D25000Z400	2.254 [57.25]	2.200 [55.88]	0.735 [18.67]	0.100 [2.54]	0.550 [13.97] x 0.570 [14.48]
D37000Z00 D37000Z400	2.903 [73.74]	2.200 [55.88]	0.735 [18.67]	0.100 [2.54]	0.550 [13.97] x 0.570 [14.48]
D50000Z00 D50000Z400	2.809 [71.35]	2.700 [68.58]	0.900 [22.86]	0.100 [2.54]	Ø 0.630 [16.00]

Material: Composite, conductive volume resistivity [1.0 OHM-cm
max]. Alternate material: Glass filled nylon, UL 94V-0.

Attenuation: 40+ decibels

MOLDED CABLE ASSEMBLY

EMI ENVIRONMENT INGRESS PROTECTION CODE IP67
AVAILABLE WITH WD, WDD AND EVD SERIES



**CONTACT TECHNICAL SALES
FOR MORE INFORMATION**



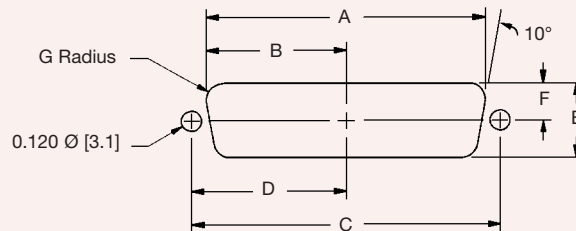
Positronic
connectpositronic.com



ACCESSORIES

Environmental
D-Sub

ENCLOSURE WALL CUTOUT FOR CONNECTORS WD SERIES AND WDD SERIES



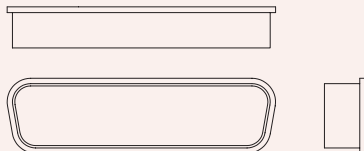
SHELL SIZE	WD	WDD	MOUNTING	A ±0.005	B ±0.005	C ±0.005	D ±0.005	E ±0.005	F ±0.005	G ±0.002
1	9	15	Inside Wall	0.806 [20.47]	0.403 [10.24]	0.984 [24.99]	0.492 [12.50]	0.449 [11.40]	0.225 [5.72]	0.132 [3.35]
			Outside Wall	0.874 [22.20]	0.437 [11.10]	0.984 [24.99]	0.492 [12.50]	0.513 [13.03]	0.257 [6.53]	0.083 [2.11]
2	15	26	Inside Wall	1.134 [28.80]	0.567 [14.40]	1.312 [33.32]	0.656 [16.66]	0.449 [11.40]	0.225 [5.72]	0.132 [3.35]
			Outside Wall	1.202 [30.53]	0.601 [15.27]	1.312 [33.32]	0.656 [16.66]	0.513 [13.03]	0.257 [6.53]	0.083 [2.11]
3	25	44	Inside Wall	1.674 [42.52]	0.837 [21.26]	1.852 [47.04]	0.926 [23.52]	0.449 [11.40]	0.225 [5.72]	0.132 [3.35]
			Outside Wall	1.743 [44.27]	0.872 [22.15]	1.852 [47.04]	0.926 [23.52]	0.513 [13.03]	0.257 [6.53]	0.083 [2.11]
4	37	62	Inside Wall	2.326 [59.08]	1.163 [29.54]	2.500 [63.50]	1.250 [31.75]	0.449 [11.40]	0.225 [5.72]	0.132 [3.35]
			Outside Wall	2.391 [60.73]	1.196 [30.38]	2.500 [63.50]	1.250 [31.75]	0.513 [13.03]	0.257 [6.53]	0.083 [2.11]
5	50	78	Inside Wall	2.218 [56.34]	1.109 [28.17]	2.406 [61.11]	1.203 [30.57]	0.555 [14.10]	0.278 [7.06]	0.132 [3.35]
			Outside Wall	2.297 [58.34]	1.149 [29.18]	2.406 [61.11]	1.203 [30.57]	0.623 [15.82]	0.312 [7.92]	0.083 [2.11]

PROTECTIVE COVER

SUPPLIED AS STANDARD WITH ALL CONNECTORS
WD, WDD AND EVD SERIES

COVER WITHOUT EARS

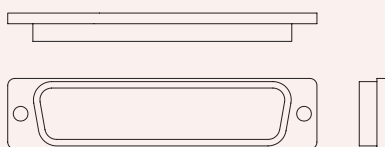
(FOR CONNECTORS WITHOUT FIXED JACKSCREWS)



Material: Conductive polyethylene
Color: Black
Optional :
Material: Static dissipative ethylene vinyl acetate
Optional: Pink

COVER WITH EARS

(FOR CONNECTORS WITH FIXED JACKSCREWS)



Material: Conductive polyester
Color: Black

WD EVD	WDD	CONDUCTIVE REPLACEMENT PART NUMBER WITHOUT EARS	STATIC DISSIPATIVE REPLACEMENT PART NUMBER WITHOUT EARS	REPLACEMENT PART NUMBER WITH EARS
9M	15M	4931-9-0-0	4931-9-1-0	4931-9-100-0
9F	15F	4932-9-0-0	4932-9-1-0	4932-9-100-0
15M	26M	4931-15-0-0	4931-15-1-0	4931-15-100-0
15F	26F	4932-15-0-0	4932-15-1-0	4932-15-100-0
25M	44M	4931-25-0-0	4931-25-1-0	4931-25-100-0
25F	44F	4932-25-0-0	4932-25-1-0	4932-25-100-0
37M	62M	4931-37-0-0	4931-37-1-0	4931-37-100-0
37F	62F	4932-37-0-0	4932-37-1-0	4932-37-100-0
50M	78M	4931-50-0-0	4931-50-1-0	4931-50-100-0
50F	78F	4932-50-0-0	4932-50-1-0	4932-50-100-0

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com



UNIQUE FEATURES

Environmental
D-Sub

U N I Q U E F E A T U R E S

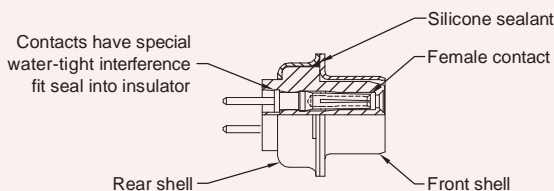
Positronic is **known** around the world **for**
offering our customers **flexibility** when choosing connectors.

In addition to allowing **customers** to **create** part numbers for **particular applications**,
Positronic offers a **wide variety** of features and accessories within our products.

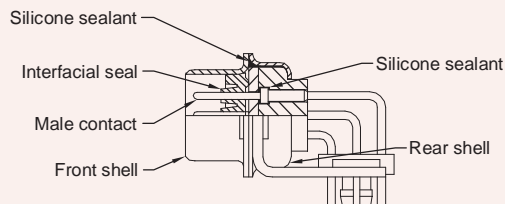
Positronic is also **eager** to modify existing products **to meet unique**
customer requirements. If you do not find what you need
with this catalog, please contact us for assistance.



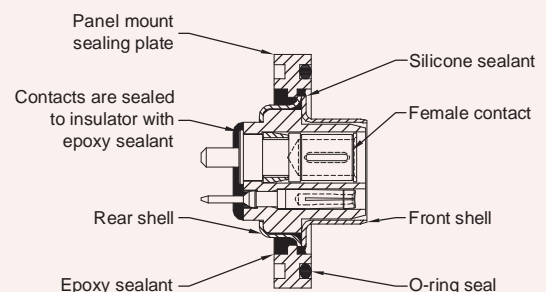
OTHER SEALED D-SUBMINIATURE CONNECTOR OPTIONS



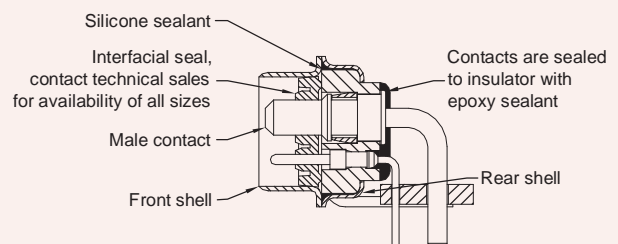
MD STYLE CONNECTOR



ODD STYLE CONNECTOR



COMBO-D STYLE CONNECTOR



COMBO-D STYLE CONNECTOR

SEALED STANDARD OR HIGH DENSITY D-SUBMINATURE

- Available in both standard density and high density connector variants.
- Standard MD or ODD series connectors can be sealed between the connector shell and the connector insert.
- Contact technical sales for more information.

SEALED COMBINATION D-SUBMINATURE

- Could be supplied with mounting plate or without.
- Contact technical sales for more information or additional contact configurations.



Positronic
connectpositronic.com

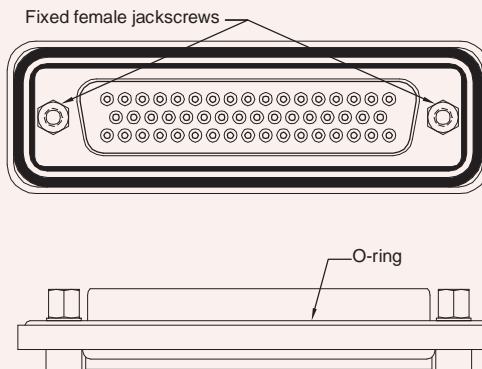
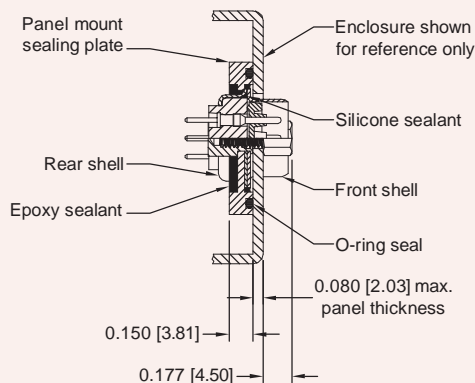


UNIQUE FEATURES

Environmental
D-Sub



MACHINED ALUMINUM MOUNTING PLATE WITH CONDUCTIVE O-RING



MATERIALS AND FINISHES:

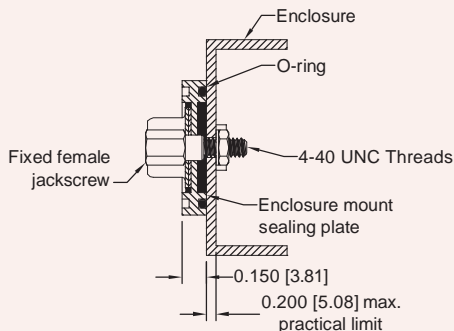
Panel mount sealing plate -
Aluminum, yellow chromate coating.

Conductive O-ring -
Silver coated thermoplastic elastomer.

CONTACT TECHNICAL SALES FOR MORE INFORMATION

OUTSIDE WALL ENCLOSURE MOUNT

FOR APPLICATIONS REQUIRING SEALED D-SUBMINIATURE CONNECTOR TO BE MOUNTED ON THE OUTSIDE OF THE ENCLOSURE.



Sealing Plate Material: Glass filled thermoplastic

Note: Sealing plate is mounted to enclosure wall with jackscrews torqued to a value of 1.75 in-lb [0.20 Nm] minimum, 2.25 in-lb [0.25 Nm] maximum.

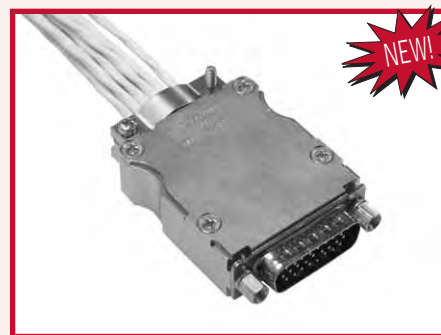
CONTACT TECHNICAL SALES FOR PART NUMBER

LIGHTWEIGHT ALUMINUM HOOD

Positronic now offers a **Lightweight Aluminum Hood** for use with D-subminiature connectors!

These hoods are offered in the following material and finish combinations:

- Aluminum
- Aluminum with electroless nickel plate
- Aluminum with yellow anodize,
- Aluminum with yellow chromate conversion, zinc content is 1% maximum.





Positronic
connectpositronic.com



UNIQUE FEATURES

Environmental
D-S_{ub}

OTHER ENVIRONMENTAL CONNECTOR OFFERINGS



HERMETIC CONNECTORS

Intended for use as an electrical feed through in high vacuum applications • Leakage rate: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar • Signal, power, coax and high voltage versions available • Connectors can be mounted on flange assembly per customer specification

ENVIRONMENTAL CIRCULAR CONNECTORS

Non-corrodible / lightweight composite construction
• EMI/RFI shielded versions • Thermocouple contacts
• Environmentally sealed versions • Rear insertion / front release of removable contacts • Two level sequential mating
• Over molding available on full assemblies



Positronic
connectpositronic.com



APPLICATION TOOLS

Environmental
D-S_{ub}

A P P L I C A T I O N T O O L S S E C T I O N

*EVD connectors are offered with **removable crimp contacts**.*

*Positronic recognizes the **importance of** supplying **application tooling** to support our customers' use of our products.*

*Information on application tooling is **available** on our web site at*

<http://www.connectpositronic.com/design-tools/tooling>

*There you will find **downloadable PDF** cross reference charts for removable and compliant press-in contacts. These charts will **supply part numbers** for insertion, removal and crimping tools, along with **information regarding use** of tools and techniques.*



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com



APPLICATION TOOLS

Environmental
D-Sub

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Positronic Contact Part Number	Hand Crimp Tool	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv,	Insertion Tool	Mfg. Cross	Mil Equiv.	Removal Tool	Mfg. Cross	Mil. Equiv	Automatic Crimp Tool See note*
FC6020D2-14	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6020D2AL	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6020D2CH	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6020D2CO	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6020D2CU	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
FC6520D2-14	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
M39029/63-368	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
M39029/64-369	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6020D-14	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6020DAL	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6020DCH	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6020DCO	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0
MC6020DCU	9507-0-0-0	AFM8	M22520/2-01	9502-5-0-0	K13-1	M22520/2-08	4711-2-0-0	91067-2	M81969/1-02	4711-2-0-0	91067-2	M81969/1-02	9550-1-0-0

All male and female crimp contacts can be ordered on reels in quantities of 2,000 by adding letter "R" after the contact part number, see page 40 for more information.







EXPLANATION OF INGRESS PROTECTION (IP) SYSTEM FOR ENCLOSURES

This system outlined in IEC 60529 is designed to indicate the standard degrees of protection: from (a) touch and ingress of solids, and (b) from ingress of liquids, which enclosures may exhibit, and must not be confused with explosion protection techniques. These degrees of protection are, however, frequently referred to in standards and literature, and hence are listed below.

The first numeral designates the degree of protection against touching live parts and ingress of solid foreign bodies, the second designates the degree of protection against ingress of liquid.

The higher the numeral of the first and second characteristic, the greater degree of protection the enclosure offers, e.g. IP55 meets all the less onerous degrees such as IP22, IP23, IP34 and IP54. The term “weatherproof” is not included at present in the IP system but IP54 enclosures are frequently described in this way.

PROTECTION OF EQUIPMENT AGAINST INGRESS OF SOLID BODIES AND LIQUIDS

SOLID FOREIGN BODIES			LIQUIDS	
FIRST CHARACTERISTIC NUMERAL	OBJECT SIZE	DEGREE OF PROTECTION	SECOND CHARACTERISTIC NUMERAL	DEGREE OF PROTECTION
0		No protection of persons against contact with live or moving parts inside the enclosure. No protection of equipment against ingress of solid foreign bodies.	0	No protection.
1	>50 mm 	Protection against accidental or inadvertent contact with live or moving parts inside the enclosure by a large surface of the human body, e.g. a hand, but not protection against deliberate access to such parts. Protection against ingress of large solid foreign bodies.	1	Protection against drops of condensed water. Drops of condensed water falling on the enclosure shall have no harmful effect.
2	>12.5 mm 	Protection against contact with live or moving parts inside the enclosure by fingers. Protection against ingress of medium size solid foreign bodies.	2	Protection against drops of liquid. Drops of falling liquid shall have no harmful effect when the enclosure is tilted at any angle up to 15° from the vertical.
3	>2.5 mm 	Protection against contact with live or moving parts inside the enclosure by tools, wires or such objects of thickness greater than 2.5 mm. Protection against ingress of small solid foreign bodies.	3	Protection against rain. Water falling in rain at an angle equal to or smaller than 60° with respect to the vertical shall have no harmful effect.
4	>1.0 mm 	Protection against contact with live or moving parts, inside the enclosure by tools, wires or such objects of thickness greater than 1 mm. Protection against ingress of small solid foreign bodies.	4	Protection against splashing. Liquid splashed from any direction shall have no harmful effect.
5		Complete protection against contact with live or moving parts inside the enclosure. Protection against harmful deposits of dust. The ingress of dust is not totally prevented, but dust cannot enter in an amount sufficient to interfere with satisfactory operation of the equipment enclosed.	5	Protection against water jets. Water projected by a nozzle from any direction under stated conditions shall have no harmful effect.
6		Complete protection against contact with live or moving parts inside the enclosure. Protection against ingress of dust.	6	Protection against conditions on ships' decks (deck watertight equipment). Water from heavy seas shall not enter the enclosures under prescribed conditions.
			7	Protection against immersion in water. It shall not be possible for water to enter the enclosure under stated conditions of pressure and time.
			8	Protection against indefinite immersion in water under specified pressure. It shall not be possible for water to enter the enclosure.



DESCRIPTION OF NEMA ENCLOSURE TYPES

TYPE	INTENDED USE AND DESCRIPTION
1	Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.
2	Indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.
3	Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and damage from external ice formation.
3R	Outdoor use primarily to provide a degree of protection against rain, sleet and damage from external ice formation.
3S	Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and to provide for operation of external mechanisms when ice laden.
4	Indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.
4X	Indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.
5	Indoor use primarily to provide a degree of protection against settling airborne dust, falling dirt and dripping noncorrosive liquids.
6	Indoor or outdoor use primarily to provide a degree of protection against hose-directed water and the entry of water during occasional temporary submersion at a limited depth and damage from external ice formation.
6P	Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth and damage from external ice formation.
12, 12K	Indoor use primarily to provide a degree of protection against circulating dust, falling dust, falling dirt and dripping noncorrosive liquids.
13	Indoor use primarily to provide a degree of protection against dust, spraying of water, oil and noncorrosive coolant.

This material is reproduced from NEMA Standards Publication 250-1991 by permission of the National Electrical Manufacturers Association which holds the copyright.



COMPARISON BETWEEN NEMA ENCLOSURE TYPE NUMBERS AND IEC ENCLOSURE CLASSIFICATION DESIGNATIONS

IEC Publication 60529, Classification of Degrees of Protection Provided by Enclosures, provides a system for specifying the enclosures of electrical equipment on the basis of the degree of protection provided by the enclosure. IEC 60529 does not specify degrees of protection against mechanical damage of equipment, risk of explosions or conditions such as moisture (produced for example by condensation), corrosive vapors, fungus or vermin. NEMA Standards Publication 250 does test for environmental conditions such as corrosion, rust, icing, oil and coolants. For this reason, and because the tests and evaluations for other characteristics are not identical, the IEC Enclosure Classification Designations cannot be exactly equated with NEMA Enclosure Type Numbers.

The IEC designation consists of the letters IP followed by two numerals. The first characteristic numeral indicates the degree of protection provided by the first enclosure with respect to persons and solid foreign objects entering the enclosure. The second characteristic numeral indicates the degree of protection provided by the enclosure with respect to the harmful ingress of water.

The Table provides an approximate equivalent conversion from NEMA Enclosure Type Numbers to IEC Enclosure Classification Designations. The NEMA Types meet or exceed the test requirements for the associated IEC Classifications; for this reason the Table cannot be used to convert exactly from IEC Classifications to NEMA Types.

COMPARISON OF NEMA TYPE NUMBERS TO IEC CLASSIFICATION DESIGNATIONS

(Cannot be used to convert IEC Classification Designations to NEMA Type Numbers)

NEMA ENCLOSURE TYPE NUMBER	IEC ENCLOSURE CLASSIFICATION DESIGNATION
1	IP10
2	IP11
3	IP54
3r	IP14
3s	IP54
4 and 4x	IP56
5	IP52
6 and 6p	IP67
12 and 12K	IP52
13	IP54

This material is reproduced from NEMA Standards Publication 250-1991 by permission of the National Electrical Manufacturers Association which holds the copyright.

Note: This comparison is based on tests specified in IEC Publication 60529.

OTHER D-SUBMINIATURE PRODUCTS

Positronic offers a full line of D-subminiature connectors in a wide variety of contact variants and package sizes with press-fit, solder and cable terminations. All Positronic connector products provide quality, reliability and flexibility.



HIGH PERFORMANCE D-SUBMINIATURE CONNECTORS

Standard and high density connectors manufactured to MIL-PRF-24308, Class M; Goddard Space Flight Center S-311-P-4 and Goddard Space Flight Center S-311-P-10.

COMPLIANT PRESS-IN CONNECTORS

Standard and high density connectors
Straight and right angle (90°) printed board mount
Low press-in force eliminates stress on printed circuit board during insertion.

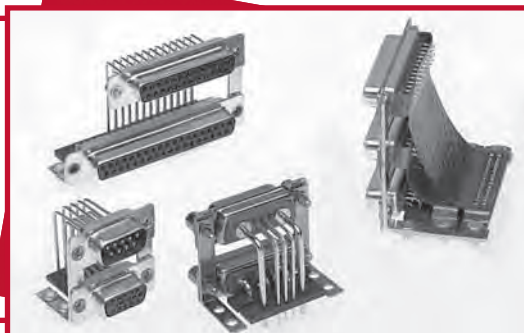


COMBO-D CONNECTORS

Connectors with signal, shielded, power, thermocouple or high voltage contacts in a single package.
Power press-fit terminations now available.

DUAL PORT CONNECTORS

Right angle (90°) printed board mount connectors assembled stacked to maximize real estate; contact variants 9 through 62; available in standard density high density, and mixed density.



Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24

Current Ratings: To 200 amperes per contact

Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in a variety of package sizes
PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

Compliance:

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22

Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven connector housing sizes

Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22

Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22

Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cabled connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22

Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



Positronic®
global connector solutions

Regional Headquarters

Positronic | USA

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/locations

For most current sales office information, please visit www.connectpositronic.com/locations

LOCATIONS

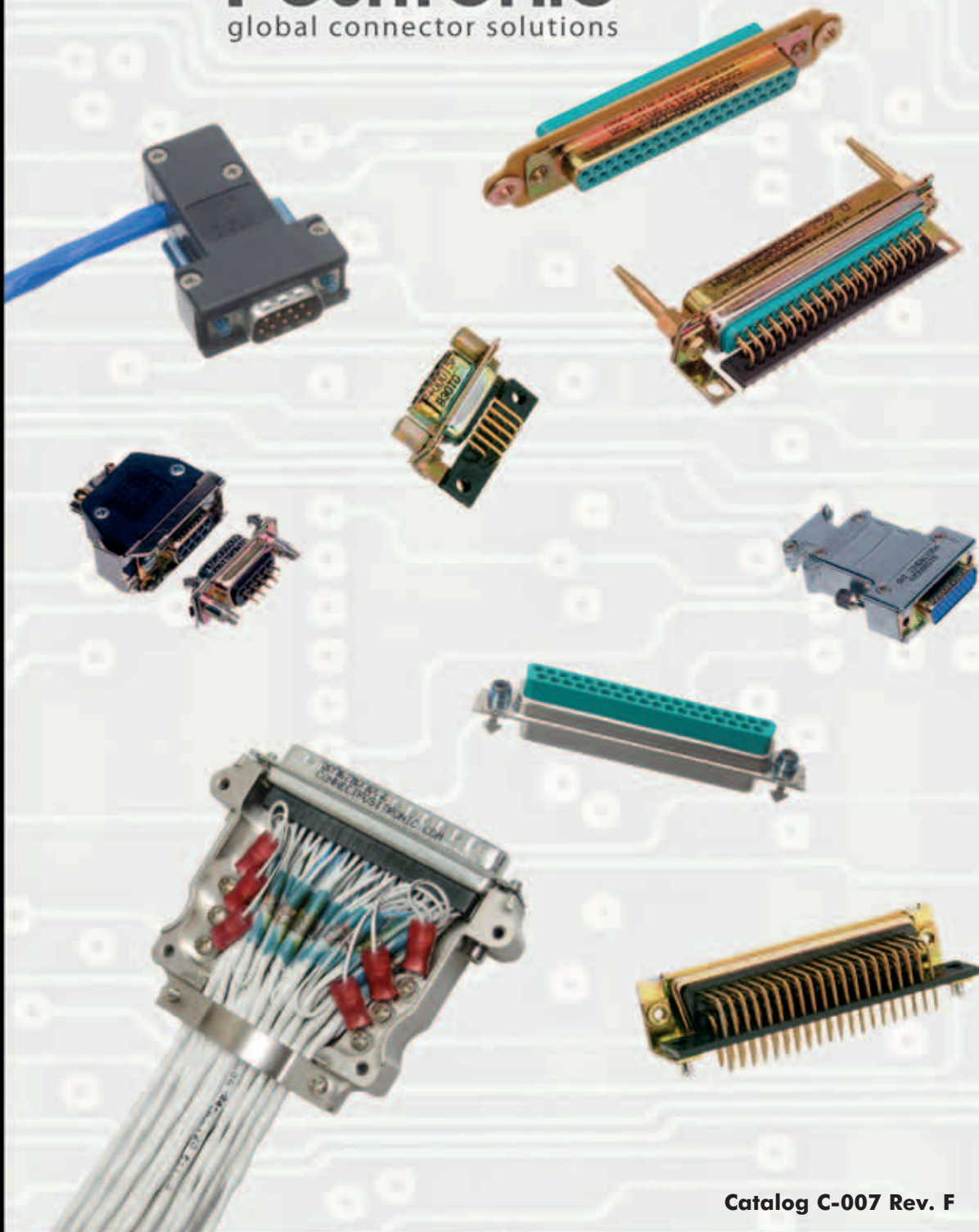
www.connectpositronic.com

ACCESSORIES

D-subminiature Connectors



Positronic®
global connector solutions



Catalog C-007 Rev. F

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261[†] #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

[†]Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

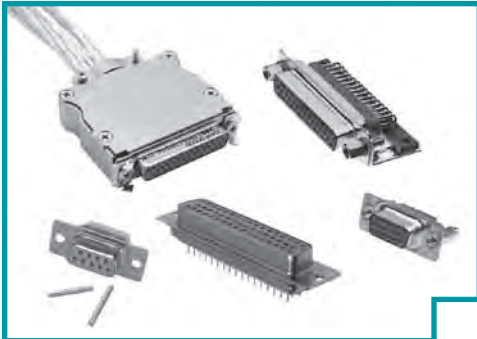
Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

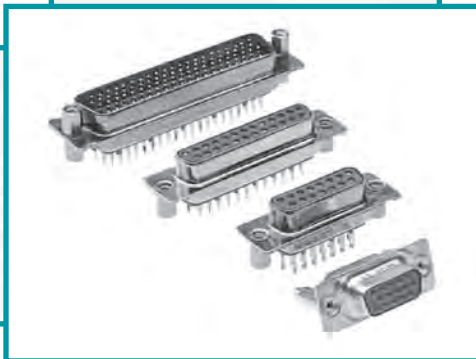
*This catalog should be accompanied by copies of Positronic's
high reliability D-subminiature connector catalogs.*

*Contact your sales representative or visit
www.connectpositronic.com for copies of these catalogs.*

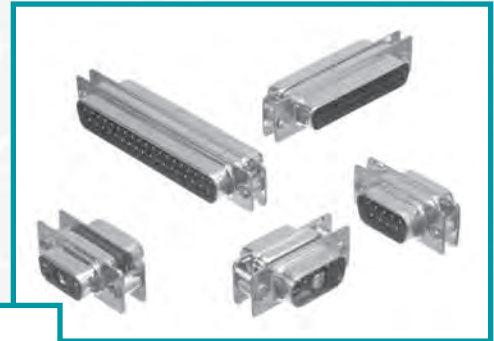
STANDARD AND HIGH DENSITY
D-SUBMINIATURE CONNECTORS



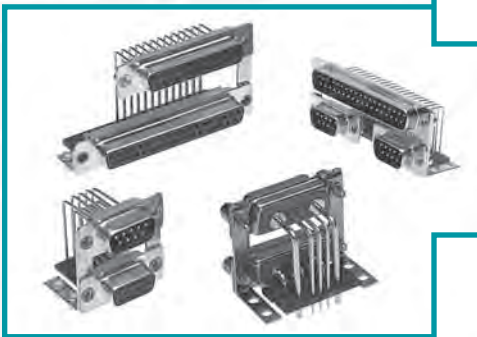
PRESS-IN CONNECTORS



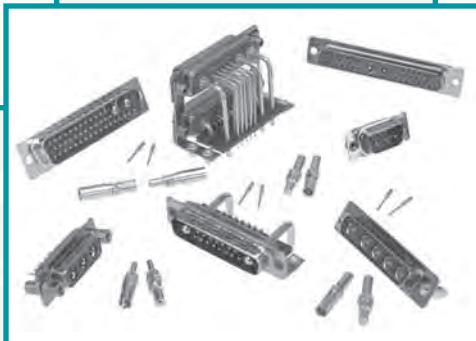
CONNECTOR SAVERS
GENDER CHANGERS



DUAL-PORT
STACKED CONNECTORS



STANDARD AND HIGH
DENSITY COMBO-D
CONNECTORS



ENVIRONMENTAL
D-SUBMINIATURE
CONNECTORS



HIGH PERFORMANCE
D-SUBMINIATURE CONNECTORS,
INCLUDING SPACEFLIGHT



TERMINATION TYPES:

Signal, Power, High Voltage, Shielded, and Thermocouple

MULTIPLE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

TABLE OF CONTENTS

D-Sub
Accessories

M O U N T I N G B R A C K E T S

RIVETED ON RIGHT ANGLE (90°) MOUNTING BRACKETS.....	1
PUSH-ON FASTENER FOR RIVETED ON RIGHT ANGLE (90°) MOUNTING BRACKETS	1
RAPID INSTALLATION INTO PRINTED CIRCUIT BOARD	
RIGHT ANGLE (90°) METAL MOUNTING BRACKET	2
SUPPLIED WITH RIVETED-ON BRACKET ASSEMBLIES	
RIGHT ANGLE (90°) METAL MOUNTING BRACKET.....	2
SECURED TO CONNECTOR WITH THREADED FASTENERS	
RIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET.....	3
SECURED TO CONNECTOR WITH THREADED FASTENERS	
RIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET WITH THREADED INSERT.....	3
SECURED TO CONNECTOR WITH THREADED FASTENERS	
RIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET WITH ALIGNMENT BAR.....	3
SUPPLIED WITH STANDARD DENSITY MIL-DTL-24308/23 AND /24 CONNECTORS	

P O S T S A N D S P A C E R S

SWAGED SPACER.....	4
SWAGED SPACERS	4
SWAGED LOCKNUT	4
SWAGED SPACER WITH PUSH-ON FASTENER.....	4
RAPID INSTALLATION INTO PRINTED CIRCUIT BOARD	
THREADED POST	5

P A N E L / B U L K H E A D M O U N T I N G O P T I O N S

MOUNTING OPTIONS	6
PANEL CUTOUTS.....	7-8

F E R R I T E I N D U C T O R

FERRITE INDUCTOR BAR FOR EMI/RFI NOISE SUPPRESSION	9
--	---

C A B L E A D A P T E R S (H O O D S / B A C K S H E L L S)

TYPICAL JACKSCREW LOCKING / CODING OPTIONS	11
TYPICAL QUICK DISCONNECT LOCKING DEVICE OPTIONS.....	12
LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD)	13
GENERAL INFORMATION	
LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD)	14
WITH FIXED FEMALE JACKSCREWS	





continued from previous page . . .

CABLE ADAPTERS (HOODS/BACKSHELLS)....continued

LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS	15
LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD) WITH QUICK DISCONNECT LOCKING DEVICE	16
EMI/RFI METAL CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS	17
EMI/RFI METAL CABLE ADAPTER (HOOD) WITH QUICK DISCONNECT LOCKING DEVICE	18
EMI/RFI METAL CABLE ADAPTER (HOOD) WITH M3 THREADS	19
EMI/RFI ADAPTER	19
CRIMP FERRULE SYSTEMS FOR USE WITH CODE G CABLE ADAPTERS (HOODS)	20
METAL CABLE ADAPTER (HOOD)	21
PLASTIC CABLE ADAPTER (HOOD)	21
LOW PROFILE CABLE ADAPTER (HOOD)	22
PLASTIC CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS.....	23
SIZE 50 PLASTIC CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS.....	24
SIZE 104 COMPOSITE CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS	24
EMI/RFI COMPOSITE CABLE ADAPTERS (HOODS) WITH JACKSCREWS.....	25

LOCKING AND CODING SYSTEMS

JACKSCREW SYSTEMS.....	27
CODING DEVICE (KEYING) JACKSCREW SYSTEMS	27
QUICK DISCONNECT LOCKING DEVICE	28

U N I Q U E F E A T U R E S

FLARED CONNECTOR HOUSING (SHELLS)	29
LOW PROFILE MOUNTING BRACKET.....	30
CAPTIVE ALIGNMENT BARS.....	30
PROTECTIVE COVER	31
INTERFACIAL SEAL	31
BLIND MATING SYSTEM.....	32
SWAGEABLE PLASTIC MOUNTING BRACKET WITH ALIGNMENT BAR.....	33
CUL-DE-SAC STYLE MOUNTING ACCESSORIES	33
CODING DEVICE (KEYING) OPTIONS.....	33



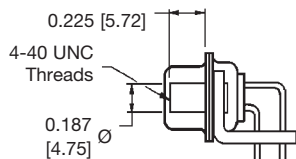
Positronic
connectpositronic.com

MOUNTING BRACKETS

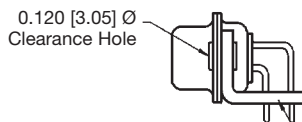
D-Sub
Accessories

RIVETED ON RIGHT ANGLE (90°) MOUNTING BRACKETS^{*1}

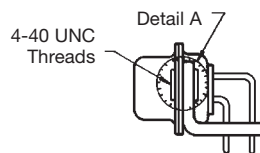
CODE R, R2, R3, R4, R5, R6, R7 AND R8



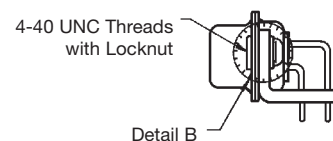
R/R2^{*2}



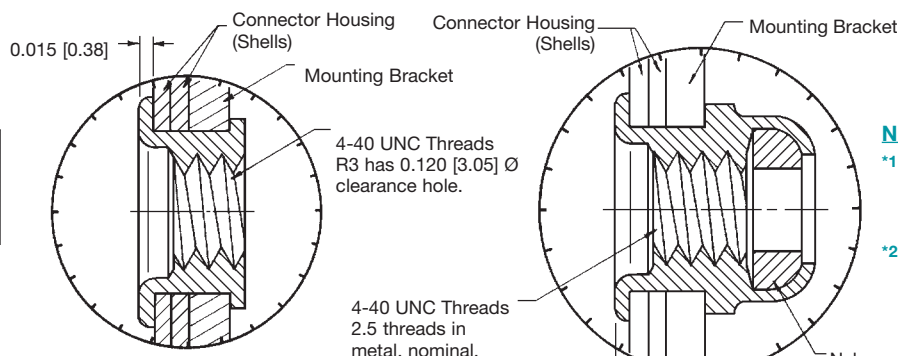
R3/R6^{*2}



R4/R7^{*2}



R5/R8^{*2}



DETAIL A

DETAIL B

For **dimensional information**, see chart on page 2

NOTES:

- ^{*1} Non-removable threaded hardware is built and inspected to 5 in/lbs or 80 in/oz torque.
- ^{*2} Contact alignment bar is supplied with R2, R6, R7 and R8 options only.

Material: Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel passivated.

PUSH-ON FASTENER FOR RIVETED ON RIGHT ANGLE (90°) MOUNTING BRACKETS

RAPID INSTALLATION INTO PRINTED CIRCUIT BOARD

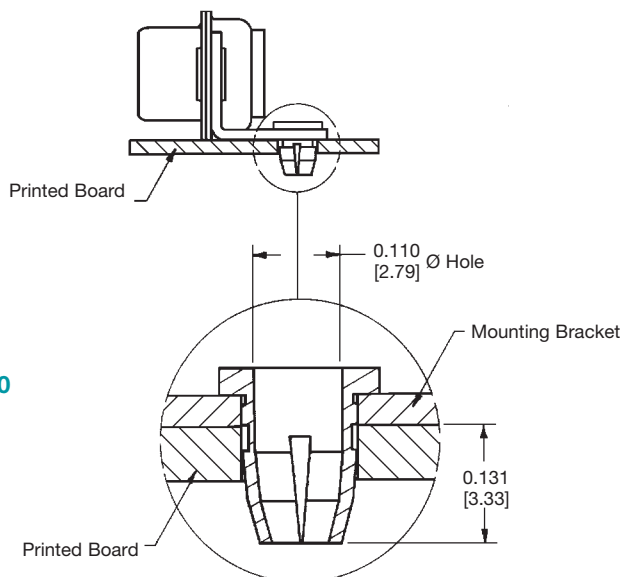
CODE N



CBD27W2F57R7N00
(shown left)

ODD15F4R7N0X
(shown center)

HDC50S5R7N00-50
(shown right)



Printed board mounting hole to be 0.123 [3.12] Ø ±0.003 for use with push-on fastener.

Material: Beryllium copper, tin plate.

TYPICAL PERFORMANCE EVALUATION DATA			
SAMPLE #	PRINTED BOARD HOLE Ø	INSERTION FORCE (LBS.)	RETENTION FORCE (LBS.)
1	0.120 [3.05]	7-1/4	5-3/4
2	0.123 [3.12]	5-3/4	5-1/2
3	0.125 [3.18]	2-3/4	2-1/2
4	0.128 [3.25]	1-3/4	2-1/4
5	0.126 [3.20] PLATED	1-3/4	2-1/4

RIGHT ANGLE (90°) METAL MOUNTING BRACKET

SUPPLIED WITH RIVETED-ON BRACKET ASSEMBLIES

CODE R, R2^{*1}, R3, R4, R5, R6^{*1}, R7^{*1}, AND R8^{*1}

PART NO.	A	B	C	D	SIZE	MD	MDX	ED	CBD	CBDD	HDC	DD	PCD	ODD
4535-1-1	0.506 [12.85]	0.623 [15.82]	0.246 [6.25]	0.358 [9.09]	9-37	4	4							
4535-2-1	0.339 [8.61]	0.456 [11.58]	0.246 [6.25]	0.358 [9.09]	9-37	5	5		5, 55, 57		5		5	
4535-3-1	0.395 [10.03]	0.512 [13.00]	0.303 [7.70]	0.414 [10.52]	29	5			5, 55, 57		5		5	
4535-4-1	0.562 [14.27]	0.679 [17.25]	0.303 [7.70]	0.414 [10.52]	29	4								
4535-5-1	0.601 [15.27]	0.718 [18.24]	0.246 [6.25]	0.358 [9.09]	9-37	59					59			
4535-6-1	0.657 [16.69]	0.774 [19.66]	0.303 [7.70]	0.414 [10.52]	29	59					59			
4535-8-1	0.420 [10.67]	0.537 [13.64]	0.246 [6.25]	0.358 [9.09]	9-37			42, 44, 52	7, 75, 77		42			
4535-9-1	0.470 [11.94]	0.587 [14.91]	0.303 [7.70]	0.414 [10.52]	29			42, 44, 52	7, 75, 77		42			
4535-32-1	0.414 [10.52]	0.531 [13.49]	0.246 [6.25]	0.358 [9.09]	15-62					4				4
4535-33-1	0.414 [10.52]	0.531 [13.49]	0.303 [7.70]	0.414 [10.52]	78					4				4
4535-34-1	0.528 [13.41]	0.645 [16.38]	0.246 [6.25]	0.358 [9.09]	15-62					5		4		5
4535-35-1	0.573 [14.55]	0.690 [17.53]	0.303 [7.70]	0.414 [10.52]	78					5		4		5
4535-61-1	0.514 [13.06]	0.631 [16.03]	0.334 [8.48]	0.457 [11.61]	104									4
4535-62-1	0.614 [15.60]	0.731 [18.57]	0.334 [8.48]	0.445 [11.30]	104					5		4		5

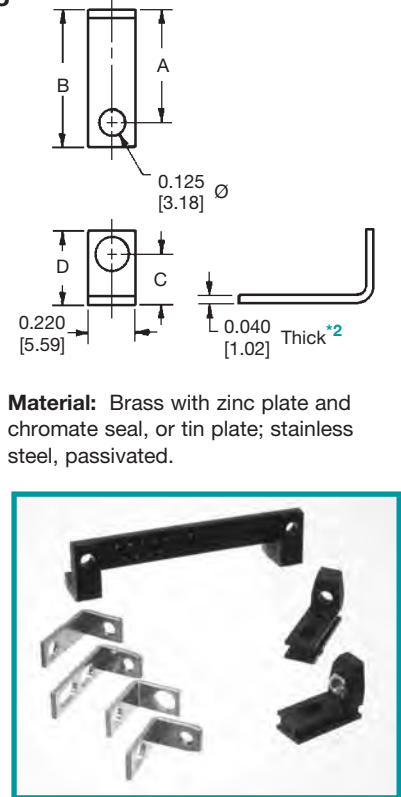
NOTE: Sold only as part of a connector assembly.

Any bracket shown can be supplied in non-standard configurations. Consult Technical Sales.

NOTES:

^{*1} Alignment bar is supplied with R2, R6, R7 and R8 options only.

^{*2} 0.062 [1.57] thick for size 104 DD & ODD series and CBD46W4 variant.



RIGHT ANGLE (90°) METAL MOUNTING BRACKET

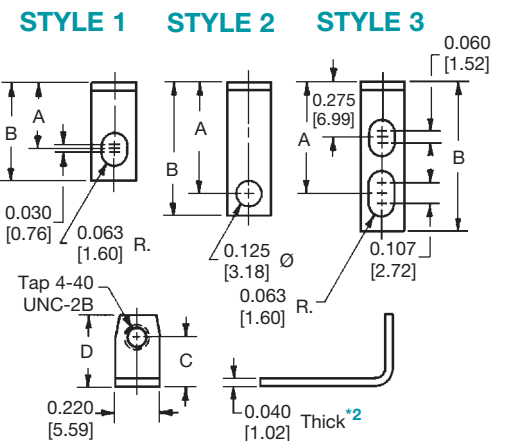
SECURED TO CONNECTOR WITH THREADED FASTENERS

CODE B AND B3

PART NO.	STYLE	A	B	C	D	SIZE	MD	MDX	ED	CBD	CBDD	HDC	DD	ODD
4535-1-0	2	0.491 [12.47]	0.608 [15.44]	0.246 [6.25]	0.358 [9.09]	9-37	4	4						
4535-2-0	1	0.324 [8.23]	0.484 [12.29]	0.244 [6.20]	0.358 [9.09]	9-37	5	5		5, 55, 57		5		
4535-3-0	1	0.380 [9.65]	0.594 [15.09]	0.303 [7.70]	0.417 [10.59]	29	5	5		5, 55, 57		5		
4535-4-0	2	0.547 [13.89]	0.664 [16.87]	0.303 [7.70]	0.414 [10.52]	29	4							
4535-5-0	3	0.554 [14.07]	0.739 [18.77]	0.244 [6.20]	0.358 [9.09]	9-37	59						4	5
4535-6-0	3	0.604 [15.34]	0.800 [20.32]	0.303 [7.70]	0.417 [10.59]	29, 50	59						4	5
4535-8-0	2	0.405 [10.29]	0.522 [13.26]	0.246 [6.25]	0.358 [9.09]	9-37			42, 44, 52	7, 75, 77		42		
4535-9-0	2	0.455 [11.56]	0.572 [14.53]	0.303 [7.70]	0.414 [10.52]	29			42, 44, 52	7, 75, 77		42		
4535-32-0	2	0.399 [10.13]	0.516 [13.11]	0.246 [6.25]	0.358 [9.09]	15-62					4			4
4535-33-0	2	0.399 [10.13]	0.516 [13.11]	0.303 [7.70]	0.414 [10.52]	78					4			4
4535-61-0	2	0.514 [13.06]	0.631 [16.03]	0.334 [8.48]	0.457 [11.61]	104								4
4535-62-0	2	0.614 [15.60]	0.731 [18.57]	0.334 [8.48]	0.445 [11.30]	104							4	5

NOTE: Sold only as part of a connector assembly.

Any bracket shown can be supplied in non-standard configurations. Consult Technical Sales.



Material: Brass with zinc plate and chromate seal, or tin plate; stainless steel, passivated.

NOTES:

^{*1} Contact alignment bar is supplied with B3 option only.

^{*2} 0.062 [1.57] thick for size 104 DD & ODD series and CBD46W4 variant.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



MOUNTING BRACKETS

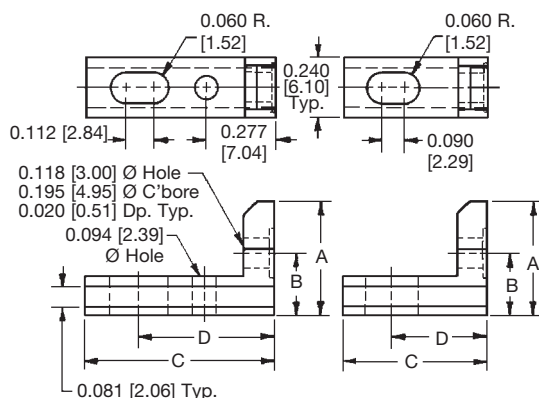
D-Sub
AccessoriesRIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET
SECURED TO CONNECTOR WITH THREADED FASTENERS
CODE B7 AND B8^{*1}

NOTE:

^{*1} Alignment bar supplied with B8 option.

STYLE 1

STYLE 2



Material: Nylon or polyester.

PART NO.	STYLE	A	B	C	D	SIZE	MD	MDX	ED	CBD	CBDD	HDC	DD	ODD
4544-6-0	1	0.450 [11.43]	0.244 [6.20]	0.740 [18.80]	0.544 [13.82]	9 - 37	4, 59	4						
4544-7-0						15 - 62							4	5
		0.565 [14.35]	0.303 [7.70]	0.790 [20.07]	0.606 [15.39]	29	4, 59							
						50	4, 59	4						
						78							4	5
4544-8-0	2	0.450 [11.43]	0.244 [6.20]	0.580 [14.73]	0.384 [9.75]	9 - 37	5	5	42, 52	5, 55, 57, 7, 75, 77	4	42, 5		4
4544-9-0						29	5		42, 52					
		0.565 [14.35]	0.303 [7.70]	0.620 [15.75]	0.440 [11.18]	50	5	5	42, 52	5, 55, 57, 7, 75, 77	4	42, 5		4

NOTE: Sold only as part of a connector assembly.

Any bracket shown can be supplied in non-standard configurations. Consult Technical Sales.

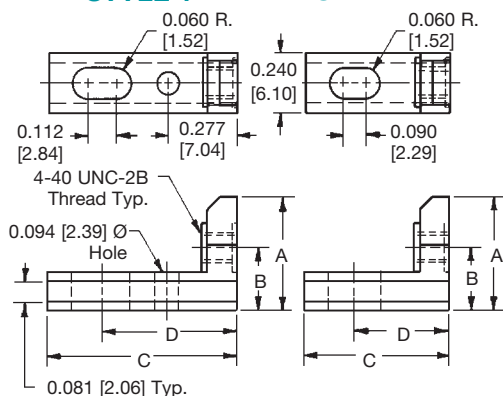
RIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET WITH THREADED INSERT
SECURED TO CONNECTOR WITH THREADED FASTENERS
CODE B9 AND B10^{*1}

NOTE:

^{*1} Alignment bar supplied with B10 option.

STYLE 1

STYLE 2



Material: Nylon or polyester.

PART NO.	STYLE	A	B	C	D	SIZE	MD	MDX	ED	CBD	CBDD	HDC	DD	ODD
4544-6-1	1	0.450 [11.43]	0.244 [6.20]	0.740 [18.80]	0.544 [13.82]	9 - 37	4, 59	4						
4544-7-1						15 - 62							4	5
						29	4, 59							
						50	4, 59	4						
						78							4	5
4544-8-1	2	0.450 [11.43]	0.244 [6.20]	0.580 [14.73]	0.384 [9.75]	9 - 37	5	5	42, 52	5, 55, 57, 7, 75, 77	4	42, 5		4
4544-9-1						29	5		42, 52					
						50	5	5	42, 52	5, 55, 57, 7, 75, 77	4	42, 52		4

NOTE: Sold only as part of a connector assembly.

Any bracket shown can be supplied in non-standard configurations. Consult Technical Sales.

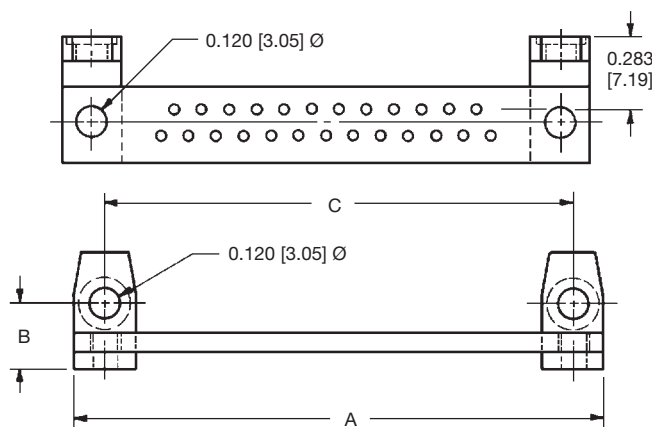
RIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET WITH ALIGNMENT BAR
SUPPLIED WITH STANDARD DENSITY MIL-DTL-24308/23 AND /24 CONNECTORS

PART NO.	A	B	C
4544-11-1	1.218 [30.94]	0.247 [6.27]	0.980 [24.89]
4544-11-2	1.546 [39.27]	0.247 [6.27]	1.312 [33.32]
4544-11-3	2.093 [53.16]	0.247 [6.27]	1.852 [47.04]
4544-11-4	2.734 [69.44]	0.247 [6.27]	2.500 [63.50]
4544-12-4	2.645 [67.18]	0.303 [7.70]	2.406 [61.11]

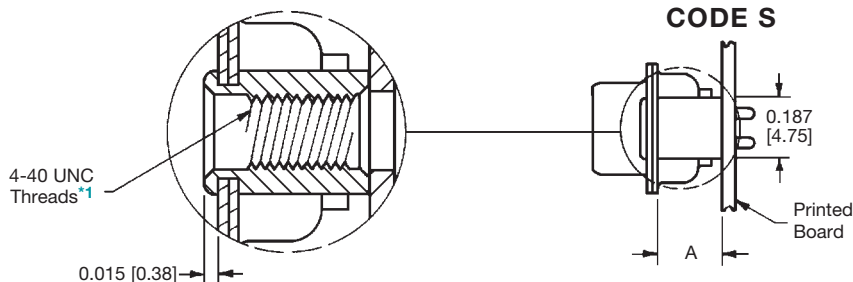
NOTE: Sold only as part of a connector assembly.

Material: Nylon or polyester.

May be supplied on special order with the MD, MDX and HDC printed board mount connectors.



SWAGED SPACER CODE S



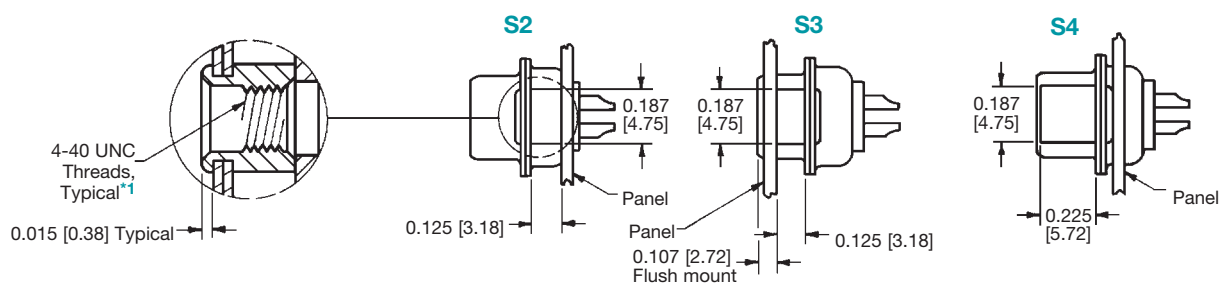
CONNECTOR SERIES	TERMINATION CODE NUMBER	A
MD, MDX, ED, HDC	all	0.225 [5.72]
	0, 1	0.375 [9.53]
ODD	2, 21, 3, 32, 4, 5	0.225 [5.72]
RD, ORD, DD, CBC, CBCD	all	0.375 [9.53]
SD	all	0.437 [11.10]
CBD, CBDD, CBM	solder cup & solder board mount	0.250 [6.53]
	press-in	0.265 [6.73]
PCD, PCDD	98	0.265 [6.73]

NOTES:

*1 Non-removable threaded hardware is built and inspected to 5in/lbs or 80 in/oz torque.

Material: Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel passivated.

SWAGED SPACERS CODE S2, S3, AND S4



NOTES:

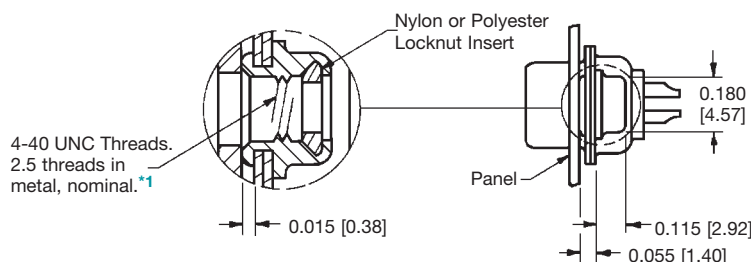
*1 Non-removable threaded hardware is built and inspected to 5in/lbs or 80 in/oz torque.

Material: Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel passivated.

SWAGED LOCKNUT CODE S5

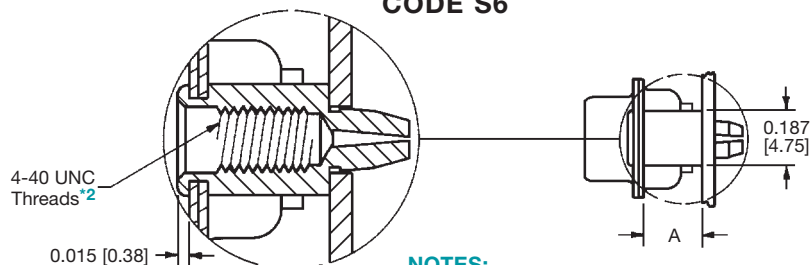
NOTES:

*1 Non-removable threaded hardware is built and inspected to 5in/lbs or 80 in/oz torque.



Material: Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel, passivated. Nylon or polyester locknut insert.

SWAGED SPACER WITH PUSH-ON FASTENER RAPID INSTALLATION INTO PRINTED CIRCUIT BOARD CODE S6*1



NOTES:

*1 Printed board mounting hole to be 0.123 [3.12] $\varnothing \pm 0.003$ for use with push-on fastener.

*2 Non-removable threaded hardware is built and inspected to 5in/lbs or 80 in/oz torque.

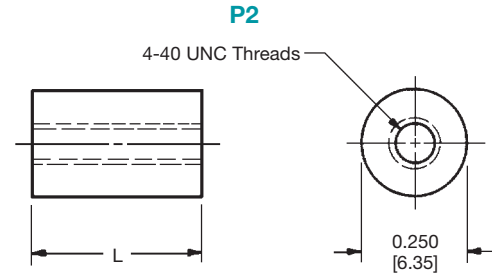
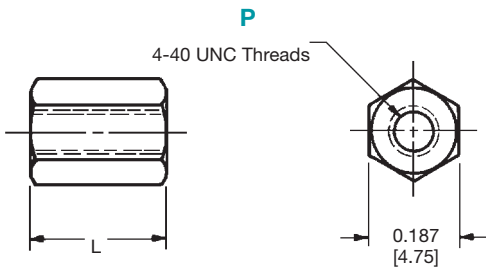
Material: Phosphor bronze, tin plate.

CONNECTOR SERIES	TERMINATION CODE NUMBER	A
MD, MDX, ED, HDC	all	0.225 [5.72]
	0, 1	0.375 [9.53]
ODD	2, 21, 3, 32	0.225 [5.72]
RD, ORD, DD, CBC, CBCD	all	0.375 [9.53]
SD	all	0.437 [11.10]
CBD, CBDD, CBM	all	0.250 [6.35]

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



THREADED POST CODE P AND P2



CONNECTOR SERIES	TERMINATION CODE NUMBER	A
MD, MDX, ED, HDC	all	0.225 [5.72]
ODD	0, 1	0.375 [9.53]
	2, 21, 3, 32	0.225 [5.72]
RD, ORD, DD, CBC, CBCD, PCD, PCDD	all	0.375 [9.53]
SD	all	0.437 [11.10]
CBD, CBDD, CBM	all	0.250 [6.35]

Material: **P** - Brass with zinc plate and chromate seal or tin plate; stainless steel, passivated.
P2 - Nylon.



RoHS

Positronic's D-subminiature Accessories are available in RoHS compliant materials. These materials will be supplied when the connector part number designates the RoHS modifier "/AA".

Connectors Designed To Customer Specifications

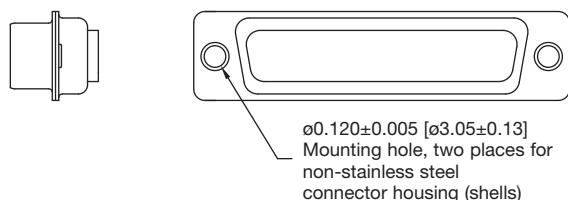
Positronic D-subminiature connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware; sealing for water resistance.

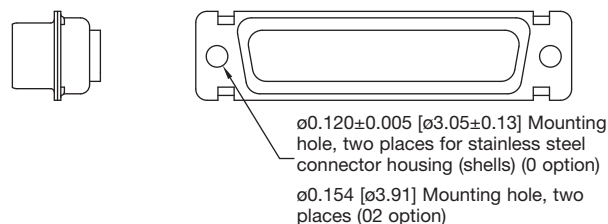
Contact Technical Sales with your particular requirements.

MOUNTING OPTIONS CODE 0, 02, F

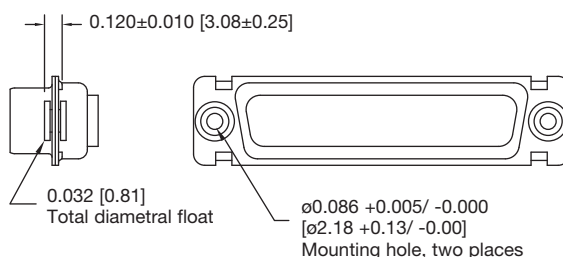
THRU HOLE MOUNTING (0)



THRU HOLE MOUNTING (0, 02)

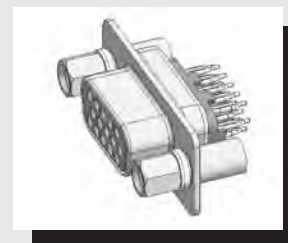
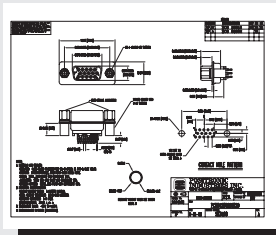


FLOAT MOUNTS (F)



Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



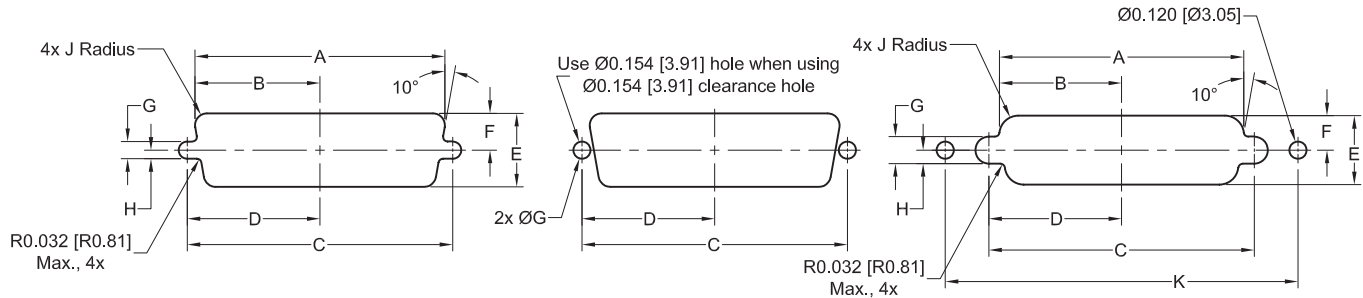


PANEL CUTOUTS

STANDARD CUTOUT

OPTIONAL CUTOUT

BLIND MATE FLOAT PLATE

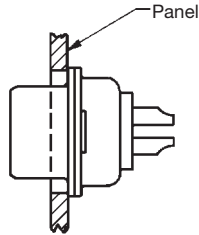


SHELL SIZE	PANEL CUTOUT OPTIONS	MOUNTING	A ±0.005 [±0.13]	B ±0.005 [±0.13]	C ±0.005 [±0.13]	D ±0.005 [±0.13]	E ±0.005 [±0.13]	F ±0.005 [±0.13]	G ±0.002 [±0.05]	H ±0.002 [±0.05]	J ±0.002 [±0.05]	K ±0.005 [±0.13]
SHELL SIZE 1	CLEARANCE HOLE	FRONT	0.874 [22.20]	0.437 [11.10]	0.984 [24.99]	0.492 [12.50]	0.513 [13.03]	0.257 [6.53]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	0.806 [20.47]	0.403 [10.24]	0.984 [24.99]	0.492 [12.50]	0.449 [11.40]	0.225 [5.72]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	0.906 [23.01]	0.453 [11.51]	0.984 [24.99]	0.492 [12.50]	0.545 [13.84]	0.273 [6.93]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	0.838 [21.29]	0.419 [10.64]	0.984 [24.99]	0.492 [12.50]	0.481 [12.22]	0.241 [6.12]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	
	BLIND MATE FLOAT PLATE	FRONT	0.838 [21.29]	0.419 [10.64]	0.984 [24.99]	0.492 [12.50]	0.481 [12.22]	0.241 [6.12]	0.188 [4.78]	0.094 [2.39]	0.132 [3.35]	1.586 [40.28]
SHELL SIZE 2	CLEARANCE HOLE	FRONT	1.202 [30.53]	0.601 [15.27]	1.312 [33.32]	0.656 [16.66]	0.513 [13.03]	0.257 [6.53]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	1.134 [28.80]	0.567 [14.40]	1.312 [33.32]	0.656 [16.66]	0.449 [11.40]	0.225 [5.72]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	1.234 [31.34]	0.617 [15.67]	1.312 [33.32]	0.656 [16.66]	0.545 [13.84]	0.273 [6.93]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	1.166 [29.62]	0.583 [14.81]	1.312 [33.32]	0.656 [16.66]	0.481 [12.22]	0.241 [6.12]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	
	BLIND MATE FLOAT PLATE	FRONT	1.166 [29.62]	0.583 [14.81]	1.312 [33.32]	0.656 [16.66]	0.481 [12.22]	0.241 [6.12]	0.188 [4.78]	0.094 [2.39]	0.132 [3.35]	1.914 [48.62]
SHELL SIZE 3	CLEARANCE HOLE	FRONT	1.743 [44.27]	0.872 [22.15]	1.852 [47.04]	0.926 [23.52]	0.513 [13.03]	0.257 [6.53]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	1.674 [42.52]	0.837 [21.26]	1.852 [47.04]	0.926 [23.52]	0.449 [11.40]	0.225 [5.72]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	1.775 [45.09]	0.888 [22.56]	1.852 [47.04]	0.926 [23.52]	0.545 [13.84]	0.273 [6.93]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	1.706 [43.33]	0.853 [21.67]	1.852 [47.04]	0.926 [23.52]	0.481 [12.22]	0.241 [6.12]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	
	BLIND MATE FLOAT PLATE	FRONT	1.706 [43.33]	0.853 [21.67]	1.852 [47.04]	0.926 [23.52]	0.481 [12.22]	0.241 [6.12]	0.188 [4.78]	0.094 [2.39]	0.132 [3.35]	2.461 [62.51]

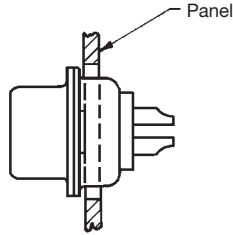
Chart continued on next page

PANEL CUTOUTS

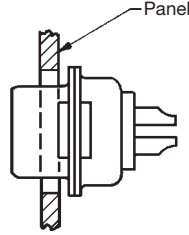
**CLEARANCE HOLE
REAR MOUNT**



**CLEARANCE HOLE
FRONT MOUNT**



**FLOAT MOUNT
REAR MOUNT**



**FLOAT MOUNT
FRONT MOUNT**

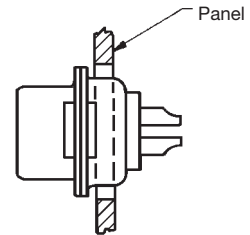


Chart continued from previous page

SHELL SIZE	PANEL CUTOUT OPTIONS	MOUNTING	A ±0.005 [±0.13]	B ±0.005 [±0.13]	C ±0.005 [±0.13]	D ±0.005 [±0.13]	E ±0.005 [±0.13]	F ±0.005 [±0.13]	G ±0.002 [±0.05]	H ±0.002 [±0.05]	J ±0.002 [±0.05]	K ±0.005 [±0.13]
SPECIAL SIZE 29	CLEARANCE HOLE	FRONT	1.425 [36.20]	0.713 [18.11]	1.534 [38.96]	0.767 [19.48]	0.623 [15.82]	0.312 [7.92]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	1.356 [34.44]	0.678 [17.22]	1.534 [38.96]	0.767 [19.48]	0.555 [14.10]	0.278 [7.06]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	1.457 [37.01]	0.729 [18.52]	1.534 [38.96]	0.767 [19.48]	0.655 [16.64]	0.328 [8.33]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	1.388 [35.26]	0.694 [17.63]	1.534 [38.96]	0.767 [19.48]	0.587 [14.91]	0.294 [7.47]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	
SHELL SIZE 4	CLEARANCE HOLE	FRONT	2.391 [60.73]	1.196 [30.38]	2.500 [63.50]	1.250 [31.75]	0.513 [13.03]	0.257 [6.53]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	2.326 [59.08]	1.163 [29.54]	2.500 [63.50]	1.250 [31.75]	0.449 [11.40]	0.225 [5.72]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	2.423 [61.54]	1.212 [30.78]	2.500 [63.50]	1.250 [31.75]	0.545 [13.84]	0.273 [6.93]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	2.354 [59.79]	1.177 [29.90]	2.500 [63.50]	1.250 [31.75]	0.481 [12.22]	0.241 [6.12]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	
	BLIND MATE FLOAT PLATE	FRONT	2.354 [59.79]	1.177 [29.90]	2.500 [63.50]	1.250 [31.75]	0.481 [12.22]	0.241 [6.12]	0.188 [4.78]	0.094 [2.39]	0.132 [3.35]	3.102 [78.79]
SHELL SIZE 5	CLEARANCE HOLE	FRONT	2.297 [58.34]	1.149 [29.18]	2.406 [61.11]	1.203 [30.56]	0.623 [15.82]	0.312 [7.92]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	2.218 [56.34]	1.109 [28.17]	2.406 [61.11]	1.203 [30.56]	0.555 [14.10]	0.278 [7.06]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	2.329 [59.16]	1.165 [29.59]	2.406 [61.11]	1.203 [30.56]	0.655 [16.64]	0.328 [8.33]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	2.250 [57.15]	1.125 [28.58]	2.406 [61.11]	1.203 [30.56]	0.587 [14.91]	0.294 [7.47]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	
	BLIND MATE FLOAT PLATE	FRONT	2.260 [57.40]	1.125 [28.58]	2.406 [61.11]	1.203 [30.56]	0.602 [15.29]	0.301 [7.65]	0.188 [4.78]	0.094 [2.39]	0.132 [3.35]	3.008 [76.40]
SHELL SIZE 6	CLEARANCE HOLE	FRONT	2.421 [61.49]	1.211 [30.76]	2.500 [63.50]	1.250 [31.75]	0.685 [17.40]	0.343 [8.71]	0.120 [3.05]	0.060 [1.52]	0.083 [2.11]	
		REAR	2.343 [59.51]	1.172 [29.77]	2.500 [63.50]	1.250 [31.75]	0.617 [15.67]	0.309 [7.85]	0.120 [3.05]	0.060 [1.52]	0.132 [3.35]	
	FLOAT MOUNT	FRONT	2.453 [62.31]	1.227 [31.17]	2.500 [63.50]	1.250 [31.75]	0.717 [18.21]	0.359 [9.12]	0.088 [2.24]	0.044 [1.12]	0.083 [2.11]	
		REAR	2.375 [60.33]	1.188 [30.18]	2.500 [63.50]	1.250 [31.75]	0.649 [16.48]	0.325 [8.26]	0.088 [2.24]	0.044 [1.12]	0.132 [3.35]	



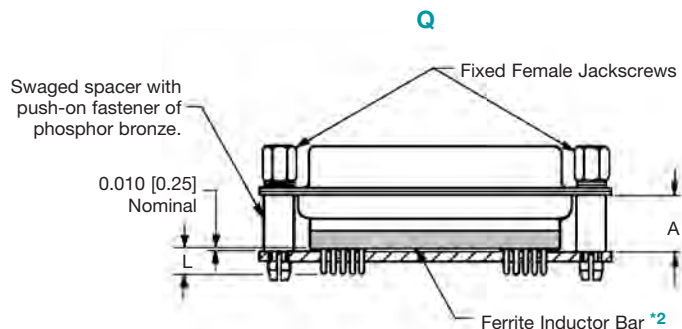
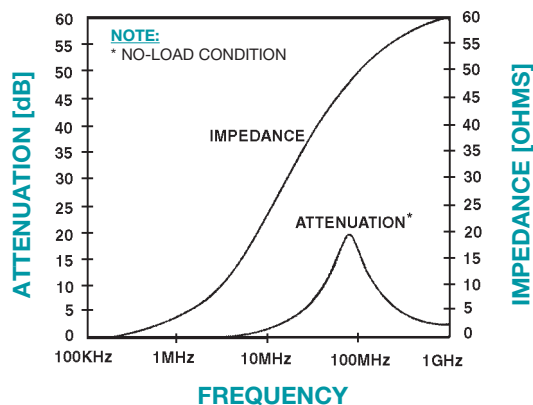
Positronic
connectpositronic.com

FERRITE INDUCTOR

D-Sub
Accessories

FERRITE INDUCTOR BAR^{*1} FOR EMI/RFI NOISE SUPPRESSION CODE F AND Q^{*2}

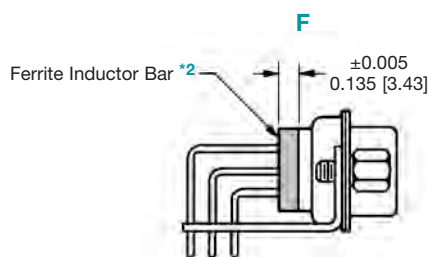
FILTERING CHARACTERISTICS



STRAIGHT PRINTED BOARD MOUNT CONNECTOR



MD9M5R7FT6X



RIGHT ANGLE (90°)
PRINTED BOARD MOUNT CONNECTOR

FERRITE INDUCTOR AVAILABILITY

SERIES	CODE NUMBER	A	L
MD, MDX, HDC	32	0.375 [9.53]	0.240 [6.10]
ODD, CBDD		0.375 [9.53]	0.165 [4.19]
DD		0.515 [13.08]	0.165 [4.19]
ED, HDC	36	0.375 [9.53]	0.101 [2.57]
MD, MDX	4	-----	-----
ODD	5	-----	-----
MD	59	-----	-----
MD, HDC	6	0.375 [9.53]	0.360 [9.14]

Material: Nickel zinc ceramic.

NOTES:

- ^{*1} This bar option is available for connector housings (shells) 9, 15, 25, and 37. Ferrite beads are used for the other sizes. Contact Technical Sales for ferrite inductor ordering information on those connectors.
- ^{*2} Specify Code F or Q in Step 6 of ordering information. F is for ferrite inductor and Q is for ferrite inductor with push-on fastener.



NEW!

TECHNICAL CHARACTERISTICS, QUICK REFERENCE

CABLE ADAPTER	MATERIAL	FINISH	CABLE CLAMP (material, finish)	HARDWARE (material, finish)	UNIQUE ATTRIBUTES	PAGE
AN ^{*1}	aluminum	nickel	aluminum, nickel	steel with nickel plate	light weight, EMI	13-16
AC ^{*1}	aluminum	no finish	aluminum, no finish	steel with nickel plate	light weight, EMI	13-16
G	zinc, die cast		zinc, die cast		EMI/RFI metal	17-20
H	steel, zinc plate	chromate seal	steel, zinc plate with chromate seal		similar to SAE AS85049/48	21
J	glass-filled polyester, UL 94V-0		steel, nickel plate		top opening, for vibration applications	21
L	glass-filled polyester, UL 94V-0		steel, nickel plate		side opening, for vibration applications	21
QH	glass-filled polyester, UL 94V-0		steel, nickel plate	steel with zinc plate and chromate seal or tin plate; stainless steel, passivated	low profile	22
W	polypropylene, UL 94V-0			See "CODE W" on page 23 for complete listing of hardware options.	low profile, low cost	23
Y	composite, conductive volume resistivity				low profile, sizes 50 & 104 only	24
Z	composite, conductive volume resistivity or glass-filled nylon, UL 94V-0				EMI/RFI composite	25

NOTES:

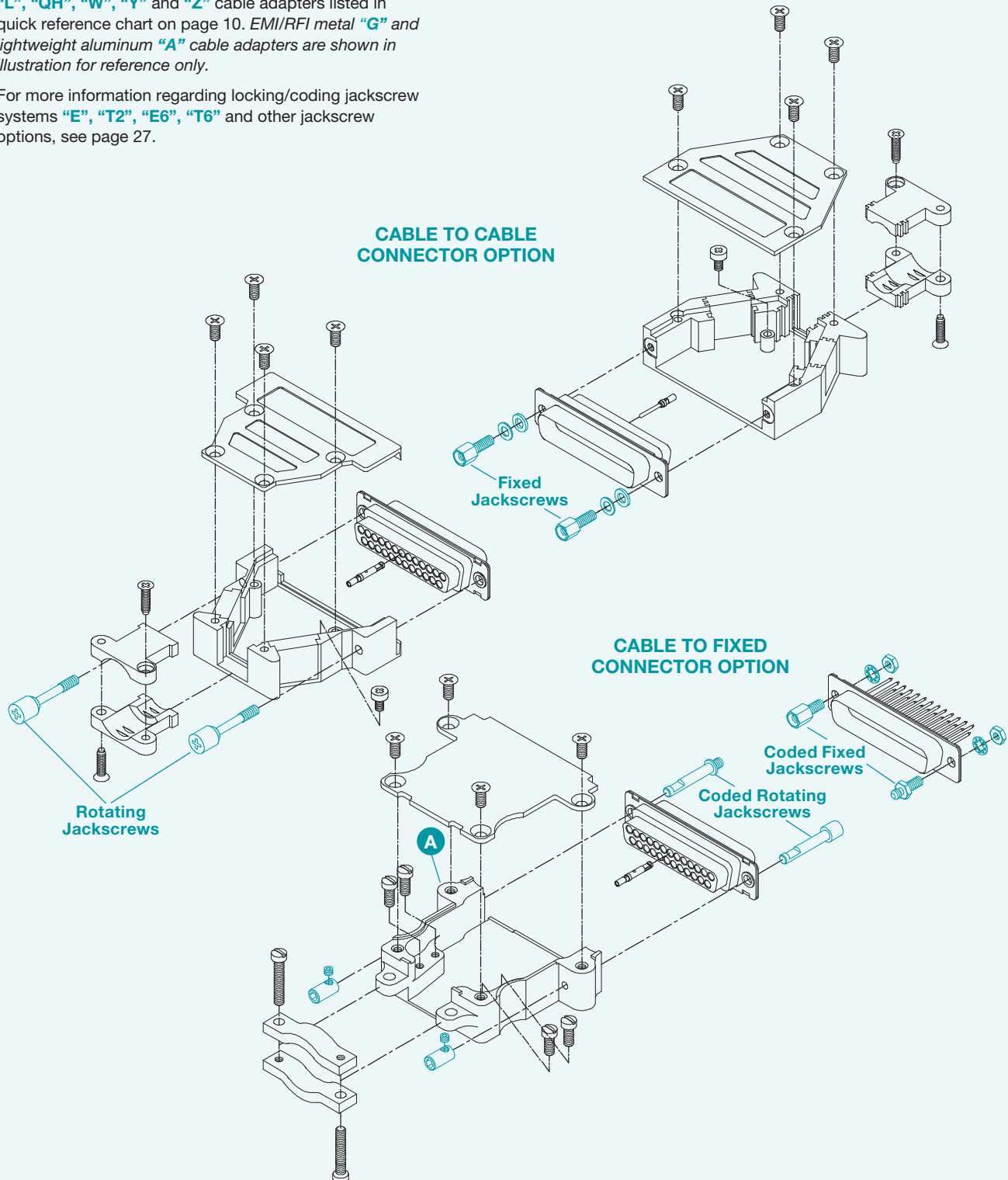
^{*1} See "MATERIAL & FINISH OPTION" chart on page 14 for additional options.



TYPICAL JACKSCREW LOCKING OPTIONS

Jackscrew options are available with “A”, “G”, “H”, “J”, “L”, “QH”, “W”, “Y” and “Z” cable adapters listed in quick reference chart on page 10. EMI/RFI metal “G” and lightweight aluminum “A” cable adapters are shown in illustration for reference only.

For more information regarding locking/coding jackscrew systems “E”, “T2”, “E6”, “T6” and other jackscrew options, see page 27.





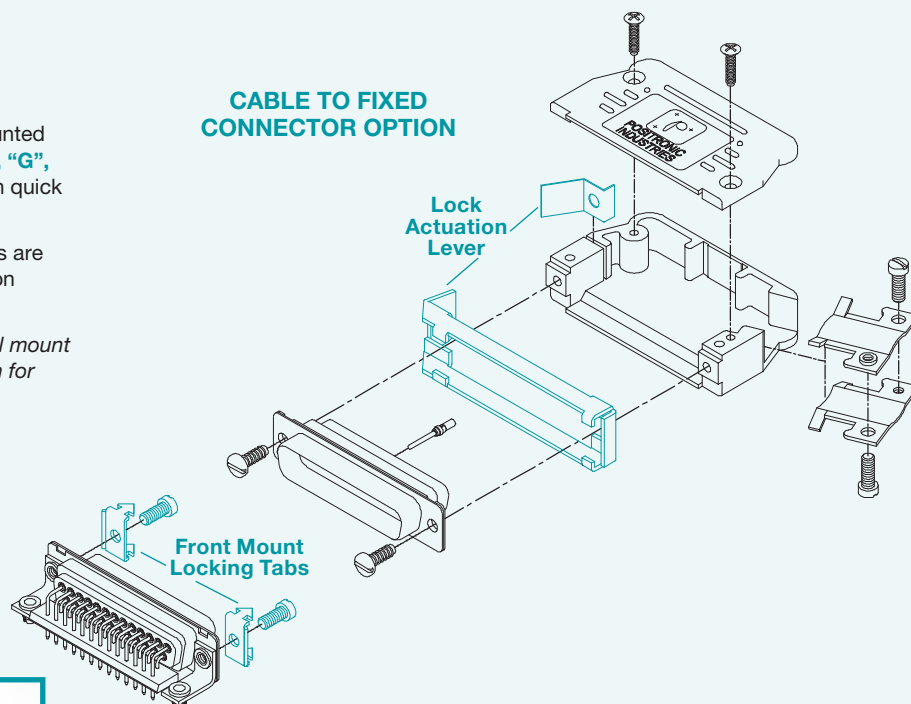
TYPICAL QUICK DISCONNECT LOCKING DEVICE OPTIONS

Lock actuation lever "VL" and front mounted locking tabs "V3" are available with "A", "G", "H", "J" and "L" cable adapters listed in quick reference chart on page 10.

Back mounted locking tabs "V5" options are also available. For detailed information on locking/coding systems see page 28.

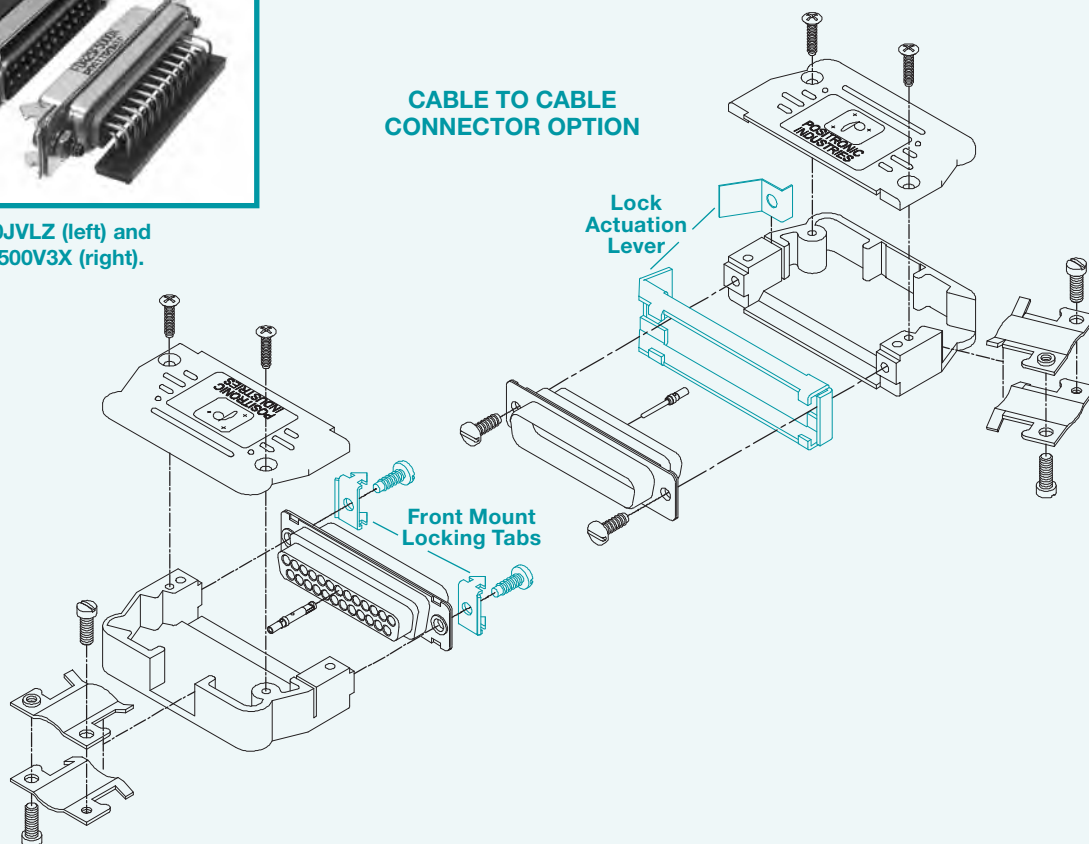
Plastic cable adapter "L" and front panel mount "V3" locking tab are shown in illustration for reference only.

CABLE TO FIXED CONNECTOR OPTION



RD25M10JVLZ (left) and
HDC25S500V3X (right).

CABLE TO CABLE CONNECTOR OPTION





Positronic
connectpositronic.com

CABLE ADAPTERS (HOODS/BACKSHELLS)

D-Sub
Accessories



LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD) EMI WITH MULTIPLE GROUNDING POINTS CODE A

GENERAL INFORMATION

This product has been designed for use in applications as a lightweight, EMI cable adapter for D-subminiature connectors. The features of the product are outlined below. Please contact Technical Sales for pricing and additional options.

GROUND SCREWS

- ◆ Sized and spaced for use with 0.250 inch [6.35mm] diameter ring terminals
- ◆ Ground shelf height and ground screw length allow for stacking of ring terminals
- ◆ Holes are pre-tapped for ease of installation
- ◆ Ground screws are located outside the exiting wire path to facilitate wire routing
- ◆ Ground holes are tapped through to the outside which provide for optional external grounding

SPACIOUS INTERIOR

- ◆ Shape maximizes internal area which facilitates harness assembly
- ◆ No obstructions behind any portion of the connector body allows cable adapter to be used with Combo-D connectors

APERTURE / STRAIN RELIEF

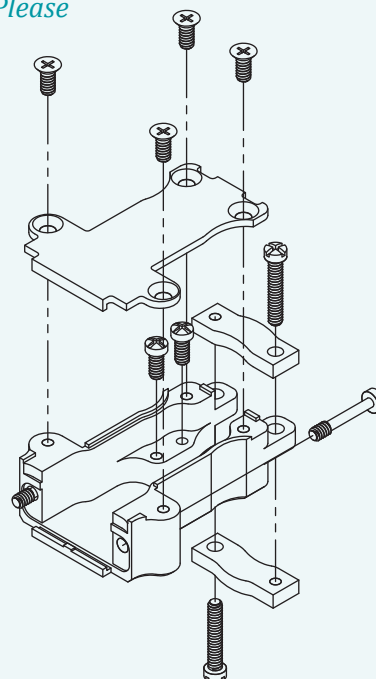
- ◆ Appropriate for high density wire bundles using twisted, shielded pairs
- ◆ Cable clamps can be “spooned” to provide strain relief for small wire bundle
- ◆ Wide form factor allows the user to easily meet bend radius requirements

THUMB GRIP

- ◆ Grip facilitates installation and removal in tight spaces

LOCKING SYSTEM

- ◆ Available with jackscrews or actuation lock system



TECHNICAL CHARACTERISTICS

MATERIAL AND FINISHES:

Cable Adapter & Cable Clamps: Aluminum, aluminum with electroless nickel plate; aluminum with yellow anodize; aluminum with yellow chromate conversion. Zinc content is 1% maximum.

Jackscrews & Screws: Steel with nickel plate; brass with zinc plate and chromate seal. Stainless steel options available, contact Technical Sales

Actuation Lock System: Steel with nickel plate.

MECHANICAL CHARACTERISTICS:

Ground Screws: Can accept up to 0.250 inch [6.35mm] diameter ring terminal.

Locking System: Jackscrews and quick disconnect lock system.

ELECTRICAL CHARACTERISTICS:

Range of Operation, Calculated Method: 2 GHz minimum.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C

WEIGHT CHART:

Contact Technical Sales for weights on T2, E6, E7 and V3 hardware options.

CABLE ADAPTER (HOOD) SIZE	D*1000ANVL ounces [grams]	D*1000ANE ounces [grams]
9	1.43 [40.50]	1.08 [30.54]
15	1.60 [45.24]	1.32 [37.44]
25	1.95 [55.22]	1.62 [45.92]
29	Contact Technical Sales	
37	2.53 [71.60]	2.19 [62.06]
50	2.61 [74.00]	2.26 [63.94]
104	n/a	2.41 [68.44]

All hardware in a cable adapter assembly including cable clamps, screws, etc.

NOTE:

*1 Designates size of cable adapter in part number.

continued on page 14

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/accessories/catalog>

TECHNICAL CHARACTERISTICS, continued

continued from page 13

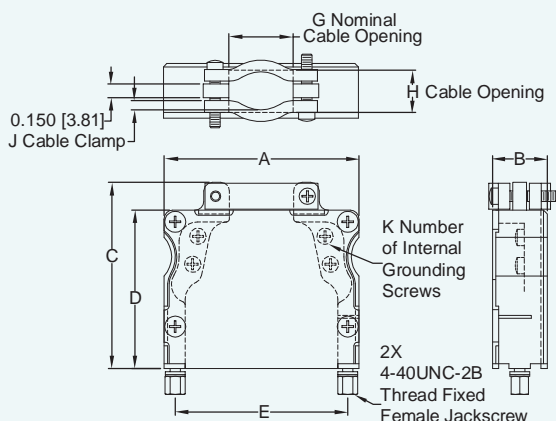
MATERIAL & FINISH OPTIONS								
CODE NUMBER	CABLE ADAPTER (HOOD) & CABLE CLAMP FINISH	HARDWARE TYPE						HARDWARE MATERIAL & FINISH
		T2	E	E6	E7	VL	V3	
N	nickel	✓	✓	✓	✓	✓	✓	steel with nickel plate
C	no finish	✓	✓	✓	✓	✓	✓	steel with nickel plate
OPTIONAL MATERIAL & FINISHES								
A	anodize	✓	✓	✓	✓	✓	✓	steel with nickel plate
B	anodize	✓	✓	✓	✓			brass with zinc plate and chromate seal
D	no finish	✓	✓	✓	✓			brass with zinc plate and chromate seal
I	yellow chromate conversion	✓	✓	✓	✓	✓	✓	steel with nickel plate
J	yellow chromate conversion	✓	✓	✓	✓			brass with zinc plate and chromate seal



LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD)

WITH FIXED FEMALE JACKSCREWS

CODE A*1T2



Also available with
**Polarized Fixed
Jackscrews.** Contact
Technical Sales
for details.

TYPICAL PART NUMBER:
D25000ANT20

D15000ANT20 - Lightweight aluminum cable adapter with fixed female jackscrews, pictured with connector installed.

SHELL SIZE	CONNECTOR / CONTACT ARRANGEMENT COMPATIBILITY		PART NUMBER	A	B	C	D	E	G	H		J	K
										Min.*2	Max.		
1	Std-D: 9 High-D: 15	Combo-D: 5W1, 2WK2 Combo-D High-D: 8W2	D9000A*1T20	1.219 [30.96]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	0.984 [24.99]	0.362 [9.19]	0.240 [6.10]	0.453 [11.51]	0.050 [1.27]	4
2	Std-D: 15 High-D: 26	Combo-D: 3W3, 3WK3, 7W2, 11W1 Combo-D High-D: 19W1	D15000A*1T20	1.547 [39.29]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	1.312 [33.32]	0.690 [17.53]	0.350 [8.89]	0.453 [11.51]	0.100 [2.54]	4
3	Std-D: 25 High-D: 44	Combo-D: 5W5, 9W4, 13W3, 17W2, 21W1 Combo-D High-D: 15W4	D25000A*1T20	2.094 [53.19]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	1.852 [47.04]	0.690 [17.53]	0.350 [8.89]	0.453 [11.51]	0.100 [2.54]	4
--	Std-D: 29 High-D: n/a	Combo-D: n/a Combo-D High-D: n/a	D29000A*1T20	1.776 [45.11]	0.689 [17.73]	2.000 [50.08]	1.700 [43.18]	1.534 [38.96]	0.690 [17.53]	0.350 [8.89]	0.564 [14.33]	0.100 [2.54]	4
4	Std-D: 37 High-D: 62	Combo-D: 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2 Combo-D High-D: 45W2	D37000A*1T20	2.736 [69.49]	0.586 [14.88]	2.250 [57.15]	1.950 [49.53]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.453 [11.51]	0.130 [3.30]	6
5	Std-D: 50 High-D: 78	Combo-D: 24W7, 36W4, 43W2, 47W1 Combo-D High-D: n/a	D50000A*1T20	2.642 [67.11]	0.689 [17.73]	2.250 [57.15]	1.950 [49.53]	2.406 [61.11]	1.242 [31.55]	0.410 [10.41]	0.564 [14.33]	0.130 [3.30]	6
6	Std-D: n/a High-D: 104	Combo-D: 46W4 Combo-D High-D: n/a	D104000A*1T20	2.736 [69.49]	0.760 [19.30]	2.250 [57.15]	1.950 [49.53]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.627 [15.93]	0.130 [3.30]	6

NOTES:

- *1 For completed part number, insert desired code number from "MATERIAL & FINISH OPTION" chart above.
- *2 Smaller cable openings may be achieved by inverting one or both cable clamps.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

CABLE ADAPTERS (HOODS/BACKSHELLS)

D-Sub
Accessories



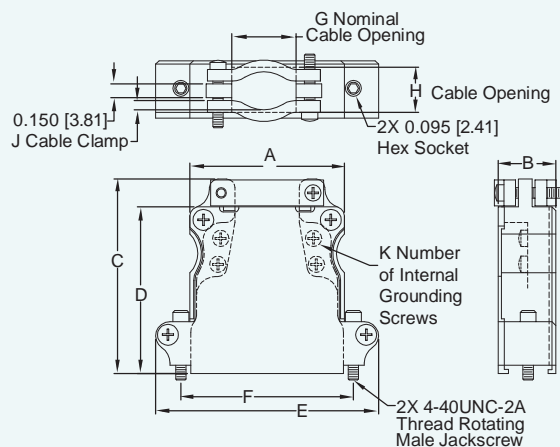
LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD)

WITH ROTATING JACKSCREWS

CODE A*1E, A*1E6, AND A*1E7

CODE E

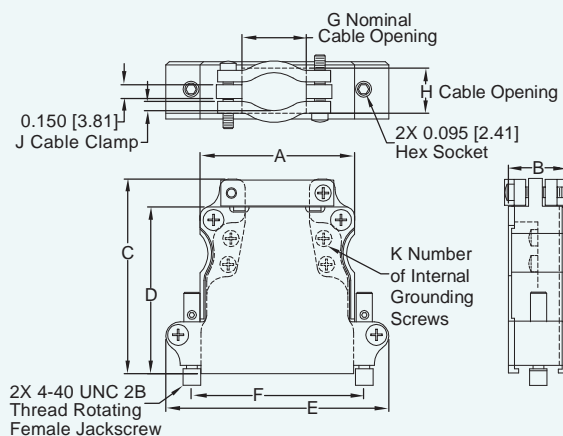
ROTATING MALE JACKSCREWS



TYPICAL PART NUMBER: D25000ACE0

CODE E7

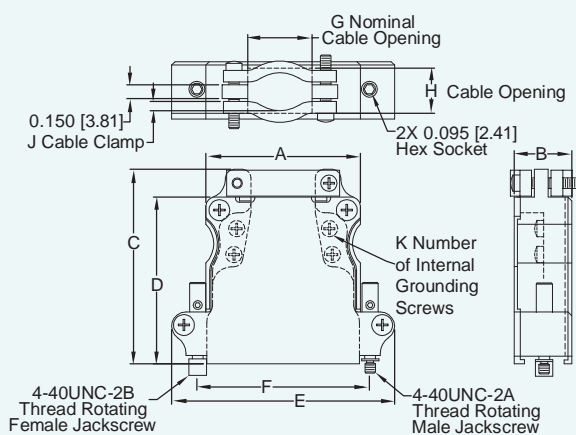
ROTATING FEMALE JACKSCREWS



TYPICAL PART NUMBER: D25000ANE70

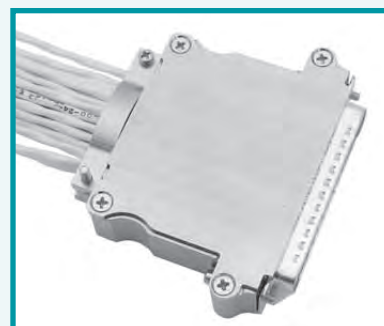
CODE E6

POLARIZED ROTATING JACKSCREWS



TYPICAL PART NUMBER: D25000ACE60

D37000ANE0- Lightweight aluminum cable adapter with rotating male jackscrows, pictured with connector installed.



For Technical Characteristics, see page 13

NOTES:

- *1 For completed part number, insert desired code number from "MATERIAL & FINISH OPTION" chart on page 14.
- *2 For completed part number, insert the desired code (E, E6 or E7) for required jackscrow option.
- *3 Smaller cable openings may be achieved by inverting one or both cable clamps.

SHELL SIZE	CONNECTOR / CONTACT ARRANGEMENT COMPATIBILITY		PART NUMBER	A	B	C	D	E	F	G	H		J	K
											Min.*3	Max.		
1	Std-D: 9 High-D: 15	Combo-D: 5W1, 2WK2 Combo-D High-D: 8W2	D9000A*1*20	0.908 [23.06]	0.616 [15.65]	2.090 [53.09]	1.790 [45.47]	1.524 [38.71]	0.984 [24.99]	0.362 [9.19]	0.240 [6.10]	0.483 [12.27]	0.050 [1.27]	4
2	Std-D: 15 High-D: 26	Combo-D: 3W3, 3WK3, 7W2, 11W1 Combo-D High-D: 19W1	D15000A*1*20	1.236 [31.39]	0.616 [15.65]	2.090 [53.09]	1.790 [45.47]	1.852 [47.04]	1.312 [33.32]	0.690 [17.53]	0.350 [8.89]	0.483 [12.27]	0.100 [2.54]	4
3	Std-D: 25 High-D: 44	Combo-D: 5W5, 9W4, 13W3, 17W2, 21W1 Combo-D High-D: 15W4	D25000A*1*20	1.656 [42.06]	0.616 [15.65]	2.090 [53.09]	1.790 [45.47]	2.392 [60.76]	1.852 [47.04]	0.690 [17.53]	0.350 [8.89]	0.483 [12.27]	0.100 [2.54]	4
--	Std-D: 29 High-D: n/a	Combo-D: n/a Combo-D High-D: n/a	D29000A*1*20	1.338 [33.99]	0.727 [18.47]	2.090 [53.09]	1.790 [45.47]	2.074 [52.68]	1.534 [38.96]	0.690 [17.53]	0.350 [8.89]	0.594 [15.09]	0.100 [2.54]	4
4	Std-D: 37 High-D: 62	Combo-D: 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2 Combo-D High-D: 45W2	D37000A*1*20	2.304 [58.52]	0.616 [15.65]	2.340 [59.44]	2.040 [51.82]	3.040 [77.22]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.483 [12.27]	0.130 [3.30]	6
5	Std-D: 50 High-D: 78	Combo-D: 24W7, 36W4, 43W2, 47W1 Combo-D High-D: n/a	D50000A*1*20	2.210 [56.13]	0.727 [18.47]	2.340 [59.44]	2.040 [51.82]	2.946 [74.83]	2.406 [61.11]	1.242 [31.55]	0.410 [10.41]	0.594 [15.09]	0.130 [3.30]	6
6	Std-D: n/a High-D: 104	Combo-D: 46W4 Combo-D High-D: n/a	D104000A*1*20	2.304 [58.52]	0.790 [20.07]	2.340 [59.44]	2.040 [51.82]	3.040 [77.22]	2.500 [63.50]	1.242 [31.55]	0.410 [10.41]	0.657 [16.69]	0.130 [3.30]	6



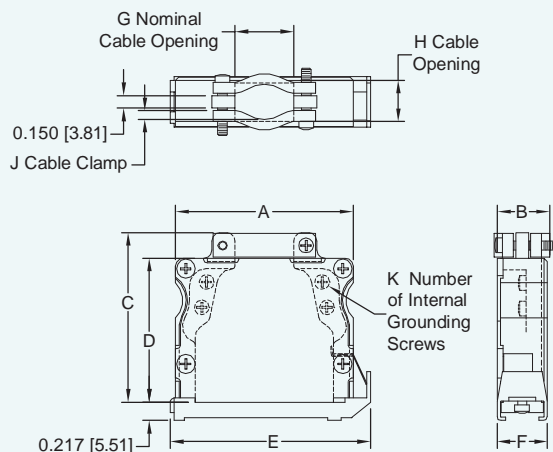
LIGHTWEIGHT ALUMINUM CABLE ADAPTER (HOOD)

WITH QUICK DISCONNECT LOCKING DEVICE

CODE A*¹VL AND A*¹V3

CODE VL

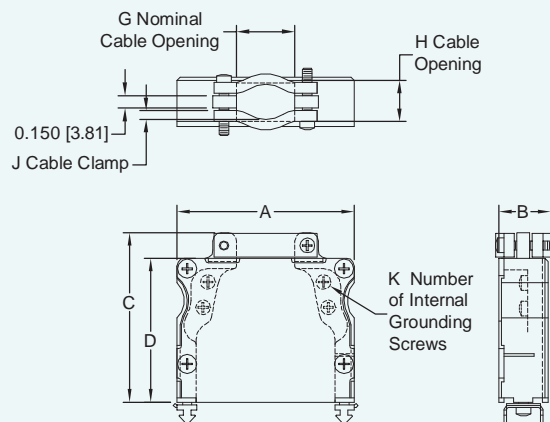
LOCK ACTUATION LEVER



TYPICAL PART NUMBER: D25000ANVL0

CODE V3

LOCKING TABS



TYPICAL PART NUMBER: D25000ACV30

Also available with
Back panel mounted
locking tabs,
see page 28 for details.

D25000ANVL0 -
Lightweight aluminum
cable adapter with
vibration lock lever,
pictured with connector
installed.



NOTES:

- *1 For completed part number, insert desired code number from "MATERIAL & FINISH OPTION" chart on page 14.
- *2 Smaller cable openings may be achieved by inverting one or both cable clamps.

SHELL SIZE	CONNECTOR / CONTACT ARRANGEMENT COMPATIBILITY		PART NUMBER	A	B	C	D	E	F	G	H		J	K
											Min.*2	Max.		
1	Std-D: 9 High-D: 15	Combo-D: 5W1, 2WK2 Combo-D High-D: 8W2	D9000A* ¹ VL0	1.219 [30.96]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	1.460 [37.08]	0.592 [15.04]	0.362 [9.19]	0.240 [6.10]	0.453 [11.51]	0.050 [1.27]	4
			D9000A* ¹ V30	---	---	---	---	---	---	---	---	---	---	
2	Std-D: 15 High-D: 26	Combo-D: 3W3, 3WK3, 7W2, 11W1 Combo-D High-D: 19W1	D15000A* ¹ VL0	1.547 [39.29]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	1.770 [44.96]	0.592 [15.04]	0.690 [17.53]	0.350 [8.89]	0.453 [11.51]	0.100 [2.54]	4
			D15000A* ¹ V30	---	---	---	---	---	---	---	---	---	---	
3	Std-D: 25 High-D: 44	Combo-D: 5W5, 9W4, 13W3, 17W2, 21W1 Combo-D High-D: 15W4	D25000A* ¹ VL0	2.094 [53.19]	0.586 [14.88]	2.000 [50.08]	1.700 [43.18]	2.360 [59.94]	0.592 [15.04]	0.690 [17.53]	0.350 [8.89]	0.453 [11.51]	0.100 [2.54]	4
			D25000A* ¹ V30	---	---	---	---	---	---	---	---	---	---	
-	Std-D: 29 High-D: n/a	Combo-D: n/a Combo-D High-D: n/a	D29000A* ¹ VL0	1.776 [45.11]	0.689 [17.73]	2.000 [50.08]	1.700 [43.18]	2.030 [51.56]	0.715 [18.16]	0.690 [17.53]	0.350 [8.89]	0.564 [14.33]	0.100 [2.54]	4
			D29000A* ¹ V30	---	---	---	---	---	---	---	---	---	---	
4	Std-D: 37 High-D: 62	Combo-D: 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2 Combo-D High-D: 45W2	D37000A* ¹ VL0	2.736 [69.49]	0.586 [14.88]	2.250 [57.15]	1.950 [49.53]	3.015 [76.58]	0.592 [15.04]	1.242 [31.55]	0.410 [10.41]	0.453 [11.51]	0.130 [3.30]	6
			D37000A* ¹ V30	---	---	---	---	---	---	---	---	---	---	
5	Std-D: 50 High-D: 78	Combo-D: 24W7, 36W4, 43W2, 47W1 Combo-D High-D: n/a	D50000A* ¹ VL0	2.642 [67.11]	0.689 [17.73]	2.250 [57.15]	1.950 [49.53]	2.900 [73.66]	0.715 [18.16]	1.242 [31.55]	0.410 [10.41]	0.564 [14.33]	0.130 [3.30]	6
			D50000A* ¹ V30	---	---	---	---	---	---	---	---	---	---	

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

CABLE ADAPTERS (HOODS/BACKSHELLS)

D-Sub
Accessories

CODE G - GENERAL INFORMATION

- EMI/RFI shielding
- Die cast zinc construction to maximize shielding and ruggedness.
- Well-proportioned to allow ample room for internal conductors.
- Central grounding post inside the cable adapter.
- Cable clamps and various cable exit options offered.
- Unused cable openings EMI/RFI protected using included metal plugs.

- Crimp ferrule system available for greater shielding performance and greater cable retention; see page 20.
- Offered with rotating jackscrews or quick disconnect locking systems.
- Supplied for D-subminiature connector housing sizes 1 - 6.

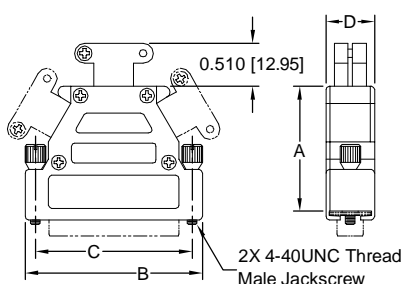
The EMI/RFI hood and adapters shown on pages 17 - 20 of this catalog are manufactured by **Inotec Electronics**. Positronic serves as the North American distributor of these hoods and adapters.

EMI/RFI METAL CABLE ADAPTER (HOOD)

WITH ROTATING JACKSCREWS

CODE GE^{*1}

GE



CABLE CLAMP OPENINGS

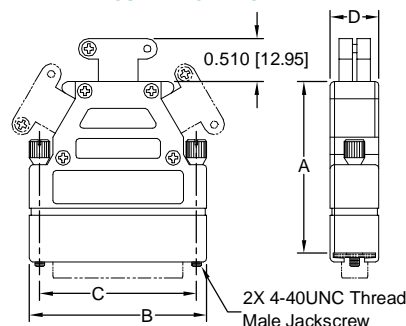
Shell Sizes 1 - 4:
0.118 [3.00], Min.
0.472 [11.99], Max.

Shell Size 5 - 6:
0.197 [5.00], Min.
0.551 [14.00], Max.

Material:
Zinc, die cast.

EXTENDED HEIGHT GE^{*2}

FOR EXTENDED GE CABLE ADAPTER,
ADD THE SUFFIX AS INDICATED IN THE TABLE BELOW.



TYPICAL PART NUMBER: D25000GE0

TYPICAL PART NUMBER: D25000GE0-1023.5

PART NUMBER (Shell Size)	A	B	C	D	CABLE EXIT OPTION ^{*5}
D9000GE0 (Shell Size 1)	1.398 [35.50]	1.220 [31.00]	0.984 [25.00]	0.583 [14.81]	1 Top (Not pictured)
D9000GE0-1023.50 (Shell Size 1)					1 Side (Not pictured)
D15000GE0 (Shell Size 2)	1.575 [40.00]	1.547 [39.30]	1.311 [33.30]	0.583 [14.81]	1 Top, 1 Side ^{*3} (Not pictured)
D15000GE0-1579.0 (Shell Size 2)					1 Side (Not pictured)
D25000GE0 (Shell Size 3)	1.575 [40.00]	2.094 [53.20]	1.850 [47.00]	0.583 [14.81]	1 Top, 2 Side ^{*4}
D37000GE0 (Shell Size 4)	1.575 [40.00]	2.736 [69.50]	2.500 [63.50]	0.583 [14.81]	1 Top, 2 Side ^{*4}
D50000GE0 (Shell Size 5)	1.654 [42.00]	2.638 [67.00]	2.406 [61.10]	0.701 [17.80]	1 Top, 2 Side ^{*4}
D104000GE0 (Shell Size 6)	1.560 [39.62]	2.835 [72.01]	2.500 [63.50]	0.764 [19.40]	1 Top, 2 Side ^{*4} (Not pictured)

PART NUMBER (Shell Size)	A	B	C	D	CABLE EXIT OPTION ^{*5}
D9000GE0-1023.5 (Shell Size 1)	1.988 [50.50]	1.220 [31.00]	0.984 [25.00]	0.583 [14.81]	1 Side (Not pictured)
D9000GE0-1023.49 (Shell Size 1)					1 Top (Not pictured)
D15000GE0-1023.5 (Shell Size 2)	2.165 [55.00]	1.547 [39.30]	1.311 [33.30]	0.583 [14.81]	1 Side ^{*3} (Not pictured)
D25000GE0-1023.5 (Shell Size 3)	2.165 [55.00]	2.094 [53.20]	1.850 [47.00]	0.583 [14.81]	1 Top, 2 Side ^{*4}
D37000GE0-1023.5 (Shell Size 4)	2.165 [55.00]	2.736 [69.50]	2.500 [63.50]	0.583 [14.81]	1 Top, 2 Side ^{*4}
D50000GE0-1023.5 (Shell Size 5)	2.244 [57.00]	2.638 [67.00]	2.406 [61.10]	0.701 [17.80]	1 Top, 2 Side ^{*4}

FEATURES:

- Gripping shoulders enable trouble-free extraction of the connector assembly even with tightly packed aligned cable adapters.
- Rotating jackscrews offer the most secure mechanical locking of the connector system.
- Standard height cable adapters for use with connector shell sizes 1 and 2 are available with a top or side cable exit option. Contact Technical Sales for details.
- Cable adapters for use with connector shell sizes 3 - 5 are designed with three (3) cable entries and can permit the looping through of cables. Cable entries not used are sealed with supplied metal plugs to maintain EMI/RFI shielding qualities.
- Two (2) height options are available, one being a low profile option (as shown on the left side of this page). An increased height option (as shown on the right side of this page) is offered for use with power conductors and coaxial cable, such as might be used with the Positronic CBD/CBM series connectors.
- Grounding to the cable adapter may be accomplished by fastening wires inside cable adapter with an M3 threaded Phillips head screw.



NOTES:

- ^{*1} To prevent stripping of the cable adapter assembly screws, we recommend using Pozidriv screwdriver bits available from stock using part number 9535-2-2-0, contact Technical Sales. Standard height GE cable adapter use the Pozidriv style jackscrews. Internal hex jackscrews are available for the standard height, but require an MOS.
- ^{*2} The extended height cable adapters use an internal hex jackscrew.
- ^{*3} These cable adapters are supplied with one (1) cable clamp set and one (1) opening plug.
- ^{*4} These cable adapters are supplied with one (1) cable clamp set and two (2) opening plugs.
- ^{*5} See page 20 for optional Crimp Ferrule System.

EMI/RFI METAL CABLE ADAPTER (HOOD)^{*1}

WITH QUICK DISCONNECT LOCKING DEVICE

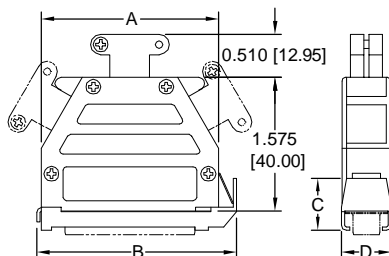
CODE G AND GVL

GVL CABLE ADAPTER SHOWN FOR REFERENCE, FOR G CABLE ADAPTER USE SAME DRAWING AS GVL CABLE ADAPTER EXCEPT WITHOUT THE LOCK ACTUATION LEVER

EXTENDED HEIGHT G^{*2} / GVL^{*2}

FOR EXTENDED CABLE ADAPTER,
ADD THE SUFFIX AS INDICATED IN THE TABLE BELOW.

G / GVL

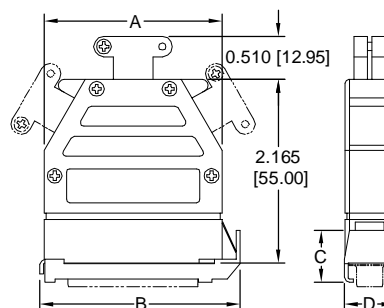


CABLE CLAMP OPENINGS

Shell Sizes 1 - 4:
0.118 [3.00], Min.
0.472 [11.99], Max.

Shell Size 5:
0.197 [5.00], Min.
0.551 [14.00], Max.

Material:
Zinc, die cast.



TYPICAL PART NUMBER: D25000GVL0

TYPICAL PART NUMBER: D25000GVL0-1023.0

SHELL SIZE	PART NUMBER	A	B	C	D	CABLE EXIT OPTION ^{*5}
1	D9000G00	1.260 [32.00]	---	---	---	2 Side ^{*3}
	D9000GVL0	---	1.460 [37.08]	0.615 [15.62]	0.600 [15.24]	
2	D15000G00	1.547 [39.30]	---	---	---	1 Top, 2 Side ^{*4}
	D15000GVL0	---	1.770 [44.96]	0.615 [15.62]	0.600 [15.24]	
3	D25000G00	2.094 [53.20]	---	---	---	1 Top, 2 Side ^{*4}
	D25000GVL0	---	2.360 [59.94]	0.615 [15.62]	0.600 [15.24]	
4	D37000G00	2.736 [69.50]	---	---	---	1 Top, 2 Side ^{*4}
	D37000GVL0	---	3.020 [76.71]	0.615 [15.62]	0.600 [15.24]	
5	D50000G00	2.638 [67.00]	---	---	---	1 Top, 2 Side ^{*4}
	D50000GVL0	---	2.900 [73.66]	0.635 [16.13]	0.710 [18.03]	

SHELL SIZE	PART NUMBER	A	B	C	D	CABLE EXIT OPTION ^{*5}
1	D9000G00-1023.2	1.260 [32.00]	---	---	---	2 Side ^{*3}
	D9000GVL0-1023.0	---	1.460 [37.08]	0.615 [15.62]	0.600 [15.24]	
2	D15000G00-1023.2	1.547 [39.30]	---	---	---	1 Top, 2 Side ^{*4}
	D15000GVL0-1023.0	---	1.770 [44.96]	0.615 [15.62]	0.600 [15.24]	
3	D25000G00-1023.2	2.094 [53.20]	---	---	---	1 Top, 2 Side ^{*4}
	D25000GVL0-1023.0	---	2.360 [59.94]	0.615 [15.62]	0.600 [15.24]	
4	D37000G00-1023.2	2.736 [69.50]	---	---	---	1 Top, 2 Side ^{*4}
	D37000GVL0-1023.0	---	3.020 [76.71]	0.615 [15.62]	0.600 [15.24]	
5	D50000G00-1023.2	2.638 [67.00]	---	---	---	1 Top, 2 Side ^{*4}
	D50000GVL0-1023.0	---	2.900 [73.66]	0.635 [16.13]	0.710 [18.03]	

NOTES:

- ^{*1} To prevent stripping of the cable adapter assembly screws, we recommend using Pozidriv screwdriver bits available from stock using part number 9535-2-2-0, contact Technical Sales. For the mounting screws, we recommend using a standard Phillips head screwdriver bit.
- ^{*2} The extended height cable adapters use an internal hex jackscrew.
- ^{*3} These cable adapters are supplied with one (1) cable clamp set and one (1) opening plug.
- ^{*4} These cable adapters are supplied with one (1) cable clamp set and two (2) opening plugs.
- ^{*5} See page 20 for optional Crimp Ferrule System.



FEATURES:

- Rapid locking system stays in a constantly-locked position, utilizing a blade spring. System is unlocked by simply pressing the slide latch. Locking is automatic upon coupling to the mating connector.
- Gripping shoulders enable trouble-free extraction of the connector assembly even with tightly packed aligned cable adapters.
- Cable adapters for use with connector shell sizes 2 - 5 are designed with three (3) cable entries and can permit the looping through of cables. Cable entries not used are sealed with the supplied metal plugs to maintain EMI/RFI shielding. Cable adapters for use with connector shell size 1 are designed with only two (2) side openings.
- Two (2) height options are available, one being a low profile option (as shown on the left side of this page). An increased height option (as shown on the right side of this page) is offered for use with power conductors and coaxial cable, such as might be used with the Positronic CBD/CBM series connectors.
- Grounding to the cable adapter may be accomplished by fastening wires inside cable adapter with an M3 threaded Phillips head screw.

For information regarding **QUICK DISCONNECT LOCKING DEVICE**, see page 28.



Positronic
connectpositronic.com

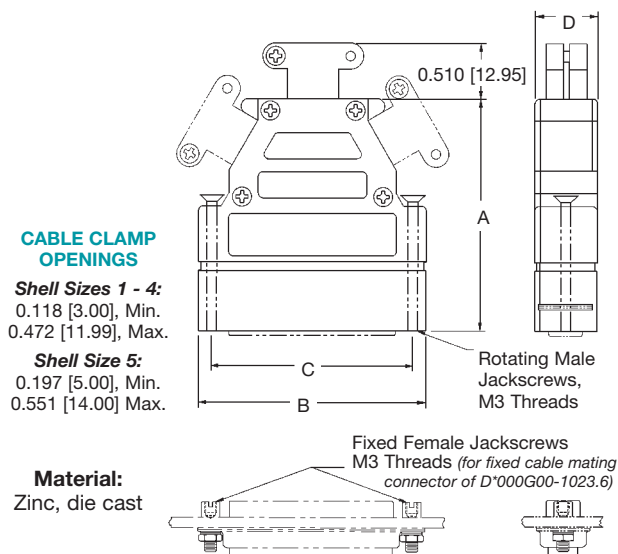
CABLE ADAPTERS (HOODS/BACKSHELLS)

D-Sub
Accessories

EMI/RFI METAL CABLE ADAPTER (HOOD)^{*1} WITH M3 THREADS

TO OBTAIN THE FIXED FEMALE JACKSCREWS (SHOWN BELOW),
ADD THE SUFFIX "-1193.6" TO THE END OF THE PART NUMBER.

Contact Technical Sales for additional ordering information.



NOTES:

- ^{*1} To prevent stripping of the cable adapter assembly screws, we recommend using Pozidriv screwdriver bits available from stock using part number 9535-2-2-0, contact Technical Sales.
- ^{*2} These cable adapters are supplied with one (1) cable clamp set and two (2) opening plugs.
- ^{*3} See page 20 for optional Crimp Ferrule System.

PART NUMBER (Shell Size)	A	B	C	D	CABLE EXIT OPTION ^{*3}
D9000G00-1023.6 (Shell Size 1)	1.949 [49.50]	1.287 [32.70]	0.984 [25.00]	0.583 [14.81]	1 Top (Not pictured)
D15000G00-1023.6 (Shell Size 2)	2.126 [54.00]	1.551 [39.40]	1.311 [33.30]	0.583 [14.81]	1 Side (Not pictured)
D25000G00-1023.6 (Shell Size 3)	2.126 [54.00]	2.165 [55.00]	1.850 [47.00]	0.583 [14.81]	1 Top, 2 Side ^{*2}
D37000G00-1023.6 (Shell Size 4)	2.204 [56.00]	2.803 [71.20]	2.500 [63.50]	0.583 [14.81]	1 Top, 2 Side ^{*2}
D50000G00-1023.6 (Shell Size 5)	2.204 [56.00]	2.717 [69.01]	2.406 [61.10]	0.701 [17.80]	1 Top, 2 Side ^{*2}
D104000G00-1023.6 (Shell Size 6)	1.929 [49.00]	2.835 [72.00]	2.500 [63.50]	0.764 [19.40]	1 Top, 2 Side ^{*2}

FEATURES:

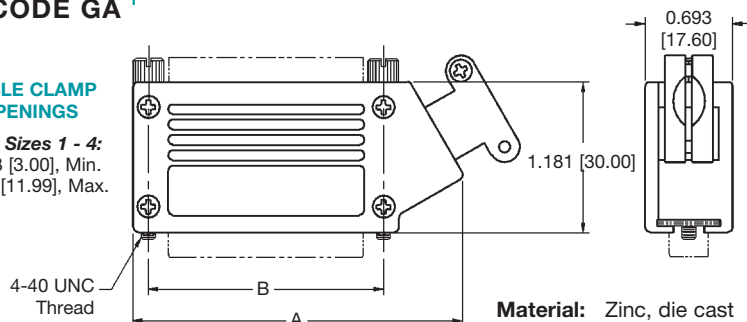
- Developed for applications where the highest degree of EMI/RFI shielding protection is required.
- The connector is recessed into the cable adapter so that additional EMI/RFI protection is gained.
- When this connector system is fully coupled, the front edge of the cable adapter presses against the panel that houses the mating connector, offering greater shielding.
- Cable adapters for use with connector shell sizes 3 - 5 are designed with three (3) cable entries and can permit the looping through of cables. Cable entries not used are sealed with supplied metal plugs to maintain EMI/RFI shielding qualities.
- Jackscrew locking system is supplied as a standard for secure mechanical coupling.
- Grounding to the cable adapter may be accomplished by fastening wires inside cable adapter with an M3 threaded Phillips head screw.

EMI/RFI ADAPTER CODE GA^{*1}



CABLE CLAMP OPENINGS

Shell Sizes 1 - 4:
0.118 [3.00], Min.
0.472 [11.99], Max.



FEATURES:

- The "GA" series adapter can be used as a gender-changer which provides EMI/RFI protection.
- The "GA" series adapter allows for internal placement of a printed circuit board between the connectors.
- The "GA" series adapter can be used to adapt connectors of one interface standard to another.
- The "GA" series adapter can be used in applications where tapping into the electrical line path between connectors is necessary. A cable exit is provided for this application.
- If no connector is inserted into the rear side of the cable adapter, the opening can be closed with a metal plate which can be adapted for use with LED's, mini-switches, and coaxial connectors.
- Jackscrew locking system is supplied as a standard for secure mechanical coupling.
- Grounding to the cable adapter may be accomplished by fastening wires inside cable adapter with an M3 threaded Phillips head screw.

PART NUMBER (Shell Size)	A	B	OPTIONAL COVER PLATE	OPTIONAL CABLE OPENING PLUG ^{*2}
D9000GA0 (Shell Size 1)	1.733 [44.00]	0.984 [25.00]	4589-9-0-0	4596-1-0-0 ^{*3}
D15000GA0 (Shell Size 2)	2.059 [52.30]	1.311 [33.30]	4589-15-0-0	4596-1-0-0 ^{*3}
D25000GA0 (Shell Size 3)	2.598 [66.00]	1.850 [47.00]	4589-25-0-0	4596-1-0-0 ^{*3}
D37000GA0 (Shell Size 4)	3.248 [82.50]	2.500 [63.50]	4589-37-0-0	4596-1-0-0 ^{*3}

NOTES:

- ^{*1} To prevent stripping of the cable adapter assembly screws, we recommend using Pozidriv screwdriver bits available from stock using part number 9535-2-2-0, contact Technical Sales.
- ^{*2} See page 20 for optional Crimp Ferrule System.
- ^{*3} Must be purchased separately.

CRIMP FERRULE SYSTEMS FOR USE WITH CODE G CABLE ADAPTERS (HOODS)

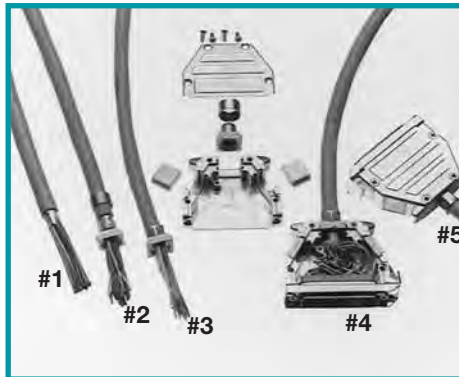
The crimp ferrule system can be used with all Positronic code "G" cable adapters and is recommended when maximizing EMI/RFI protection is desired.

The crimp ferrule system optimizes the transition of the cable shield into the cable adapter in three ways. First: It provides a low impedance connection of the cable shield to the cable adapter which remains constant over time. Second: The system provides an EMI/RFI tight cable exit point. Third: The system provides for high mechanical retention of the cable in the cable adapter.

Application of the crimp ferrule system is quite simple. Once the cable insulation and shield are cut to the correct dimensions (#1), the crimp ferrule is placed over the cable

and the crimp flange is inserted between the shield and the conductors (#2). The crimp ferrule is now slid over the cable insulation into position over the crimp flange and the crimp is made using Positronic-supplied hand press and die sets (#3). This assembly is then terminated to the connector and placed into the cable adapter (#4). Finally, the cover is placed on the cable adapter and secured using four (4) screws (#5).

To order the Positronic-supplied hand press, request part number 9520-0-0-0 or for hand crimp tool, request part number 9521-3-0-0. To order Positronic-supplied die sets, contact Technical Sales for ordering information, since die sets are customized based on the specific crimp flanges, crimp ferrules and cables used.



A crimp ferrule (left) and a crimp flange (right) shown above.

CRIMP FERRULE / FLANGE ORDERING INFORMATION

STEP	1	2	3	4	
TYPICAL	4592	***	***	0	CRIMP FERRULE
PART NUMBERS	4593	***	***	0	CRIMP FLANGE
STEP 1 - BASIC SERIES 4592 - Crimp Ferrule 4593 - Crimp Flange		STEP 2 & 3 - DIAMETERS*1		STEP 4 - PLATING 0 - Standard plating.	

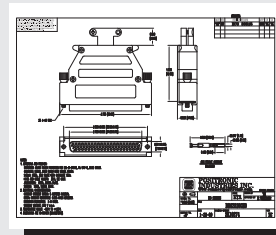
NOTE:

*1 Contact Technical Sales for part number completion which is determined by Customer-required cable diameters and type.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/accessories/catalog>

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.





Positronic
connectpositronic.com

CABLE ADAPTERS (HOODS/BACKSHELLS)

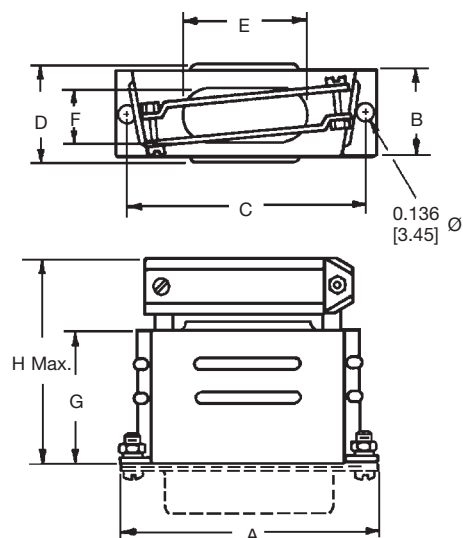
D-Sub
Accessories

METAL CABLE ADAPTER (HOOD) CODE H

Material: Steel, zinc plate with chromate seal.

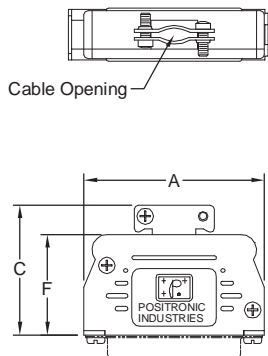
NOTE: Brass with gold plate finish is available for space applications. Contact Technical Sales for ordering information.

PART NUMBER (Shell Size)	A	B	C	D MAX.	E	F	G	H MAX.
D15000H00 (Shell Size 2)	1.531 [36.88]	0.492 [12.50]	1.312 [33.32]	0.578 [14.68]	0.713 [18.11]	0.312 [7.92]	0.750 [19.05]	1.219 [30.96]
D25000H00 (Shell Size 3)	2.078 [52.78]	0.492 [12.50]	1.852 [47.04]	0.578 [14.68]	1.000 [25.40]	0.312 [7.92]	1.000 [25.40]	1.532 [38.91]
D37000H00 (Shell Size 4)	2.718 [69.03]	0.492 [12.50]	2.500 [63.50]	0.578 [14.68]	1.375 [34.93]	0.312 [7.92]	1.000 [25.40]	1.532 [38.91]
D50000H00 (Shell Size 5)	2.625 [66.68]	0.601 [15.27]	2.406 [61.11]	0.687 [17.45]	1.406 [35.71]	0.406 [10.31]	1.125 [28.58]	1.657 [42.09]



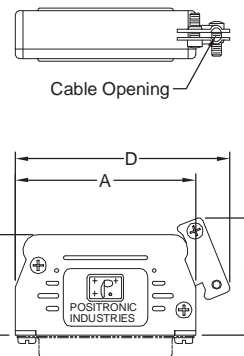
PLASTIC CABLE ADAPTER (HOOD) CODE J AND L

CODE J
TOP OPENING



Typically used
with *Quick
Disconnect
Locking Device*,
see page 28

CODE L
SIDE OPENING



Material:

Cable Adapter: Glass-filled polyester,
UL 94V-0.

Cable Clamps: Steel, nickel plate.

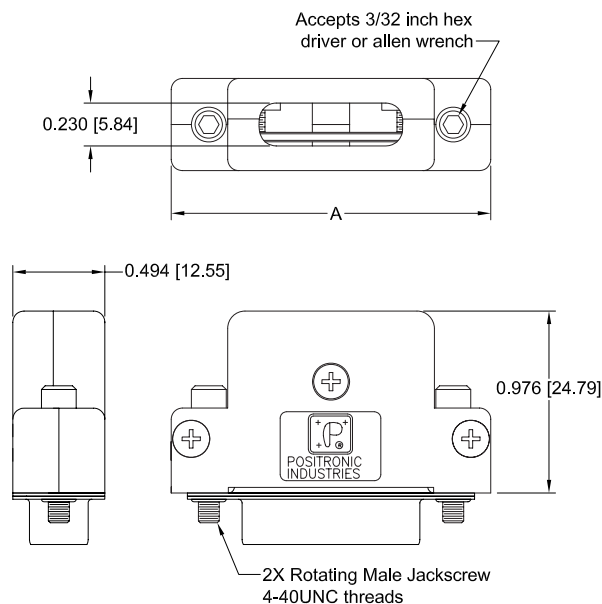


D25000LVLO

PART NUMBER (Shell Size)	A	B	C	D	E	F	CABLE OPENING	
							MINIMUM	MAXIMUM
D9000J00 D9000L00 (Shell Size 1)	1.262 [32.05]	0.593 [15.06]	1.130 [28.70]	1.520 [38.61]	1.030 [26.16]	0.864 [21.95]	0.145 [3.43] Ø	0.280 [7.11] Ø
D1500J00 D1500L00 (Shell Size 2)	1.551 [39.40]	0.649 [16.48]	1.414 [35.92]	1.900 [48.26]	1.240 [31.50]	1.022 [25.96]	0.160 [4.06] Ø	0.275 [6.99] Ø
D2500J00 D2500L00 (Shell Size 3)	2.129 [54.08]	0.621 [15.77]	1.533 [38.94]	2.492 [63.30]	1.380 [35.10]	1.186 [30.12]	0.110 [2.79] Ø	0.275 [6.99] Ø
D2900J00 D2900L00	1.801 [45.75]	0.697 [17.70]	1.537 [39.04]	2.164 [54.97]	1.390 [35.31]	1.196 [30.38]	0.110 [2.79] Ø	0.390 [9.91] Ø
D3700J00 D3700L00 (Shell Size 4)	2.786 [70.76]	0.650 [16.51]	1.844 [46.84]	3.188 [79.20]	1.690 [42.93]	1.506 [38.25]	0.230 X 0.630 [5.84] X [16.00]	0.350 X 0.630 [8.89] X [16.00]
D5000J00 D5000L00 (Shell Size 5)	2.688 [68.28]	0.745 [18.92]	1.839 [46.71]	3.015 [76.58]	1.690 [42.93]	1.504 [38.23]	0.230 X 0.630 [5.84] X [16.00]	0.430 X 0.630 [10.92] X [16.00]

LOW PROFILE CABLE ADAPTER (HOOD) CODE QH

Note: When using QH cable adapter with connector series other than QB, use MOS -1886.0 to allow for installation of required mounting spacers.
Example part number:
RD15S10QH0-1886.0



Material:

Cable Adapter: Glass filled polyester, UL 94V-0.

Jackscrews: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

Internal cable clamp: Steel, nickel plate.

PART NUMBER (Shell Size)	A
D15000QH0 (Shell Size 2)	1.715 [43.56]
D25000QH0 (Shell Size 3)	2.255 [57.28]



QB7W2S00QH0 cable adapter shown above with contacts

CONTACT TECHNICAL SALES FOR MORE INFORMATION



Positronic's D-subminiature Accessories are available in RoHS compliant materials. These materials will be supplied when the connector part number designates the RoHS modifier "/AA".



Positronic
connectpositronic.com

CABLE ADAPTERS (HOODS/BACKSHELLS)

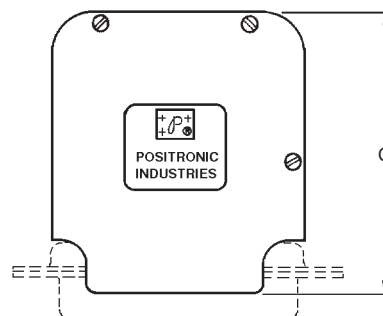
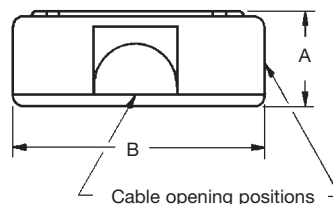
D-Sub
Accessories

PLASTIC CABLE ADAPTER (HOOD) CODE W



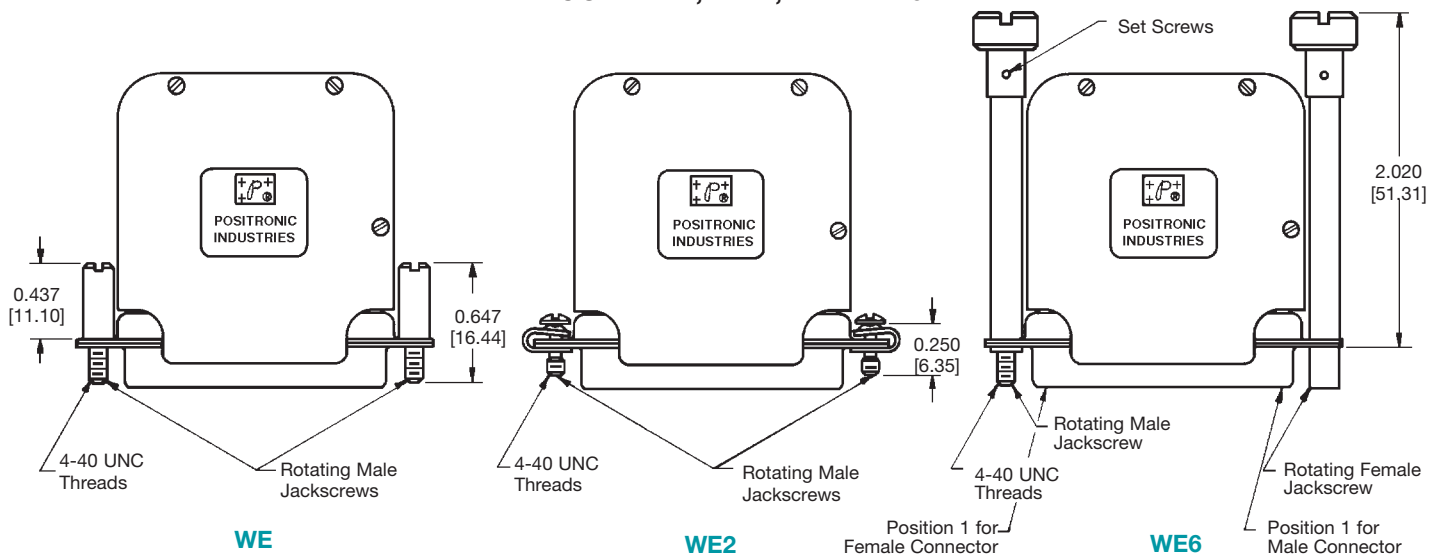
SD25M10WE20 (left) and
RD25S10W00 (right) shown above.

PART NUMBER (Shell Size)	A	B	C	CABLE OPENING	
				MINIMUM	MAXIMUM
D9000W00 (Shell Size 1)	0.630 [16.00]	0.770 [19.56]	1.800 [45.72]	R 0.093 [2.36]	R 0.093 [2.36]
D15000W00 (Shell Size 2)	0.630 [16.00]	1.100 [27.94]	1.800 [45.72]	R 0.125 [3.18]	R 0.456 [3.96]
D25000W00 (Shell Size 3)	0.630 [16.00]	1.622 [41.20]	1.800 [45.72]	R 0.125 [3.18]	R 0.250 [6.35]



Material: Polypropylene UL 94V-0.

PLASTIC CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS CODE WE, WE2, AND WE6



Material:
Cable adapter: Polypropylene UL 94V-0.
Jackscrew: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

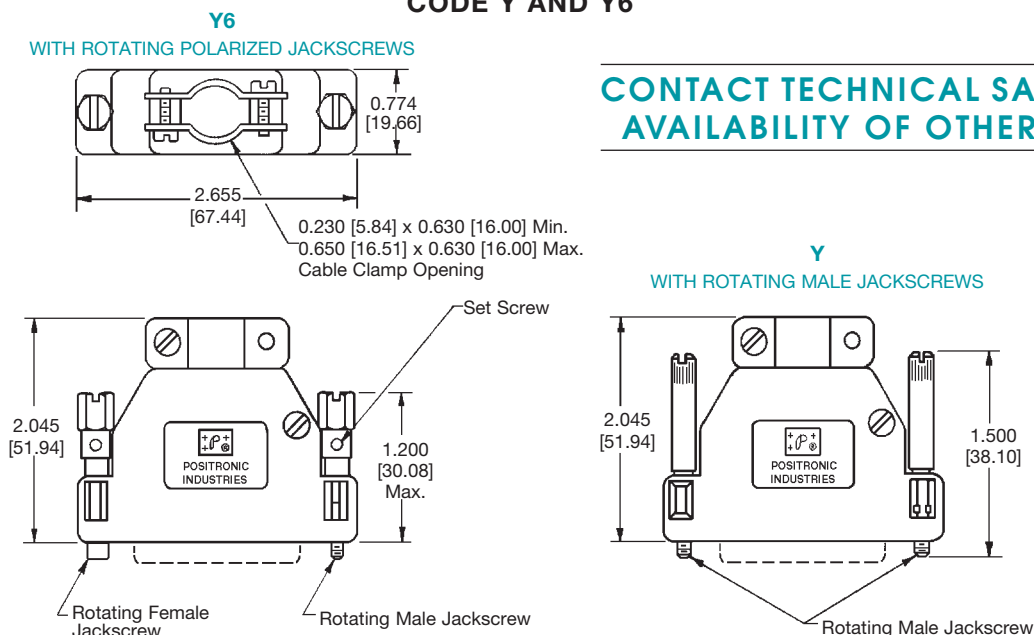
Material:
Cable adapter: Polypropylene UL 94V-0.
Jackscrew: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

U-Clip: Spring steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

Material:
Cable adapter: Polypropylene UL 94V-0.
Jackscrew: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

Spacer & Knob: Aluminum, yellow chromate conversion.

SIZE 50 PLASTIC CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS CODE Y AND Y6



CONTACT TECHNICAL SALES FOR
AVAILABILITY OF OTHER SIZES.

Material: Cable adapter: Composite, conductive volume resistivity [1.0 ohm-cm max.].

Attenuation - 40+ decibels.

Alternate material - Glass-filled nylon, UL 94V-0.

Jackscrews - Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

Cable Clamps - Steel, nickel plated.

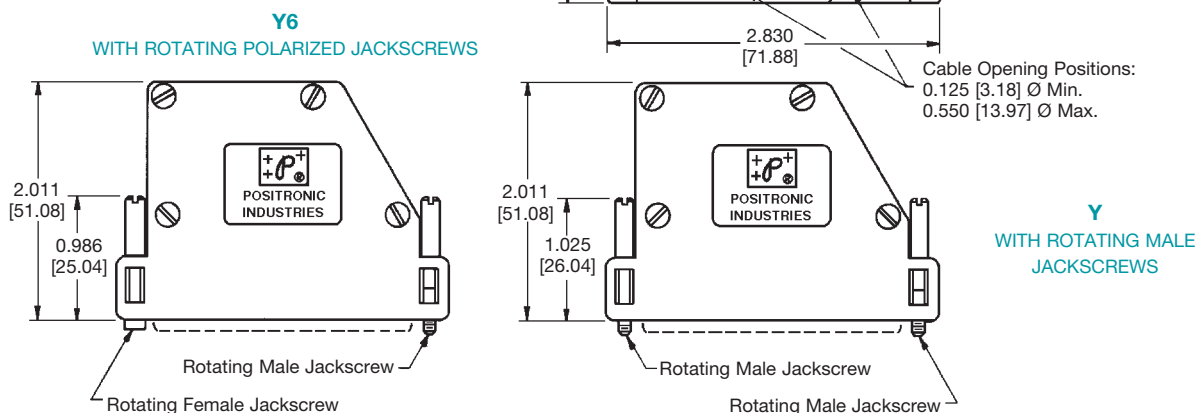
SIZE 104 COMPOSITE CABLE ADAPTER (HOOD) WITH ROTATING JACKSCREWS CODE Y AND Y6

Material: Cable adapter: Composite, conductive volume resistivity [1.0 ohm-cm max.].

Attenuation: 40+ decibels.

Alternate material: Glass-filled nylon,
UL 94V-0.

Jackscrews: Steel with zinc plate and chromate seal.
Y6 knobs: stainless steel, passivated.



DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



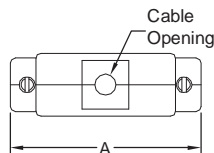
Positronic
connectpositronic.com

CABLE ADAPTERS (HOODS/BACKSHELLS)

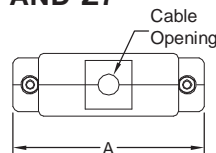
D-Sub
Accessories

EMI/RFI COMPOSITE CABLE ADAPTERS (HOODS) WITH JACKSCREWS

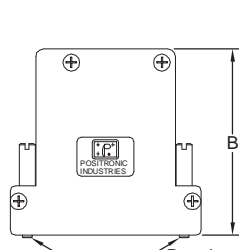
EXTENDED HEIGHT, BOTH TOP AND SIDE CABLE OPENINGS FOR LARGE DIAMETER SHIELDED AND POWER CONTACTS
CODE Z, Z4, Z6, AND Z7



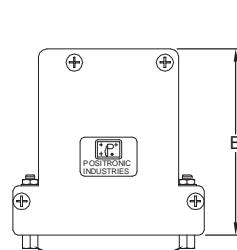
**CODE Z - COMPOSITE
CABLE ADAPTER WITH
ROTATING MALE JACKSCREWS**



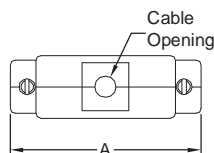
**CODE Z4 - COMPOSITE
CABLE ADAPTER WITH
FIXED FEMALE JACKSCREWS**



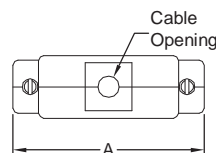
Rotating Male Jackscrews; 4-40UNC threads;
steel with zinc plate and chromate seal or tin plate;
stainless steel, passivated



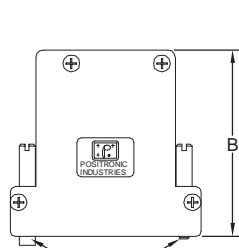
Fixed Female Jackscrews; 4-40UNC threads;
steel with zinc plate and chromate seal or tin plate;
stainless steel, passivated



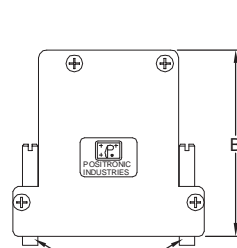
**CODE Z6 - COMPOSITE
CABLE ADAPTER WITH
ROTATING MALE AND
FEMALE JACKSCREWS**



**CODE Z7 - COMPOSITE
CABLE ADAPTER WITH
ROTATING FEMALE
JACKSCREWS**



Rotating Male and Female Jackscrews; 4-40UNC
threads; steel with zinc plate and chromate seal or
tin plate; stainless steel, passivated



Rotating Female Jackscrews; 4-40UNC threads;
steel with zinc plate and chromate seal or tin plate;
stainless steel, passivated

Material: Composite, conductive volume resistivity [1.0 ohm-cm max.], UL 94V-0.

Attenuation: 40+ decibels.

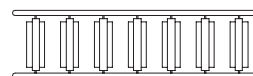
Alternate Material: Glass filled nylon, UL 94V-0.

SHELL SIZE	PART NUMBER	A	B	C	CABLE OPENING		
					MIN.	MAX.	
1	D9000Z00	1.387 [35.23]	1.935 [49.15]	0.735 [18.67]	0.100 [2.54]	0.400 [10.16]	0.570 [14.48]
	D9000Z400						
	D9000Z600						
	D9000Z700						
2	D15000Z00	1.715 [43.56]	1.935 [49.15]	0.735 [18.67]	0.100 [2.54]	0.400 [10.16]	0.570 [14.48]
	D15000Z400						
	D15000Z600						
	D15000Z700						
3	D25000Z00	2.254 [57.25]	2.200 [55.88]	0.735 [18.67]	0.100 [2.54]	0.550 [13.97]	0.570 [14.48]
	D25000Z400						
	D25000Z600						
	D25000Z700						
4	D37000Z00	2.903 [73.74]	2.200 [55.88]	0.735 [18.67]	0.100 [2.54]	0.550 [13.97]	0.570 [14.48]
	D37000Z400						
	D37000Z600						
	D37000Z700						
5	D50000Z00	2.809 [71.35]	2.700 [68.58]	0.900 [22.86]	0.100 [2.54]	Ø	0.630 [16.00]
	D50000Z400						
	D50000Z600						
	D50000Z700						

TYPICAL INSERTS



Various inserts are provided to
accommodate different cable sizes.



INSERT TREE ASSEMBLY



WIRE HARNESS CONNECTORS

SAVE TIME AND MONEY!

Let Positronic support you by cablizing your
D-subminiature connector selection.

Cable Assembly Design Support

We work closely with customers to:

1. Design assemblies in accordance with customer specifications.
2. Prepare wire harness connector configuration and performance specifications.
3. Design each system in accordance with applicable customer, domestic, and international standards.
4. Define and conduct performance and verification testing.



Technical Sales Support



Engineering Support



Puerto Rico Cable Assembly



Quality Assurance

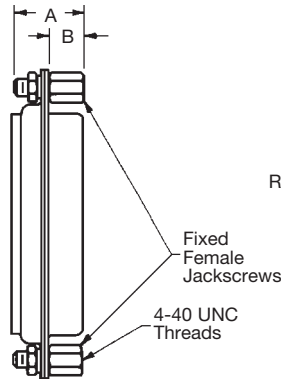
FOR MORE DETAILS CONTACT **TECHNICAL SALES**
OR VISIT OUR **WEB SITE** AT:
CONNECTPOSITRONIC.COM/CABLE-ASSEMBLIES



JACKSCREW SYSTEMS CODE T, T2, T3, T4, T5, E, E2, AND E3

T^{*1} / T2^{*1} / T3^{*1} / T4^{*1} / T5^{*1}

CODE	A	B
T ^{*3}	0.437 [11.10]	0.250 [6.35]
T2 ^{*3}	0.500 [12.70]	0.198 [5.03]
T3	0.812 [20.60]	0.198 [5.03]
T4	0.445 [11.30]	0.220 [5.59]
T5	0.448 [11.38]	0.198 [5.03]

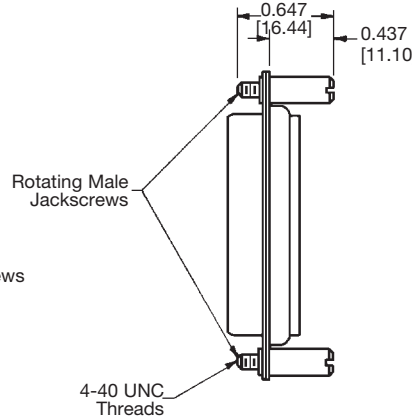


FIXED FEMALE JACKSCREWS

Material:^{*2} T, T4, and T5 = Copper alloy or steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

T2 and T3 = Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

E / E3

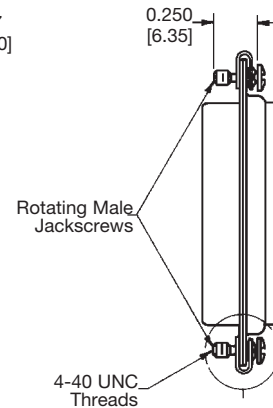


ROTATING MALE JACKSCREWS

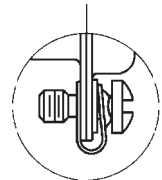
Material:^{*2} Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

E = slotted for screw driver
E3 = rotating male with internal hex for 3/32 hex drives

E2



ROTATING MALE SCREW LOCKS



Material:^{*2}

Screw: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

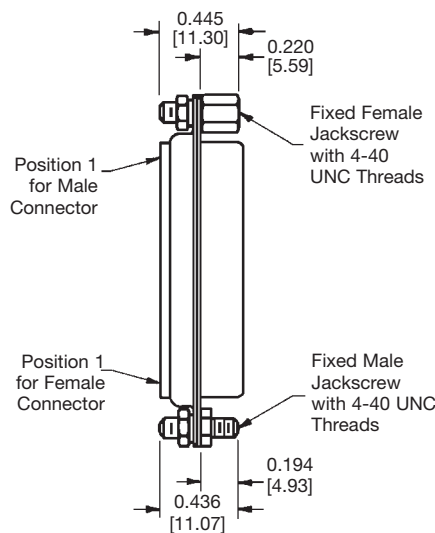
U-Clip: Spring steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

NOTES:

- ^{*1} T, T2, T3, T4 or T5 jackscrew supplied on connectors in combination with other accessories may differ dimensionally, contact Technical Sales for more information.
- ^{*2} T, T2, T3, T4, T5, E, E2 or E3 - Passivated stainless steel jackscrews available. Contact Technical Sales for ordering information.
- ^{*3} Internal thread length of T & T2 jackscrews is 0.120 [3.05] nominal.

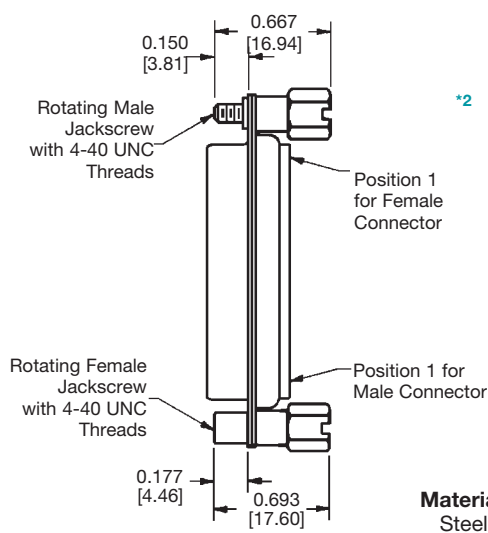
CODING DEVICE (KEYING) JACKSCREW SYSTEMS CODE T6 AND E6

T6



FIXED MALE AND FEMALE JACKSCREWS

E6^{*2}



ROTATING MALE AND FEMALE JACKSCREWS

NOTES:

- ^{*1} T6 or E6 passivated stainless steel jackscrews available. Contact Technical Sales for ordering information.
- ^{*2} For customer installations of knobs onto jackscrews, recommend set screw torque value of 16 in/oz. Recommend application of thread lock to set screw.

Material:^{*1}

Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

Material:^{*1}

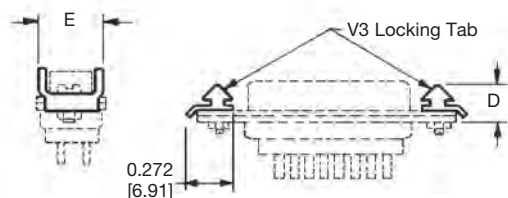
Male jackscrews: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.

Female jackscrews: Copper alloy with zinc plate and chromate seal or tin plate; stainless steel, passivated.

FRONT MOUNTED LOCKING TABS

QUICK DISCONNECT LOCKING DEVICE

CODE V3



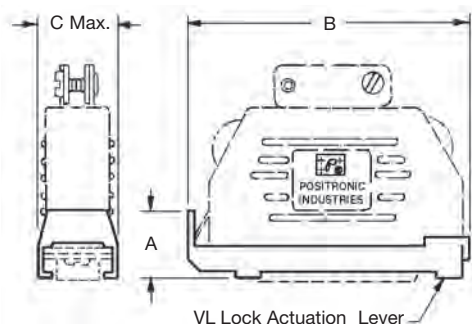
Material: Steel or copper alloy, nickel plate.

SHELL SIZE	PART NO.	D	E
1	D9/370000V30	0.270 [6.85]	0.465 [11.81]
2	D9/370000V30	0.270 [6.85]	0.465 [11.81]
3	D9/370000V30	0.270 [6.85]	0.465 [11.81]
SPECIAL SIZE 29	D290000V30	0.270 [6.85]	0.585 [14.86]
4	D9/370000V30	0.270 [6.85]	0.465 [11.81]
5	D500000V30	0.270 [6.85]	0.585 [14.86]

LOCK ACTUATION LEVER

QUICK DISCONNECT LOCKING DEVICE

CODE VL



May be used
with **Front or
Back Mounted
Locking Tabs**,
see above and
below.

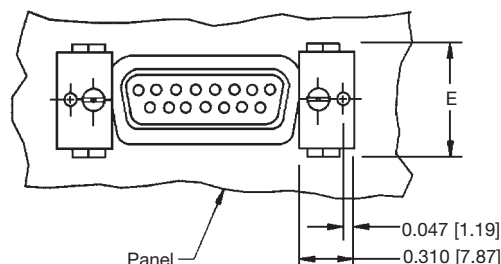
Material: Steel, nickel plate.

SHELL SIZE	PART NUMBER	A	B	C MAX.
1	D90000VL0	0.580 [14.73]	1.460 [37.08]	0.600 [15.24]
2	D150000VL0	0.580 [14.73]	1.770 [44.96]	0.600 [15.24]
3	D250000VL0	0.580 [14.73]	2.360 [59.94]	0.600 [15.24]
SPECIAL SIZE 29	D290000VL0	0.640 [16.26]	2.030 [51.56]	0.715 [18.16]
4	D370000VL0	0.580 [14.73]	3.020 [76.71]	0.600 [15.24]
5	D500000VL0	0.635 [16.13]	2.900 [73.66]	0.710 [18.03]

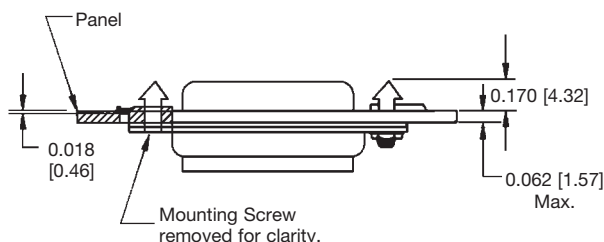
BACK MOUNTED LOCKING TABS

QUICK DISCONNECT LOCKING DEVICE

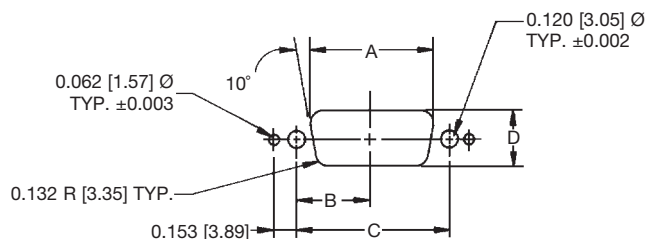
CODE V5



Panel



Mounting Screw
removed for clarity.



PANEL CUTOUT

SHELL SIZE	PART NUMBER	A	B	C	D	E
1	D9/370000V50	0.806 [20.47]	0.492 [12.50]	0.984 [24.99]	0.449 [11.40]	0.465 [11.81]
2	D9/370000V50	1.134 [29.80]	0.656 [16.66]	1.312 [33.32]	0.449 [11.40]	0.465 [11.81]
3	D9/370000V50	1.674 [42.52]	0.926 [23.52]	1.852 [47.04]	0.449 [11.40]	0.465 [11.81]
SPECIAL SIZE 29	D290000V50	1.356 [34.44]	0.767 [19.48]	1.534 [38.96]	0.555 [14.10]	0.585 [14.86]
4	D9/370000V50	2.326 [59.08]	1.250 [31.75]	2.500 [63.50]	0.449 [11.40]	0.465 [11.81]
5	D500000V50	2.218 [56.34]	1.203 [30.56]	2.406 [61.11]	0.555 [14.10]	0.585 [14.86]

Material: Steel, nickel plate.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

UNIQUE FEATURES



D-Sub
Accessories

U N I Q U E F E A T U R E S

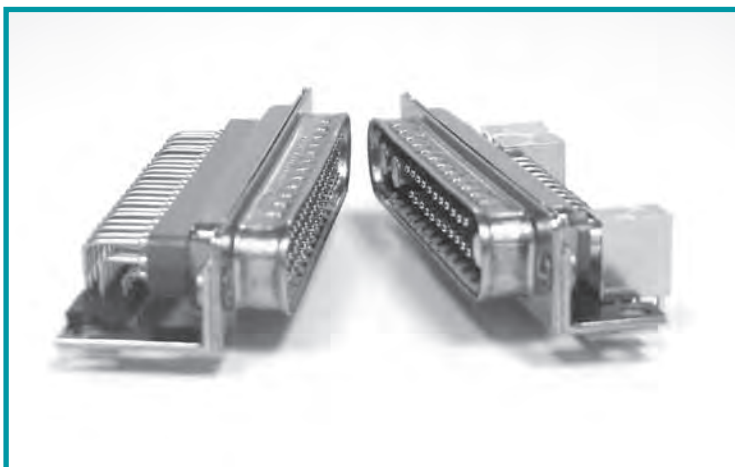
Positronic is **known** around the world **for**
offering our customers **flexibility** when choosing connectors.

In addition to allowing **customers** to **create** part numbers for **particular applications**,
Positronic offers a **wide variety** of features and accessories within our products.

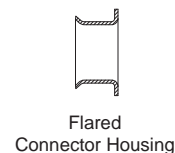
Positronic is also **eager** to modify existing products **to meet unique**
customer requirements. If you do not find what you need
with this catalog, please contact us for assistance.

FLARED CONNECTOR HOUSING (SHELLS)

Flared connector housings provide a more **generous misalignment** characteristics than
standard D-subminiature connector housings.



SIDE VIEWS OF FLARED CONNECTOR HOUSING (SHELL) FOR
DD62M4R7000-1503.33 (shown left) and
CBD25W3M85R7000-1503.33 (shown right)



CONTACT TECHNICAL SALES FOR
PART NUMBERS AND DETAIL INFORMATION



LOW PROFILE MOUNTING BRACKET

Allows reduced distance from the top of the printed circuit board to the top of the connector compared to standard mounting brackets.



Mounting bracket material: Brass with zinc plate and chromate seal or tin plate.

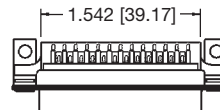
CONTACT TECHNICAL SALES FOR MORE INFORMATION

CAPTIVE ALIGNMENT BARS FOR ROBOTIC "PICK AND PLACE" APPLICATIONS

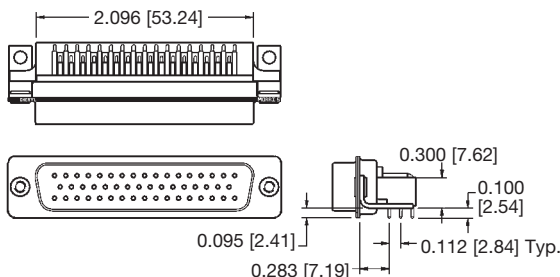
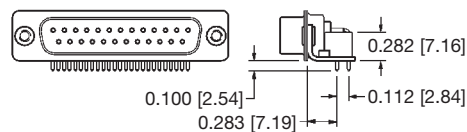
FOR MD-SERIES CONNECTORS, ADD THE SUFFIX "1298.3" TO THE END OF THE PART NUMBER.
FOR ODD-SERIES CONNECTORS, ADD THE SUFFIX "1298.4" TO THE END OF THE PART NUMBER.

Material: Polyphenylenesulfide.

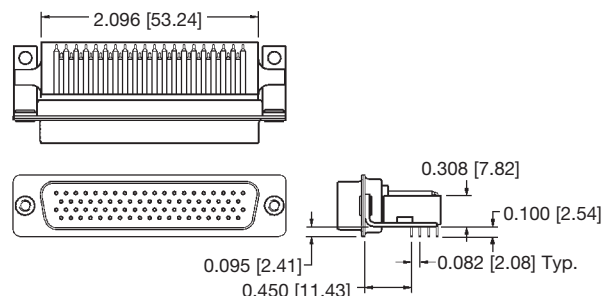
CONTACT TECHNICAL SALES FOR MINIMUM ORDER QUANTITIES AND PRODUCTION LEAD TIMES



TYPICAL PART NUMBER:
MD25M5R7000-1298.3



TYPICAL PART NUMBER:
MD50F5R7000-1298.3



TYPICAL PART NUMBER:
ODD78F5R7000-1298.4



Positronic
connectpositronic.com

UNIQUE FEATURES



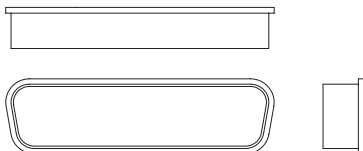
D-Sub
Accessories

PROTECTIVE COVER

SUPPLIED AS STANDARD WITH ALL WD AND WDD SERIES CONNECTORS

COVER WITHOUT EARS

FOR CONNECTORS WITHOUT FIXED JACKSCREWS



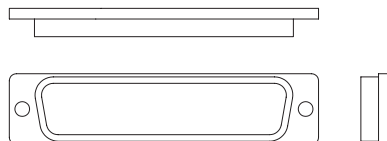
Material: Conductive polyethylene
Color: Black

Optional:

Material: Static dissipative ethylene vinyl acetate
Color: Pink

COVER WITH EARS

FOR CONNECTORS WITH FIXED JACKSCREWS



Material: Conductive polyester
Color: Black

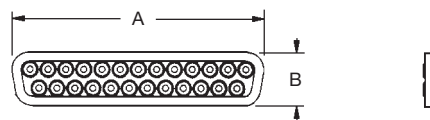
SHELL SIZE	GENDER	CONDUCTIVE REPLACEMENT PART NUMBER WITHOUT EARS	STATIC DISSIPATIVE REPLACEMENT PART NUMBER WITHOUT EARS	REPLACEMENT PART NUMBER WITH EARS
1	Male	4931-9-0-0	4931-9-1-0	4931-9-100-0
	Female	4932-9-0-0	4932-9-1-0	4932-9-100-0
2	Male	4931-15-0-0	4931-15-1-0	4931-15-100-0
	Female	4932-15-0-0	4932-15-1-0	4932-15-100-0
3	Male	4931-25-0-0	4931-25-1-0	4931-25-100-0
	Female	4932-25-0-0	4932-25-1-0	4932-25-100-0
4	Male	4931-37-0-0	4931-37-1-0	4931-37-100-0
	Female	4932-37-0-0	4932-37-1-0	4932-37-100-0
5	Male	4931-50-0-0	4931-50-1-0	4931-50-100-0
	Female	4932-50-0-0	4932-50-1-0	4932-50-100-0
6	Male	---	---	4931-16-100-0
	Female	---	---	4932-16-100-0

INTERFACIAL SEAL

AVAILABLE FOR MALE CONNECTORS ONLY

SUPPLIED AS STANDARD WITH ALL MALE WD AND WDD SERIES CONNECTORS

CONNECTOR ARRANGEMENTS (SHELL SIZE)	A	B
9 / 15 (Shell Size 1)	0.678 [17.22]	0.338 [8.59]
15 / 26 (Shell Size 2)	1.002 [25.45]	0.338 [8.59]
25 / 44 (Shell Size 3)	1.550 [39.37]	0.338 [8.59]
37 / 62 (Shell Size 4)	2.189 [55.60]	0.338 [8.59]
50 / 78 (Shell Size 5)	2.085 [52.96]	0.446 [11.33]



CONTACT ARRANGEMENT SIZE 25
INTERFACIAL SEAL
(SHOWN FOR REFERENCE ONLY)

Material: Thermoplastic Elastomer (TPE),
Santoprene™ or equivalent.

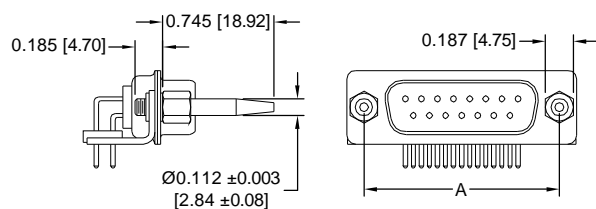
CONTACT TECHNICAL SALES
FOR PART NUMBERS



BLIND MATING SYSTEM

BLIND MATING GUIDE PINS

TO OBTAIN BLIND MATING GUIDE PINS, ADD THE SUFFIX
"-759.0" TO THE END OF THE PART NUMBER.



TYPICAL PART NUMBER:
MD15M5R7000-759.0

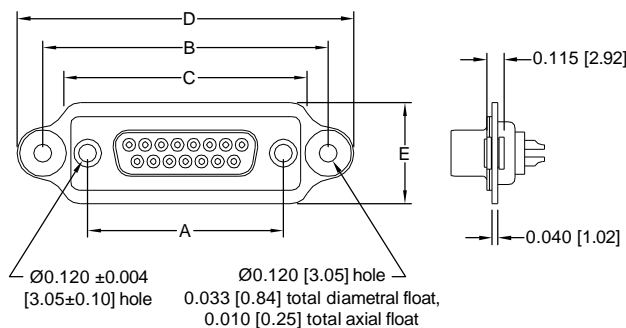
Material: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated



**RD9S1000-759.1 and
HDC9M3S6000-14-759.0**

FLOAT MOUNTING PLATE

TO OBTAIN FLOAT MOUNTING PLATE, ADD THE SUFFIX
"-759.1" TO THE END OF THE PART NUMBER.



TYPICAL PART NUMBER:
MD15F20000-759.1

Material: Aluminum, yellow anodize standard.
Black anodize available.



**ODD26M20000-759.1 and
ODD26F4R700S-759.0**

SHELL SIZE	A	B	C	D NOMINAL	E
1	0.984 [24.99]	1.586 [40.28]	1.333 [33.86]	1.930 [49.02]	0.677 [17.20]
2	1.312 [33.22]	1.914 [48.62]	1.661 [42.19]	2.258 [57.35]	0.677 [17.20]
3	1.852 [47.04]	2.461 [62.51]	2.208 [56.08]	2.805 [71.25]	0.677 [17.20]
SPECIAL SIZE 29	1.534 [38.96]	2.146 [54.43]	1.890 [48.01]	2.487 [63.17]	0.789 [20.04]
4	2.500 [63.50]	3.102 [78.79]	2.849 [72.36]	3.446 [87.53]	0.677 [17.20]
5	2.406 [61.11]	3.008 [76.40]	2.755 [69.98]	3.352 [85.14]	0.789 [20.04]

CONTACT TECHNICAL SALES FOR ADDITIONAL
ORDERING INFORMATION

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/accessories/catalog>



Positronic
connectpositronic.com

UNIQUE FEATURES

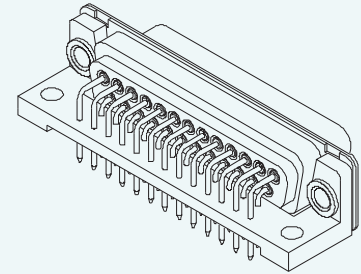
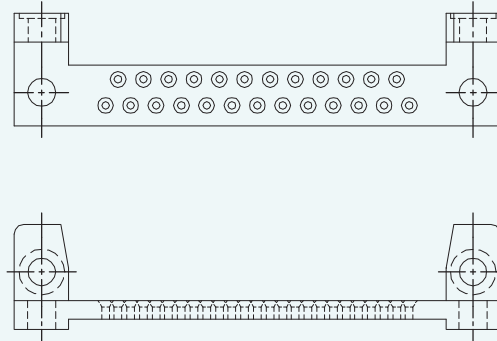


D-Sub
Accessories

SWAGEABLE PLASTIC MOUNTING BRACKET WITH ALIGNMENT BAR



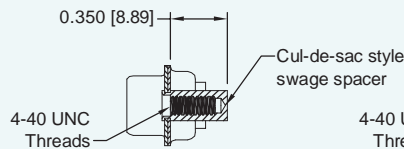
Non-conductive mounting brackets are necessary in many applications. Consult Technical Sales for complete part number.



CUL-DE-SAC STYLE MOUNTING ACCESSORIES CODE C5 AND C7

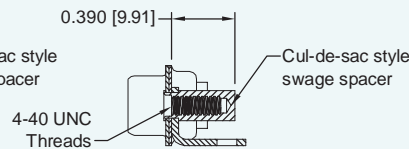
C5

FIXED CABLE CONNECTOR



C7

RIGHT ANGLE (90°)
PRINTED BOARD MOUNT



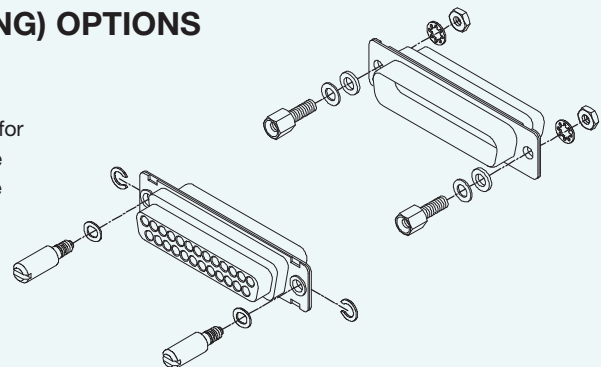
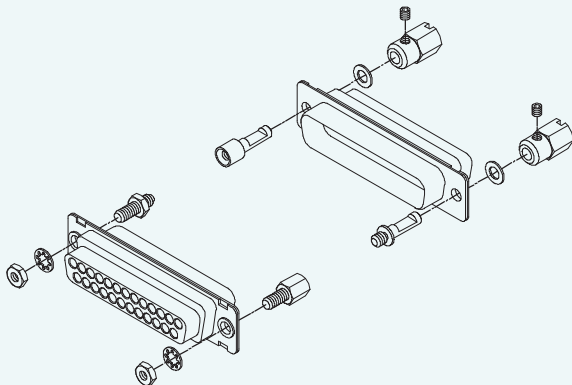
Material: Steel with zinc plate and chromate seal or tin plate; stainless steel, passivated.



CODING DEVICE (KEYING) OPTIONS

UP TO EIGHT CODING DEVICE OPTIONS!

Jackscrews can be supplied in configurations to allow for up to four coding device options, as shown in the table below. An additional four coding device options can be achieved by reversing the connector genders.



OPTION ^{*1}	MALE CONNECTOR	CODE ^{*2}	FEMALE CONNECTOR	CODE ^{*2}
1	2 male rotating	E	2 female fixed	T
2	2 female rotating	E6-833.7	2 male fixed	T6-866.1
3	1 female, 1 male rotating	E6	1 male, 1 female fixed	T6
4	1 male, 1 female rotating	E6-1827.1	1 female, 1 male fixed	T6-1827.0

NOTE: ^{*1} Additional 4 options achieved by switching male and female connectors.

^{*2} For jackscrew dimensional information see page 27.

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24

Current Ratings: To 200 amperes per contact

Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22

Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven connector housing sizes

Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22

Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22

Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cabled connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22

Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



Positronic®
global connector solutions

Regional Headquarters

Positronic | USA

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/locations

LOCATIONS
For most current sales office information, please visit www.connectpositronic.com/locations

www.connectpositronic.com

HIGH DENSITY RECTANGULAR Rectangular Connectors



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS



LOOK
FOR OUR
NEW PRODUCTS!



Qualified to:

MIL-C-28748/13 & MIL-C-28748/14

MIL-DTL-28748/7 & MIL-DTL-28748/8

SAE AS39029/34-440 & SAE AS39029/35-441



Catalog C-008 Rev. E

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

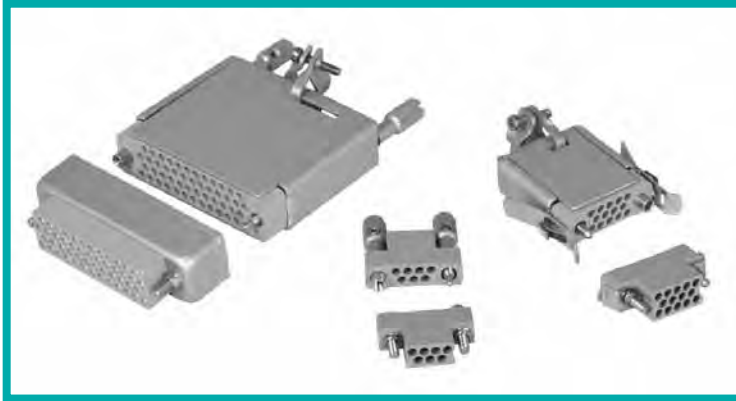
Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

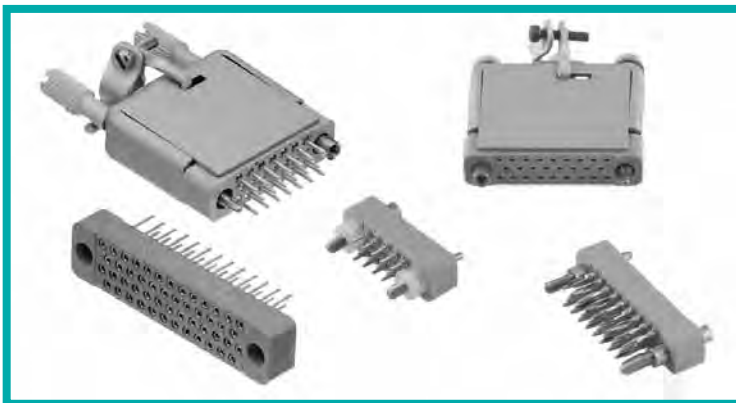
Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic®, Positronic Industries, Inc.®, P+ logo, Positronic Global Connector Solutions®, Connector Excellence® and their logo designs are registered trademarks of Positronic Industries, Inc.



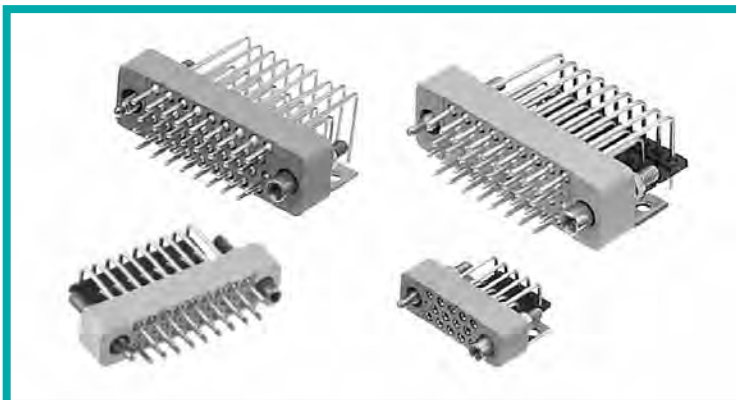
SGMC SERIES

High density rectangular connectors with size 22 removable contacts. Industrial performance or MIL-C-28748/13, MIL-C-28748/14, SAE AS39029/34 and SAE AS39029/35. Eleven connector variants, 4 through 104 contacts. Crimp, solder cup, straight solder and compliant press-in printed board mount terminations. Thermocouple contact options available.



SGM SERIES

High density rectangular connectors with size 22 straight printed circuit board mount / solder cup contacts. Industrial performance or MIL-DTL-28748/7 and MIL-DTL-28748/8. Thirteen connector variants, 4 through 75 contacts. Solder cup, wrap post, straight solder and compliant press-in printed board mount terminations. Thermocouple contact options available.



SMPL SERIES

High density rectangular connectors with size 22 right angle printed circuit board mount contacts. Industrial performance or conformance to MIL-DTL-28748. Twelve connector variants, 4 through 50 contacts. Right angle (90°) solder printed board mount terminations. Thermocouple contact options available.

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/54/HighDensityRectangular/catalogs>



Positronic Industries
connectpositronic.com

TABLE OF CONTENTS

High
Density
Rectangular

G E N E R A L I N F O R M A T I O N

What makes Positronic's new "PosiBand®" contact interface a significant improvement?	1
The PosiBand® contact system has many advantages over the legacy split tine design	2
Temperature Rise Curves	2
Mating Dimensions and Exploded View of Typical Mated Connector Assemblies	3
Connector Component Description and Terminology	4

S G M C S E R I E S

Technical Characteristics	5-6
Connector Insert Dimensions	7-8
Contact Hole Dimensions and Printed Board Hole Pattern for Contact Variants 75 and 104	8
Removable Contact Ordering Assistance Chart	9
Ordering Information	10

R E M O V A B L E C O N T A C T S

Technical Characteristics	11
Size 22 Removable Crimp Contact	11
Size 22 Removable Military Crimp Contact	12
Size 22 Removable Thermocouple Crimp Contact	12
Size 22 Removable Solder Cup Contact	13
Size 22 Removable Straight Solder Printed Board Mount Contact	13
Size 22 Removable Compliant Press-In Printed Board Mount Contact	14
Mounting Hardware for Printed Board Mount Connectors	14

S G M S E R I E S

Technical Characteristics	15-16
Connector Insert Dimensions for SGM and SMPL Series	17-18
Straight Solder Printed Board Mount Termination	18
Solder Cup Termination	19
Wrap Post Termination	20
Compliant Press-In Printed Board Mount Termination	20
Contact Hole Dimensions and Printed Board Hole Pattern for SGM and SGMC Series	21
Ordering Information	22

continued on next page. . . .



S M P L S E R I E S

Technical Characteristics	23-24
Right Angle (90°) Printed Board Mount Termination	25
Mounting Bracket	25
Alignment Bar Dimensions	25
Right Angle (90°) Printed Board Hole Pattern	26
Ordering Information	27

U N I Q U E F E A T U R E S

Introduction	28
Low Profile Space Saving High Reliability Mezzanine Connector	28
Customer Specified Contact Termination Length	29
Flush Panel Connector Mounting Brackets	29
Polarization & Coding (Keying) Options	30

A C C E S S O R I E S

Panel Cut-Out Dimensions.....	30
Polarizing Guides	31
Fixed and Rotating Jackscrew Systems	31
Polarizing Guide and Jackscrew Thread Availability Chart	31
Polarizing Guide	32
Jackscrew System	33
Connector Housing (Shells)	34
Aluminum Cable Adapter (Hood)	35
Aluminum Cable Adapter (Hood) with Jackscrew System	35
Full Access Aluminum Cable Adapter (Hood) with Jackscrew System	36
Quick Disconnect Locking Device	36

A P P L I C A T I O N T O O L S

Introduction	37
Contact Application Tools Cross Reference List	38
Compliant Press-In Connector Installation Tools	39

continued on next page. . .



Positronic Industries
connectpositronic.com

TABLE OF CONTENTS

High
Density
Rectangular

P C B P R I N T E D H O L E S I Z E

Suggested Printed Board Hole Sizes for Compliant Press-In Connectors	40
--	----

S P E C I A L O P T I O N S

Modifications (MOS)	41
---------------------------	----

M I L Q U A L I F I E D P R O D U C T S

Positronic offers a wide variety of QPL connector products	42
--	----

Visit our web site for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/54/HighDensityRectangular/catalogs>

Connectors Designed To Customer Specifications

*Positronic **SGMC**, **SGM** and **SMPL** series connectors
can be modified to customer specifications.*

Examples: select loading of contacts for cost savings or to gain creepage and
clearance distances; longer printed circuit board terminations; customer specified hardware.

Contact Technical Sales with your particular requirements.



Positronic® Cable & Harness Assemblies

Many Industries Served including:

- Aerospace
- Datacom / Telecom
- Medical
- Industrial
- Military / Defense
- Transit / Rail

Support Capabilities:

- Design, development, engineering support, and documentation
- Build to customer print
- Assist in expansion of qualified suppliers on BOM
- Select facilities certified to ISO 9001 and AS9100
- Adherence to IPC-620 standards
- Product prototyping and first articles
- Electrical and mechanical testing

Products & Services

- Cable and harness assemblies
- Flex circuit assemblies
- Coaxial cable assemblies
- Kitting services
- EMI/RFI shielded assemblies
- Box builds
- Hermetic assemblies

**SAVE TIME AND MONEY! Let Positronic support you
by cablizing your **SGM/SGMC** connector selection.**

For more details contact *Technical Sales* or visit our *web site* at: <http://www.posicables.com>



Positronic Industries
connectpositronic.com

GENERAL INFORMATION

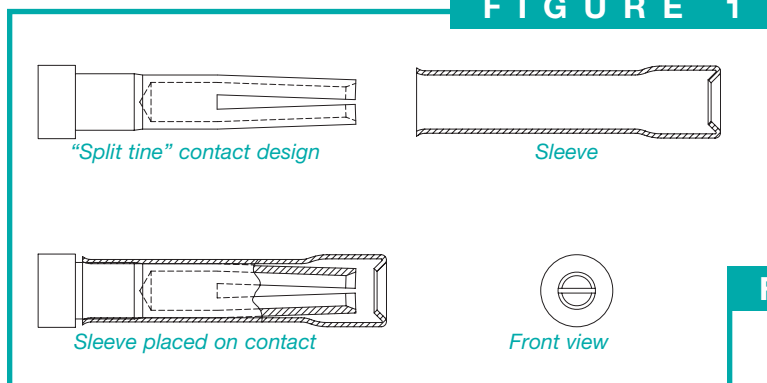
High
Density
Rectangular

What Makes Positronic's New "PosiBand®" Contact Interface a Significant Improvement?



High reliability connectors utilize female **closed entry contacts** that provide an unbroken ring of solid material at the face of the contact. The closed entry feature is **crucial in preventing damage** to female contacts used in harsh environments, repeated mating cycles, blind mate applications and applications requiring highest reliability.

FIGURE 1



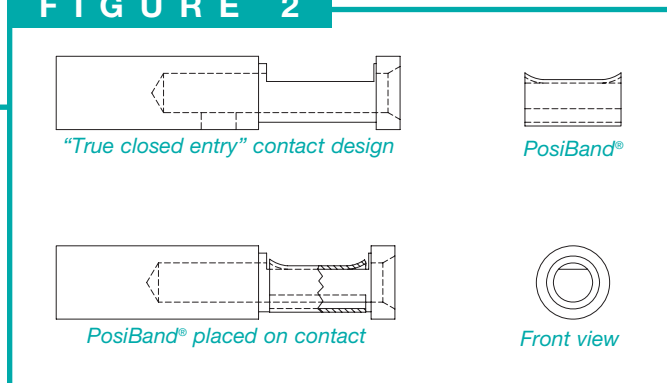
The most common **closed entry design** utilized by connector manufacturers is a split tine and sleeve concept. **See figure 1.** With this design, both the mechanical forces and

electrical interface are provided only at the tip of the female contact.

Positronic's new **PosiBand technology** takes a unique approach for closed entry female contacts.

PosiBand contacts utilize a two-piece contact design. **See figure 2.** Each piece serves a separate function, providing a more mechanically robust contact and more consistent electrical performance.

FIGURE 2



The main body of the **PosiBand** contact provides a true closed entry opening to enhance robustness. The **PosiBand** spring clip provides normal force on the male contact. Consistent electrical performance is supported through a larger area of contact interface between the male and female contact along the entire "floor" of the contact body. **PosiBand** contacts are QPL listed under **SAE AS39029** and **MIL-DLT-24308** specifications. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C** to the higher 40 gram contact separation test.

continued on next page . . .

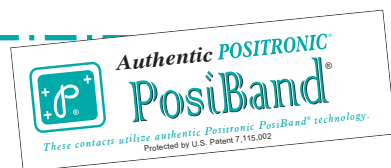
continued from previous page . . .

The PosiBand® contact system has many advantages over the legacy split line design.

- X PosiBand** is more robust than split line contact, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- X PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- X PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- X The PosiBand's** contact body does not require annealing of the crimp barrels, as does the split line design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- X PosiBand** is qualified under **SAE AS39029** and **MIL-DTL-24308** specifications. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C** to the higher 40 gram contact separation test requirement.

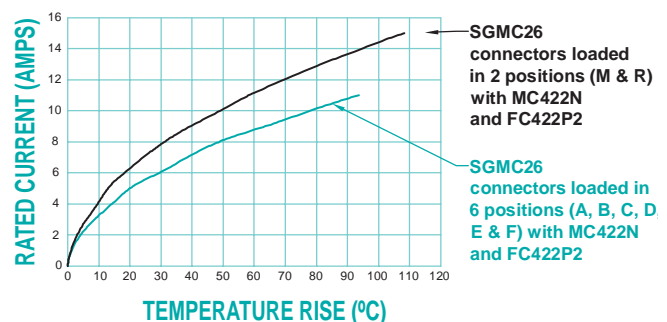
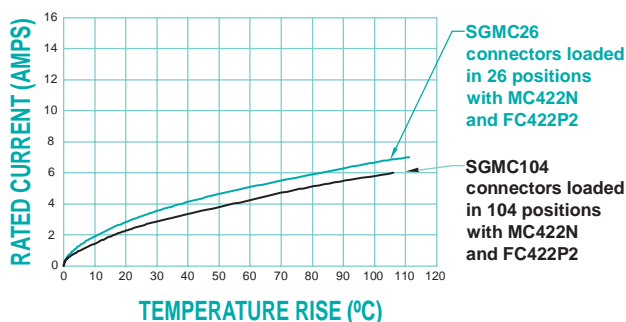


For more details about the **advantages of the PosiBand®** system, please view the detailed white paper at www.connectpositronic.com/content/37/ or visit our web site at www.connectpositronic.com.



TEMPERATURE RISE CURVES

Test conducted in accordance with UL1977.



Size 22 PosiBand Contacts

Initial Contact Resistance: 0.004 ohms, maximum.
Curve developed with contacts terminated to size 22 AWG wire.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

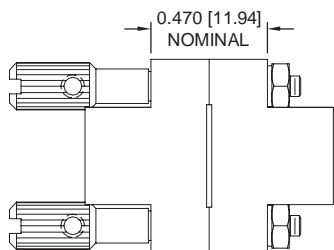


Positronic Industries
connectpositronic.com

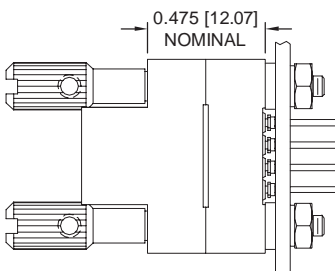
GENERAL INFORMATION

High
Density
Rectangular

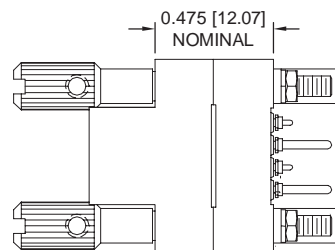
MATING DIMENSIONS FULLY MATED



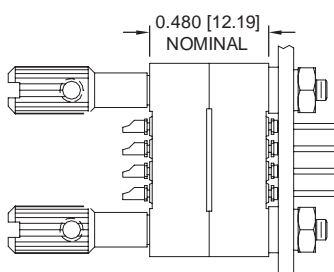
SGMC TO SGMC



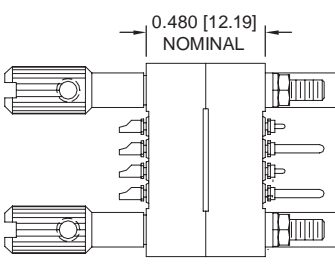
SGMC TO SGM



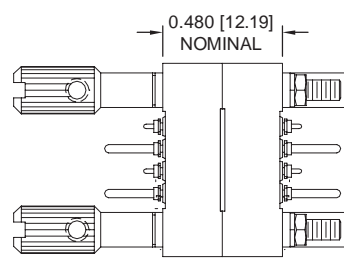
SGMC TO SMPL



SGM TO SGM

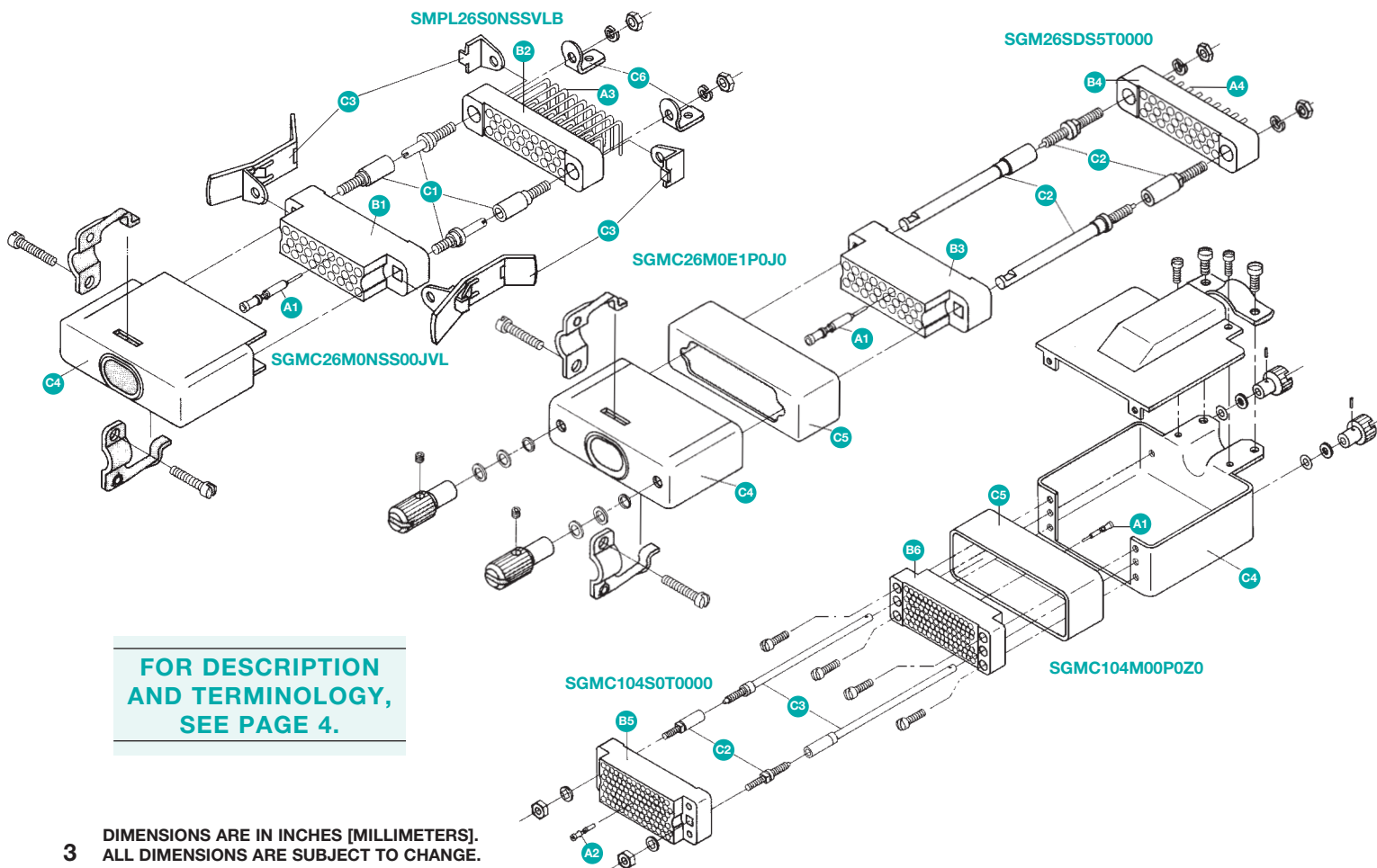


SGM TO SMPL



SMPL TO SMPL

EXPLODED VIEWS OF TYPICAL MATED CONNECTOR ASSEMBLIES



FOR DESCRIPTION
AND TERMINOLOGY,
SEE PAGE 4.



CONNECTOR COMPONENT DESCRIPTION AND TERMINOLOGY

See “*Supplemental Definitions*” for clarification of “*italicized*” terms.

FOR ILLUSTRATIONS, SEE PAGE 3.

- A1** – Connector contact: The primary electrically conductive element of connectors. The contact system is comprised of a *male contact* and a *female contact*. In general, contacts are available in a wide variety of sizes. The contacts in this catalog are size 22 (0.030 inches [0.76mm] in diameter). Contacts can be provided with multiple *termination* types, including wire *crimp* and solder; printed circuit board (pcb) solder, straight and right angle mount; and straight mount *compliant press-in*. A male crimp termination contact is shown in the example.
- A2** – See definitions outlined in A1. A female crimp termination contact is shown in the example.
- A3** – See definitions outlined in A1. A female right angle pcb solder termination is shown in the example.
- A4** – See definitions outlined in A1. A female straight pcb solder termination is shown in the example.
- B1** – Connector insert: The connector insulating element which also supports and positions the contacts in the connector system. Connectors can be supplied as a *free connector* or a *fixed connector*. Connector systems are available with a wide variety of *contact variants* and *termination types*. A 26 contact variant free connector for use with size 22 male crimp contacts is shown in the example.
- B2** – See definitions outlined for B1. A 26 contact variant fixed connector with size 22 female contacts and right angle solder terminations is shown in the example.
- B3** – A 26 contact variant free connector for use with size 22 male crimp contacts is shown in the example.
- B4** – See definitions outlined for B1. A 26 contact variant fixed connector with size 22 female contacts and straight solder terminations is shown in the example.
- B5** – See definitions outlined for B1. A 104 contact variant fixed bulkhead or panel mount connector for use with size 22 female crimp contacts is shown in the example.
- B6** – A 104 contact variant free connector for use with size 22 male crimp contacts is shown in the example.
- C1** – Male and female guides – Used to guide the mating of connector pairs and ensure proper alignment of contacts. A *polarized* guide system is shown in the example. Guide systems can also be used as a *coding device* for 75 and 104 variant connectors when used in corner position mounting holes.
- C2** – Jackscrew system – A *locking device* which uses the mechanical advantage of male and female screw threads to couple and uncouple connector pairs. The system consists of a fixed jackscrew and a rotating jackscrew. A *polarized* jackscrew system is shown in the example. Jackscrew systems can also be used as a *coding device* for connectors.
- C3** – Quick disconnect locking device – Device which allows for rapid connect and disconnect of connector pairs. The system shown in the example consists of fixed lock tabs and actuation levers.

C4 – Cable adapter – Connector accessory (commonly referred to as a “hood” or “back shell”) which is used on *free connectors* to support cable or wires and to protect contact terminations. Cable adapters may be used with other accessories such as jackscrew and quick disconnect locking systems, guides, and connector housings as shown in the examples.

C5 – Connector Housing – Connector accessory (commonly referred to as a “shell” or “shroud”) which protects the mating portion of the connector contacts. Connector housings are capable of serving as a *coding device* with the use of pin and slot system shown in this catalog, *see page 34 for details*.

C6 – Mounting bracket – Connector accessory used to mechanically fix a connector to a mounting surface. The example shows a mounting bracket used to secure a right angle solder connector to a pcb.

SUPPLEMENTAL DEFINITIONS

Male contact – Contact gender in which mechanical and electrical engagement is made on the outer surface of the contact.

Female contact – Contact gender in which mechanical and electrical engagement is made on the inner surface of the contact.

Size (contact) – A designation to differentiate one contact from another. Numbers are commonly used for this purpose. The designator numbers are associated with a specific male contact diameter; the smaller the designator, the larger the contact size.

Termination type – Means of making connection between the contact and external conductors.

Compliant press-in termination – A termination with a specially shaped section designed to provide an electrically secure solderless connection when pressed into a printed circuit board (pcb).

Crimp contact termination – A contact having a barrel which accepts a conductor and the barrel is designed to be crimped.

Free connector – The portion of connector system designed for attachment to the free end of wire or cable.

Fixed connector – The portion of connector system designed for attachment to a rigid surface.

Contact variant – The number, size, and arrangement of contacts.

Polarization (connector mating) – Integral feature within a connector system to ensure corresponding male and female contacts are engaged when the connectors are mated.

Coding device – Means of preventing the mating of a connector to any connector other than its intended mate. Also referred to as “keying”.

Locking device (connector) – An accessory that provides mechanical retention of mated connectors.

Connector component terminology is based on I.E.C. (International Electrotechnical Commission) language. See <http://www.electropedia.org/> for more information.



Positronic Industries
connectpositronic.com

SGMC SERIES INDUSTRIAL / MILITARY QUALITY REMOVABLE CONTACTS

High
Density
Rectangular

- ✓ High reliability connectors with **removable** contacts.
- ✓ Contacts are high density size 22.
- ✓ Terminations: crimp, solder cup, straight solder and compliant press-in printed board mount.
See pages 11- 14 for details.
- ✓ Female closed entry contacts utilize the "PosiBand®" system. *See page 1 for details.*
- ✓ Current ratings: signal level to 13 amperes.
See temperature rise curves on page 2 for details.
- ✓ Eleven connector variants, 4 - 104 contacts.
- ✓ A multitude of polarization and connector coding (keying) options. *See pages 30-34 for details.*
- ✓ Intermateable with SGM and SMPL series.
See page 15 for SGM series and page 23 for SMPL series.
- ✓ Thermocouple contact options available.
- ✓ A wide variety of options and accessories.

Connectors Qualified to:

- DSCC Drawing No. 86040 & 86078
- MIL-C-28748/13 & 28748/14

Contacts Qualified to:

- SAE AS39029/34 & 39029/35

Telecommunication:

- UL File # E49351

T E C H N I C A L C H A R A C T E R I S T I C S

MATERIALS AND FINISHES:

Connector Insert:	Glass filled DAP per ASTM-D-5948 type SDG-F. Green color is standard, black or grey available.
Removable Contacts:	Precision machined copper alloy. 0.000015 inch [0.38 µ] gold over nickel. Other finishes available upon request, <i>see pages 11-14 for details.</i>
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Jackscrew System:	Passivated stainless steel.
Connector Housing (Shells):	Aluminum with yellow anodize or black anodize1.

Cable Adapter (Hood):

Aluminum with yellow or black anodize.

Quick Disconnect

Actuation lock lever and lock tab,

Locking Device:

copper alloy with nickel plate.

MECHANICAL CHARACTERISTICS:

Removable Contacts:

Insert contact to rear face of connector insert, release from front face of connector insert. Size 22 contact, male contact - 0.030 inch [0.76mm] mating diameter. Female contact - PosiBand closed entry design, *see page 1 for details.*

Contact Retention in Connector Insert:

6 lbs. [26.5N] minimum.

continued on next page. . . .

TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . . .

MECHANICAL CHARACTERISTICS, *continued*:

Contact Termination:	Crimp all wire sizes from 20 AWG [0.5 mm ²] through 28 AWG [0.08 mm ²]. Solder cup - 0.035 inch [0.89mm] hole diameter for 22 AWG [0.3mm ²] wire maximum. 0.045 inch [1.14mm] hole diameter for 20 AWG [0.5mm ²] wire maximum. Straight printed board mount - 0.025 inch [0.64mm] termination diameter. Compliant press-in termination.
Locking Systems:	Friction, quick disconnect locking device and jackscrews.
Polarization:	Polarized guides and jackscrew system.
Coding (Keying) Device:	Pin and slot system; male and female guide system.
Mechanical Operations:	1000 operations
Jackscrews:	Standard threads, 2-56 UNC on all sizes, except 75 and 104 connector variants, which use 6-32 UNC. Metric threads, M2X0.4 and M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:	13 amperes, 2 contacts energized. 10 amperes, 6 contacts energized. 6 amperes, 26 contacts energized. 5 amperes, 104 contacts energized <i>See temperature rise curves on page 2 for details.</i>
Initial Contact Resistance:	0.004 ohms, maximum.
Flash over Voltage:	2200 V.AC (rms)
Test Voltage:	1000 V.AC (rms)
Insulation Resistance:	5 G ohms, minimum.
Clearance and Creepage Distance:	0.060 inch [1.52 mm], minimum.
Working Temperature:	-55°C to 135°C
Working Voltage:	250 V.AC (rms)

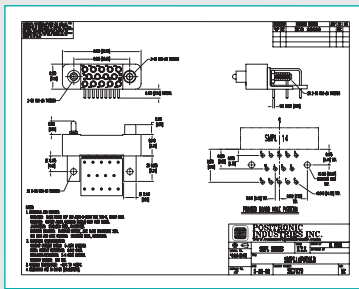
THERMOCOUPLE CONTACTS:

Size 22 removable crimp contacts are available, *see page 12 for details*.
Straight printed circuit board mount contacts are available in SGM series, *see page 16 for details*.
Right angle (90°) printed circuit board mount contacts are available in SMPL series, *see page 24 for details*.

Visit our web site for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/54/HighDensityRectangular/catalogs>

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



2-D Drawing



3-D Model



Positronic Industries
connectpositronic.com

SGMC SERIES

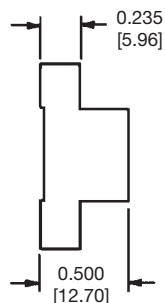
INDUSTRIAL / MILITARY QUALITY

REMOVABLE CONTACTS

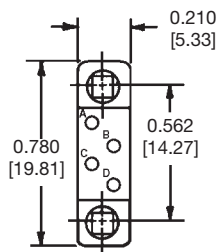
High
Density
Rectangular

CONNECTOR INSERT DIMENSIONS

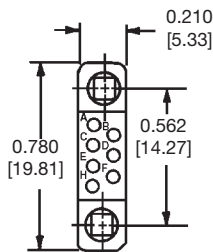
MATING FACE VIEW OF FEMALE OR REAR FACE VIEW OF MALE



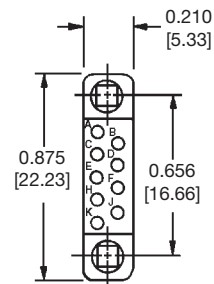
MALE AND FEMALE
PROFILE VIEW



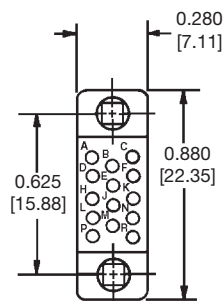
SGMC 4



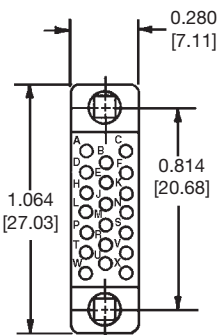
SGMC 7



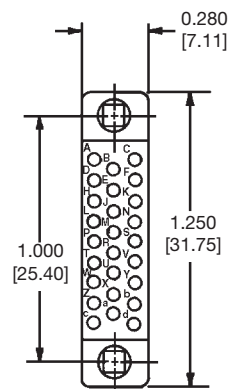
SGMC 9



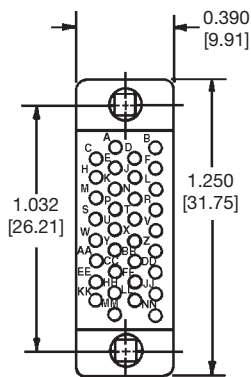
SGMC 14



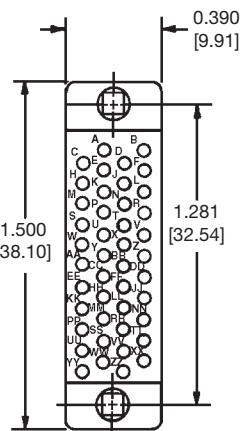
SGMC 20



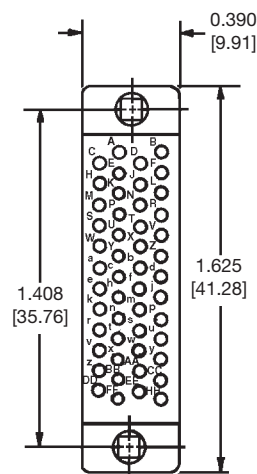
SGMC 26



SGMC 34



SGMC 44



SGMC 50

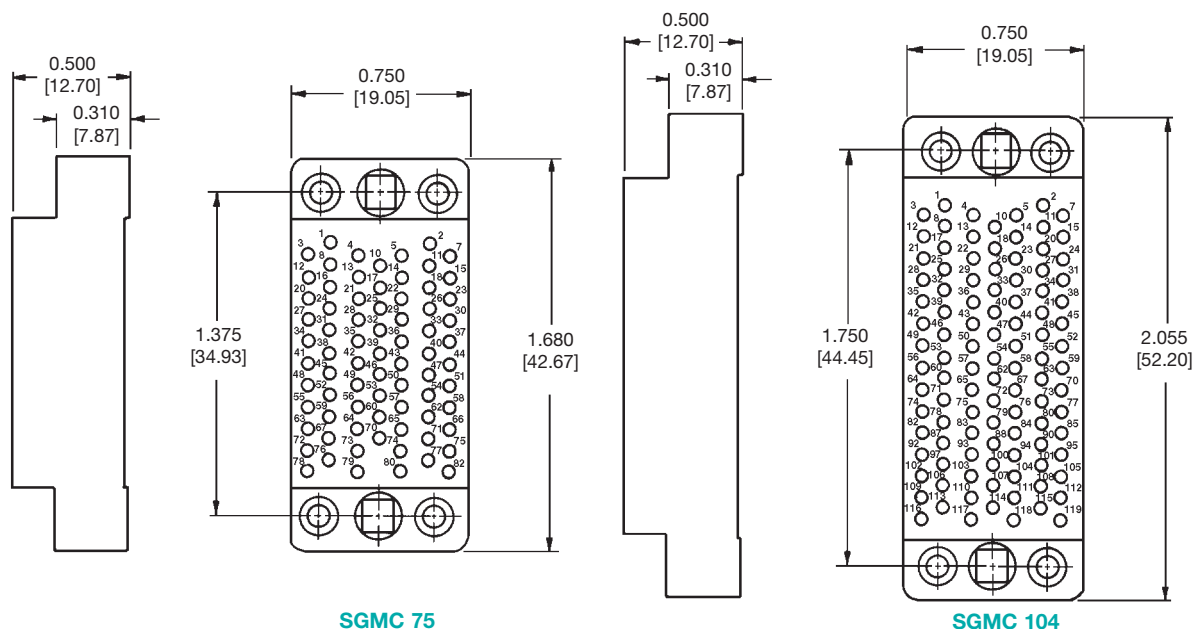
CONTACT HOLE PATTERNS:

For SGMC series contact hole patterns, refer to page 21 in SGM series.

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 11-14.

CONNECTOR INSERT DIMENSIONS

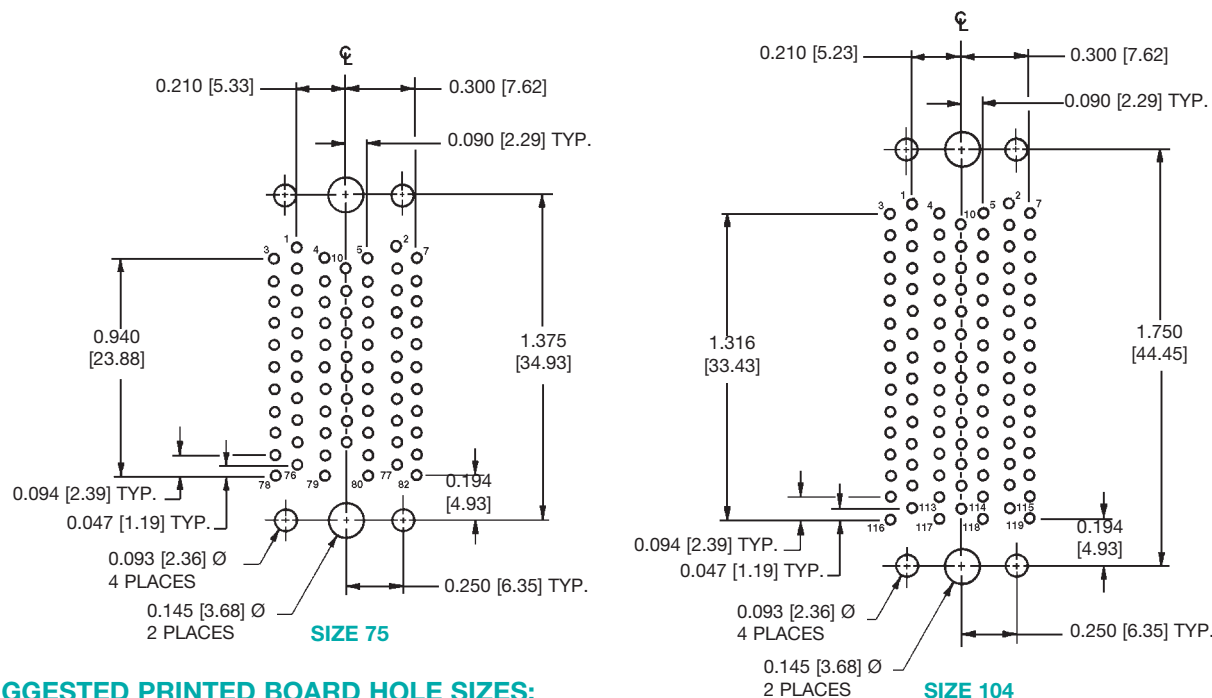
MATING FACE VIEW OF FEMALE OR REAR FACE VIEW OF MALE



CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN FOR CONTACT VARIANTS 75 AND 104

MATING FACE VIEW OF FEMALE OR REAR FACE VIEW OF MALE

For contact hole patterns for SGM series sizes 4 - 50, refer to page 21 in SGM series.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.040 [1.01] Ø holes in printed board for contact terminations.

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 11-14.



REMOVABLE CONTACT ORDERING ASSISTANCE CHART

SGMC SERIES CRIMP AND SOLDER CUP CONTACT TERMINATIONS

TERMINATION TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	WIRE SIZE AWG [mm ²]
CRIMP	see page 11 for additional information	22	FC422P2	MC422N	$\frac{22}{0.3} / \frac{24}{0.25} / \frac{26}{0.12} / \frac{28}{0.08}$
			FC420P2	MC420N	20 [0.5]
MILITARY CRIMP	see page 12 for additional information	22	M39029/35-441	M39029/34-440	$\frac{22}{0.3} / \frac{24}{0.25} / \frac{26}{0.12} / \frac{28}{0.08}$
THERMOCOUPLE CRIMP	see page 12 for additional information	22	FC422P2CH	MC422NCH	$\frac{22}{0.3} / \frac{24}{0.25} / \frac{26}{0.12}$
			FC422P2AL	MC422NAL	
			FC422P2CU	MC422NCU	
			FC422P2CO	MC422NCO	
SOLDER CUP	see page 13 for additional information	22	FS422P2	MS422N	22 [0.3] max.
			FS420P2	MS420N	20 [0.5] max.

NOTE: For ordering crimp contacts on reels, add "R" to part number, see page 11 for details. Examples: MC422NR or FC422P2R

SGMC SERIES PRINTED BOARD MOUNT CONTACT TERMINATIONS

TERMINATION TYPE	PAGE NUMBER REFERENCE IN CATALOG	CONTACT SIZE	FEMALE PART NUMBER	MALE PART NUMBER	USABLE TERMINATION LENGTH	TERMINATION DIMENSION
STRAIGHT SOLDER	see page 13 for additional information	22	FDS425P2	MDS425N	0.125 [3.18]	0.025 Ø [0.64]
			FDS456P2	MDS456N	0.156 [3.96]	0.025 Ø [0.64]
			FDS487P2	MDS487N	0.187 [4.75]	0.025 Ø [0.64]
COMPLIANT PRESS-IN	see page 14 for additional information	22	FPF467P2	MPF467N	N/A	0.048 Ø [1.22]

NOTE: Positronic recommends printed circuit board contacts be supplied installed in the connector. Contact technical sales.

For information regarding **REMOVABLE CONTACTS**, see contact illustration drawings and charts on pages 11-14.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 37.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	SGMC	14	S	0	ESS	0	0	0	0	-14

STEP 1 - BASIC SERIES
SGMC series

STEP 2 - CONNECTOR VARIANTS
4, 7, 9, 14, 20, 26, 34, 44, 50, 75, 104

STEP 3 - CONNECTOR GENDER
M - Male
S - Female - PosiBand closed entry contacts, see page 1 for more information.

STEP 4 - CONTACT TERMINATION TYPE
0 - Contacts are to be ordered separately, see contact ordering chart on page 9.

***1 STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEMS**
N - Polarizing guides.
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
E - Rotating jackscrews with knobs.
E1 - Rotating jackscrews used with cable adapter only. Not offered on 75 and 104 variants.
ESS - Short rotating jackscrews.
0 - If no polarizing guides or jackscrews are required. Also use "0" if ordering cable adapter equipped with jackscrews, for variants 75 and 104, see STEP 8.

NOTE:
*1 For details of items listed in steps 5 through 9, see Accessories section on pages 30-36.
*2 Select '0' in Step 6 when selecting 'V' and 'VL' options.

STEP 10 - SPECIAL OPTIONS
FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 41.

***1 STEP 9 - ADDITIONAL FEATURES**
B - For black anodized aluminum parts.
R - For yellow chromate coating on aluminum parts.
*2 V - Lock tab, not offered on 75 and 104 variants.
*2 VL - Actuation lock lever, not offered on 75 and 104 variants.
0 - If no additional options are required.
M - Jackscrews with metric threads.

***1 STEP 8 - CABLE ADAPTER (HOODS)**
V - Side opening cable adapter equipped with stainless steel jackscrew system offered on 104 variant only.
Z - Top opening cable adapter equipped with stainless steel jackscrew system offered on 104 variants only.
J - Top opening cable adapter offered on all variants except 75 and 104.
0 - If no cable adapters are required.

***1 STEP 7 - CODING (KEYING) POSITIONS OF CONNECTOR HOUSING (SHELLS)**
Select letter to designate position of male pin or female slot for coding system.
A, B, C, D, E, F, G
0 - If no coding is required or if no connector housings are required.

***1 STEP 6 - CONNECTOR HOUSING (SHELLS)**
P - Male shell.
R - Female shell.
0 - If no connector housings are required.

Do you need 2-D drawings or 3-D models?

See page 6 for more information!

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 37.



Positronic Industries
connectpositronic.com

SGMC SERIES INDUSTRIAL / MILITARY QUALITY REMOVABLE CONTACTS

High
Density
Rectangular

REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

SIZE 22 REMOVABLE CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy. 0.000015 inch [0.38 μ] gold over nickel. Other finishes available upon request, for details, see optional plating finishes below.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of connector insert, release from front face of connector insert. Size 22 contact, male - 0.030 inch [0.76mm] mating diameter. Female contact - PosiBand closed entry design, see page 1 for details. Terminations for 20, 22, 24, 26, and 28 AWG.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

- 13 amperes, 2 contacts energized.
- 10 amperes, 6 contacts energized.
- 6 amperes, 26 contacts energized.
- 5 amperes, 104 contacts energized

See temperature rise curves on page 2 for details.

Initial Contact Resistance: 0.004 ohms, maximum.

OPTIONAL PLATING FINISHES

- 14 0.000030 [0.76 μ] gold over nickel by adding "-14" suffix onto part number. Example: FC422P2-14.
- 15 0.000050 inch [1.27 μ] gold over nickel by adding "-15". Example: FC422P2-15.

REELED CONTACTS:

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9550-1. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC420NR for a male contact and FC422P2R for female contact.



Enlarged section of
plastic contact carriers

REMOVABLE CRIMP CONTACT FOR USE WITH SGMC SERIES CONNECTORS SIZE 22

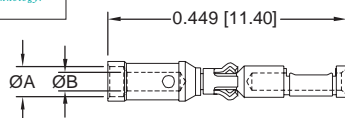
CLOSED CRIMP BARREL WITH INSULATION SUPPORT

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

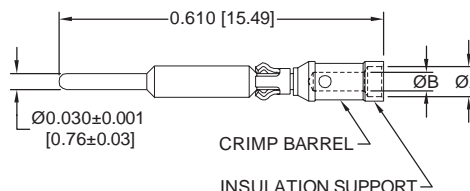


Authentic POSITRONIC
PosiBand®
These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG [mm²]	ØA	ØB
FC422P2	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]	0.056 [1.42]	0.035 [0.89]
FC420P2	20 [0.5]	N/A	0.045 [1.14]

MALE PART NUMBER	WIRE SIZE AWG [mm²]	ØA	ØB
MC422N	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]	0.056 [1.42]	0.035 [0.89]
MC420N	20 [0.5]	N/A	0.045 [1.14]

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 37.

REMOVABLE MILITARY CRIMP CONTACT
FOR USE WITH SGMC SERIES CONNECTORS

SIZE 22

QUALIFIED TO SAE AS39029

***MILITARY
SPECIFICATION CONTACTS**

STANDARD FINISH:
per SAE AS39029 specifications

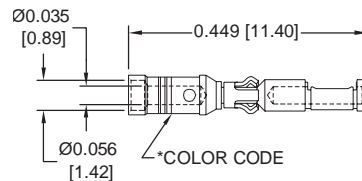
COLOR CODE:

MALE CONTACT:
YELLOW/YELLOW/BLACK

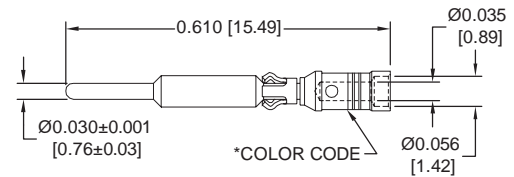
FEMALE CONTACT:
YELLOW/YELLOW/BROWN

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



MALE CONTACT



FEMALE PART NUMBER	WIRE SIZE AWG/[mm²]
*M39029/35-441	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]

MALE PART NUMBER	WIRE SIZE AWG/[mm²]
*M39029/34-440	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]

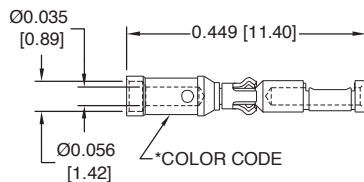
REMOVABLE THERMOCOUPLE CRIMP CONTACT
FOR USE WITH SGMC SERIES CONNECTORS

SIZE 22

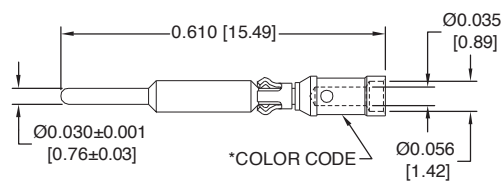


Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



MALE CONTACT



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE*	WIRE SIZE AWG [mm²]
K	CHROMEL (+)	FC422P2CH	MC422NCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	ALUMEL (-)	FC422P2AL	MC422NAL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
T	COPPER (+)	FC422P2CU	MC422NCU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC422P2CO	MC422NCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	FC422P2CH	MC422NCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC422P2CO	MC422NCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 37.



Positronic Industries
connectpositronic.com

SGMC SERIES INDUSTRIAL / MILITARY QUALITY REMOVABLE CONTACTS

High
Density
Rectangular

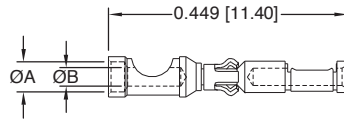
REMOVABLE SOLDER CUP CONTACT FOR USE WITH SGMC SERIES CONNECTORS SIZE 22

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.



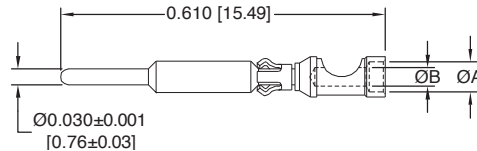
Authentic POSITRONIC[®]
PosiBand[®]
These contacts utilize authentic Positronic PosiBand[®] technology.
Protected by U.S. Patent 7,115,002

FEMALE CONTACT "CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB
FS422P2	22 [3/0]	0.056 [1.42]	0.035 [0.89]
FS420P2	20 [0.5]	N/A	0.045 [1.14]

MALE CONTACT



MALE PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB
MS422N	22 [3/0]	0.056 [1.42]	0.035 [0.89]
MS420N	20 [0.5]	N/A	0.045 [1.14]

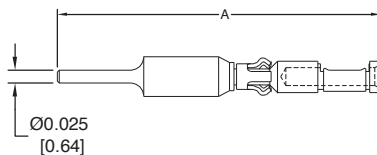
REMOVABLE STRAIGHT SOLDER PRINTED BOARD MOUNT CONTACT^{*1} FOR USE WITH SGMC SERIES CONNECTORS^{*2} SIZE 22



Authentic POSITRONIC[®]
PosiBand[®]
These contacts utilize authentic Positronic PosiBand[®] technology.
Protected by U.S. Patent 7,115,002

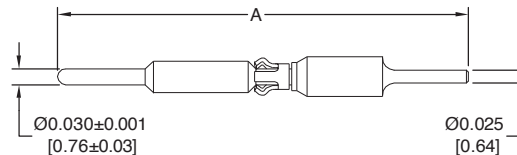
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT "CLOSED ENTRY" DESIGN



FEMALE PART NUMBER	A	B <small>See below illustration</small>
FDS425P2	0.607 [15.42]	0.125 [3.18]
FDS456P2	0.638 [16.21]	0.156 [3.96]
FDS487P2	0.669 [16.99]	0.187 [4.75]

MALE CONTACT



MALE PART NUMBER	A	B <small>See below illustration</small>
MDS425N	0.772 [19.61]	0.125 [3.18]
MDS456N	0.803 [20.40]	0.156 [3.96]
MDS487N	0.834 [21.18]	0.187 [4.75]

CONTACT HOLE PATTERNS:

For SGMC series contact hole patterns, refer to page 21 in SGM series.

NOTES: ^{*1} Positronic recommends printed circuit board contacts be supplied installed in the connector. Contact technical sales.

^{*2} Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board, see mounting hardware presentation on page 14.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 37.

REMOVABLE COMPLIANT PRESS-IN PRINTED BOARD MOUNT CONTACT*1

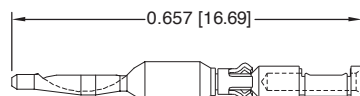
FOR USE WITH SGMC SERIES CONNECTORS*2

SIZE 22



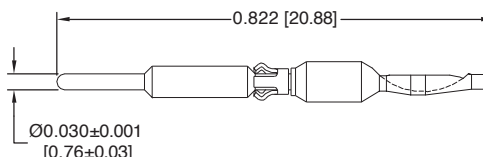
Note: Unless otherwise specified, compliant press-in contacts are not supplied with SGMC connectors and must be ordered separately. Contacts may be installed in connector to custom order.

FEMALE CONTACT "CLOSED ENTRY" DESIGN



PART NUMBER: FPF467P2

MALE CONTACT



PART NUMBER: MPF467N

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.105 [2.66] Ø hole in printed board for connector mounting holes.

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 40.

For compliant press-in connector installation tools, see page 39.

CONTACT HOLE PATTERNS:

For SGMC series contact hole patterns, refer to page 21 in SGM series.

NOTES: *1 Positronic recommends printed circuit board contacts be supplied installed in the connector. Contact technical sales.

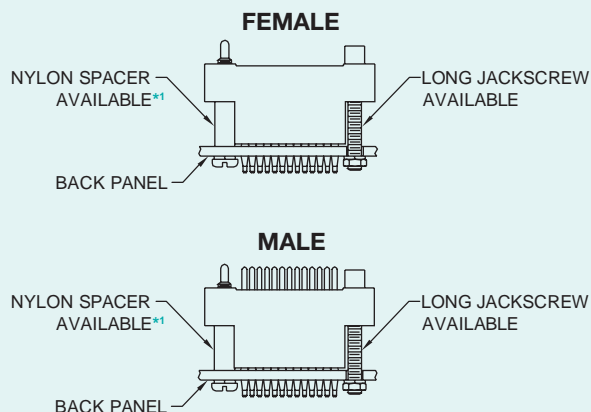
*2 Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board, see mounting hardware presentation below.

MOUNTING HARDWARE FOR PRINTED BOARD MOUNT CONNECTORS

FOR USE WITH SGMC OR SGM SERIES CONNECTORS

SGMC CONNECTOR INSERT SHOWN IN ILLUSTRATION FOR REFERENCE

Positronic recommends the practice of using mounting hardware. Stresses that occur during coupling and uncoupling of connectors or through shock and vibration of systems can be transferred to printed circuit boards through compliant press-in connector terminations. Avoid concern over electrical integrity of the connector to board interface by using mounting screws.



NOTE: *1 Stainless steel spacer available.

CONTACT TECHNICAL SALES FOR PART NUMBERS WITH LONG JACKSCREW OR NYLON SPACER*1 !

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 37.



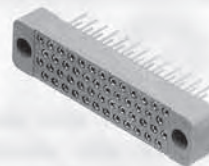
Positronic Industries
connectpositronic.com

SGM SERIES

INDUSTRIAL / MILITARY QUALITY

FIXED STRAIGHT PCB MOUNT / SOLDER CUP

High
Density
Rectangular



High reliability connectors with **fixed** contacts.



Contacts are high density size 22.



Terminations: wire wrap, solder cup, straight solder and compliant press-in printed board mount.

See pages 18-20 for details.



Female closed entry contacts utilize the "PosiBand®" system. *See page 1 for details.*



Current ratings: signal level to 13 amperes.

See temperature rise curves on page 2 for details.



Thirteen connector variants, 4 - 75 contacts.



A multitude of polarization and connector coding (keying) options. *See pages 30-34 for details.*



Intermateable with SGMC and SMPL series.

See page 5 for SGMC series and page 23 for SMPL series.



Thermocouple contact options available.



A wide variety of options and accessories.

Qualified to:

- MIL-DTL-28748/7 & 28748/8

Telecommunication:

- UL File # E49351

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black or green available.
Fixed Contacts:	Precision machined copper alloy. 0.000015 inch [0.38 µ] gold over nickel. Other finishes available upon request, <i>see page 41 for details.</i>
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Jackscrew System:	Passivated stainless steel.
Connector Housing (Shells):	Aluminum with yellow anodize or black anodize.
Cable Adapter (Hoods):	Aluminum with yellow or black anodize.

Quick Disconnect Locking Device:

Actuation lock lever and lock tab, copper alloy with nickel plate.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 22, male contact 0.030 inch [0.76 mm] mating diameter. Female contact - PosiBand closed entry design, <i>see page 1 for details.</i>
Contact Retention in Connector Insert:	6 lbs. [26.5N] minimum.
Contact Termination:	Solder cup contacts - 0.037 inch [0.94 mm] internal hole diameter for 22 AWG [0.3 mm ²] wire maximum. Straight printed board mount - 0.025 inch [0.64 mm] termination diameter.

TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . . .

MECHANICAL CHARACTERISTICS, *continued*:

	Wire post - 0.025 inch [0.64 mm] square.
	Compliant press-in termination.
Locking Systems:	Friction, quick disconnect locking device and jackscrews.
Polarization:	Polarized guides and jackscrew system.
Coding (Keying) Device:	Pin and slot system; male and female guide system.
Mechanical Operations:	1000 operations per IEC 60512-5.
Jackscrews:	Standard threads, 2-56 UNC on all sizes, except 75 connector variant, which use 6-32 UNC. Metric threads, M2X0.4 and M3X0.5 available.

Initial Contact Resistance:	0.004 ohms, maximum.
Flash over Voltage:	2200 V.AC (rms)
Test Voltage:	1000 V.AC (rms)
Insulation Resistance:	5 G ohms, minimum.
Clearance and Creepage Distance:	0.028 inch [0.71 mm], minimum.
Working Temperature:	-55°C to 135°C
Working Voltage:	250 V.AC (rms)

THERMOCOUPLE CONTACTS:

Straight printed circuit board mount contacts are available, please contact Technical Sales for details.

Right angle (90°) printed circuit board mount contacts are available in SMPL series, see page 24 for details.

Size 22 removable crimp contacts are available in SGMC series, see page 12 for details.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

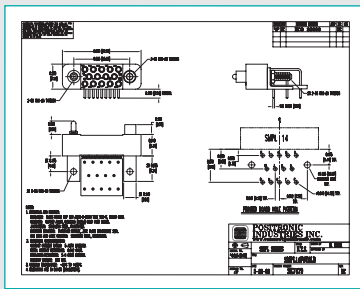
- 13 amperes, 2 contacts energized.
- 10 amperes, 6 contacts energized.
- 6 amperes, 26 contacts energized.
- 5 amperes, 104 contacts energized

See temperature rise curves on page 2 for details.

*Visit our web site for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/54/HighDensityRectangular/catalogs>*

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



2-D Drawing



3-D Model



Positronic Industries
connectpositronic.com

SGM SERIES

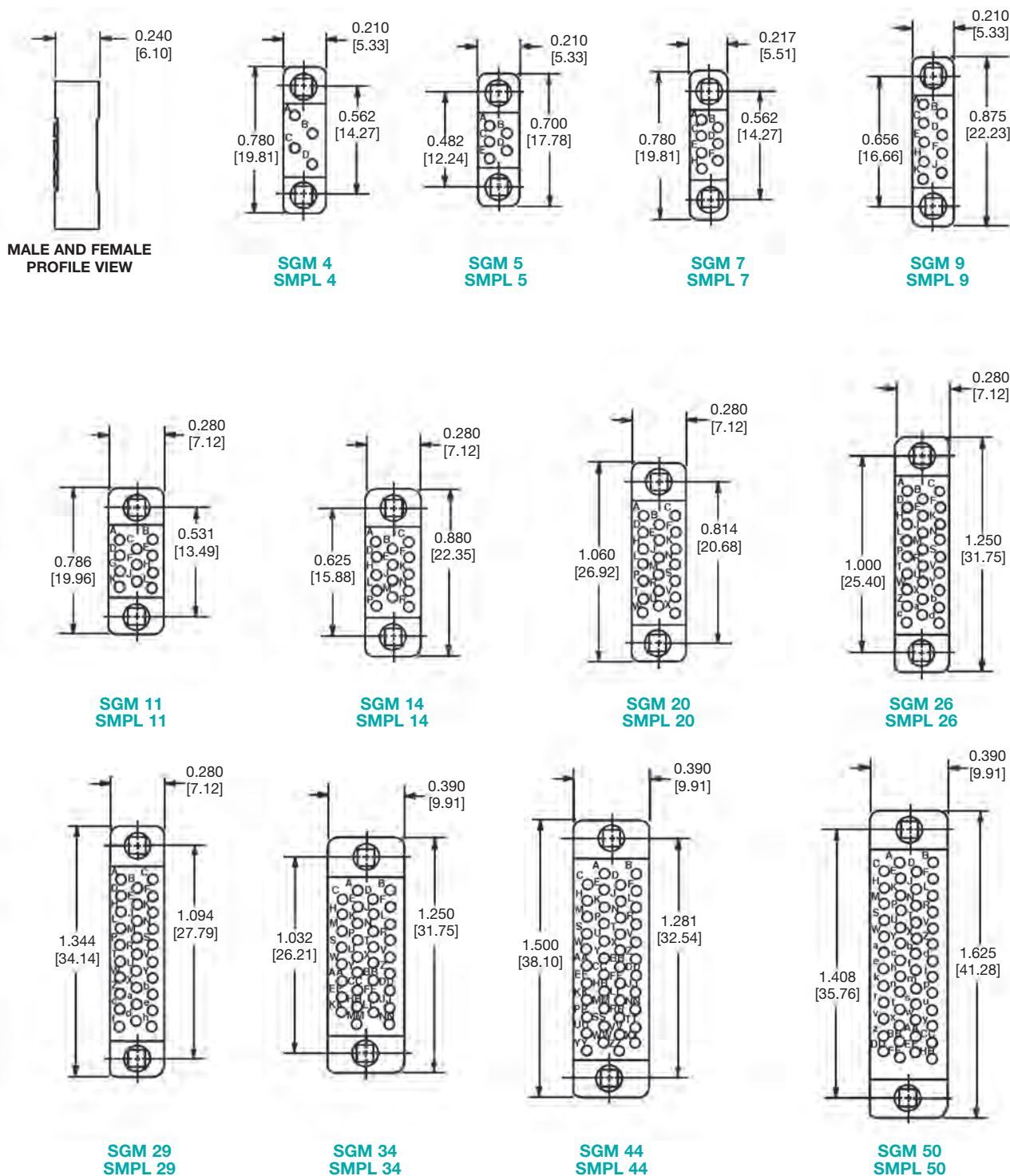
INDUSTRIAL / MILITARY QUALITY

FIXED STRAIGHT PCB MOUNT / SOLDER CUP

High
Density
Rectangular

CONNECTOR INSERT DIMENSIONS FOR SGM AND SMPL SERIES

MATING FACE VIEW OF FEMALE OR REAR FACE VIEW OF MALE



CONTACT HOLE PATTERNS:

For SGM series contact hole patterns, refer to page 21 in SGM series.
For SMPL series contact hole patterns, refer to page 26 in SMPL series.

High
Density
Rectangular

SGM SERIES

INDUSTRIAL / MILITARY QUALITY

FIXED STRAIGHT PCB MOUNT / SOLDER CUP

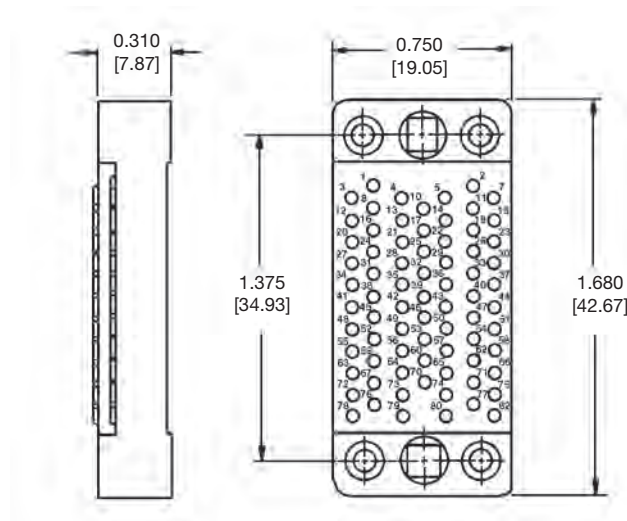


Positronic Industries
connectpositronic.com

CONNECTOR INSERT DIMENSIONS

SGM 75 CONNECTOR

MATING FACE VIEW OF FEMALE OR REAR FACE VIEW OF MALE



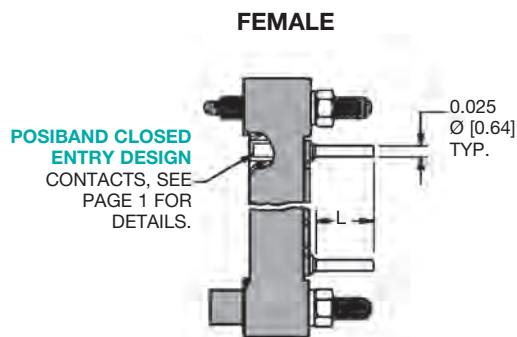
SGM 75

CONTACT HOLE PATTERNS:

For SGM 75 series contact hole patterns, refer to page 8 in SGMC series.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION

CODE DS3, DS4, DS5 AND DS6



Typical Part Number:
SGM26SDS3T0000

CONTACT CODE	L
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]
DS6	0.187 [4.75]

For straight solder contacts, specify contact code in Step 4 of ordering information.



Positronic Industries
connectpositronic.com

SGM SERIES

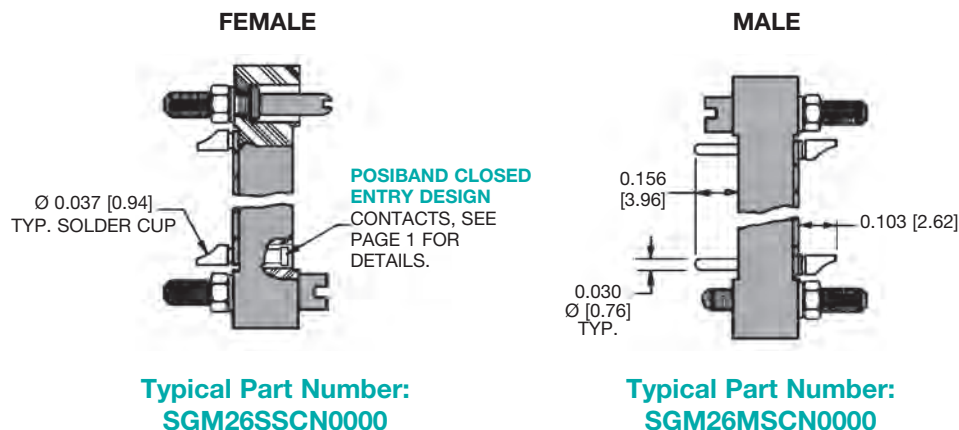
INDUSTRIAL / MILITARY QUALITY

FIXED STRAIGHT PCB MOUNT / SOLDER CUP

High
Density
Rectangular

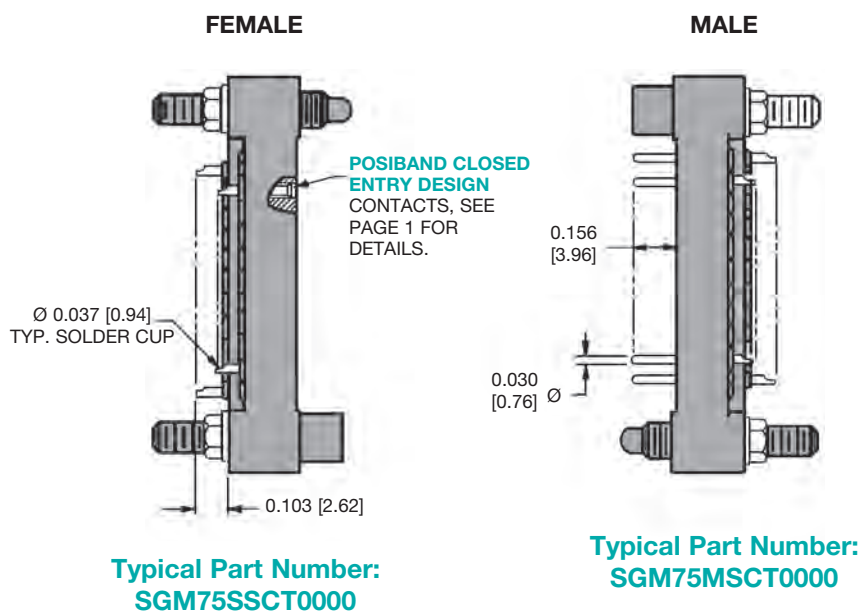
SOLDER CUP TERMINATION CODE SC

For solder cup contacts, specify contact code "SC" in Step 4 of ordering information.

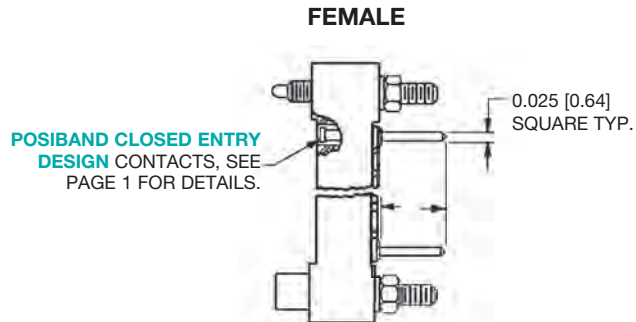


SGM 75 SOLDER CUP TERMINATION CODE SC

For solder cup contacts, specify contact code "SC" in Step 4 of ordering information.



WRAP POST TERMINATION
CODE WW1 OR CODE WW2



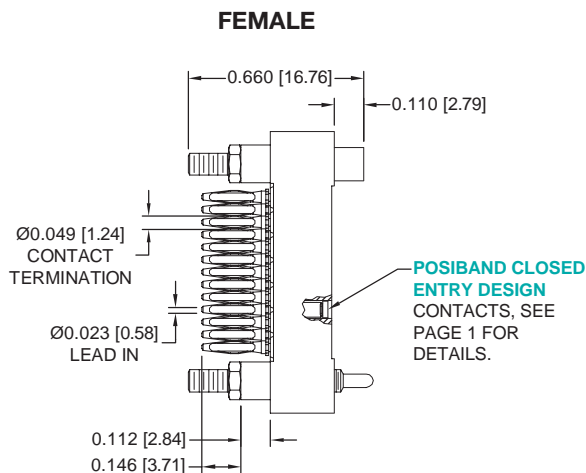
CONTACT CODE	L
WW1	0.225 [5.72]
WW2	0.355 [9.02]

For wrap post contacts, specify contact code in Step 4 of ordering information.

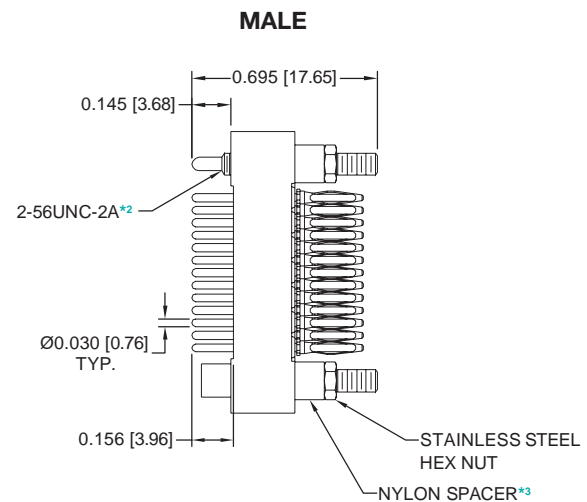
Typical Part Number:
SGM26SWW1T0000

COMPLIANT PRESS-IN PRINTED BOARD MOUNT TERMINATION^{*1}
CODE 98

For compliant press-in contacts, specify contact code "98" in Step 4 of ordering information.



Typical Part Number:
SGM26S98T0000



Typical Part Number:
SGM26M98T0000

NOTES:

^{*1} Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board.

^{*2} M2X0.4 metric thread available.

^{*3} Stainless steel spacer available.

CONTACT HOLE PATTERNS:

For compliant press-in connector contact hole patterns, see page 21.

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.105 [2.66] Ø hole in printed board for connector mounting holes.

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 40.

For compliant press-in connector installation tools, see page 39.



Positronic Industries
connectpositronic.com

SGM SERIES

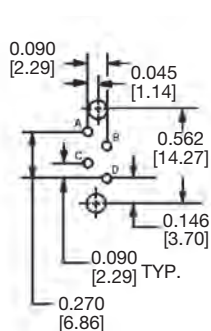
INDUSTRIAL / MILITARY QUALITY

FIXED STRAIGHT PCB MOUNT / SOLDER CUP

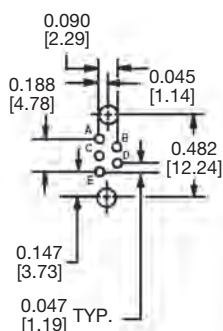
High
Density
Rectangular

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN FOR SGM AND SGMC SERIES

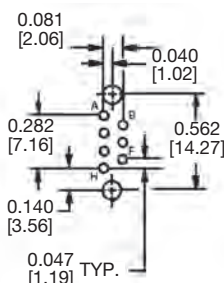
MATING FACE VIEW OF FEMALE OR REAR FACE VIEW OF MALE



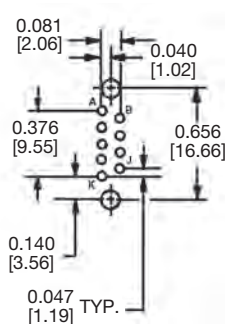
SGM 4
SGMC 4



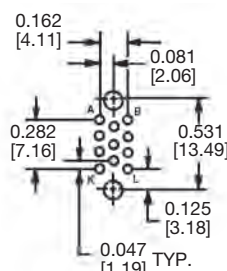
SGM 5
SGMC 5



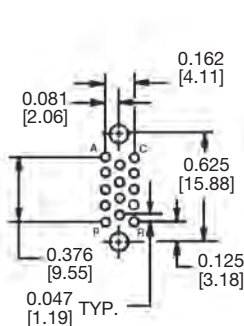
SGM 7
SGMC 7



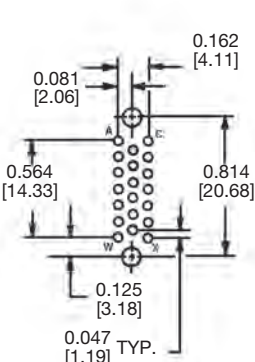
SGM 9
SGMC 9



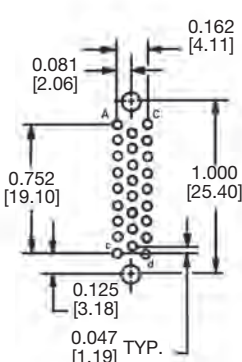
SGM 11
SGMC 11



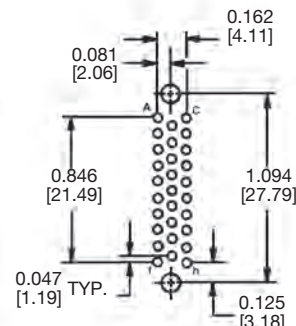
SGM 14
SGMC 14



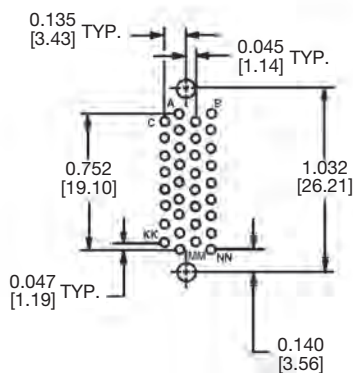
SGM 20
SGMC 20



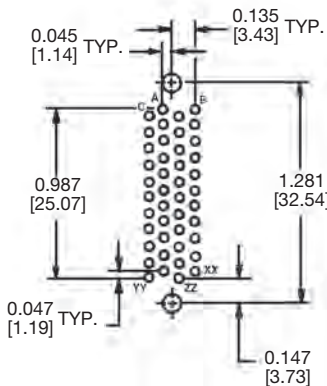
SGM 26
SGMC 26



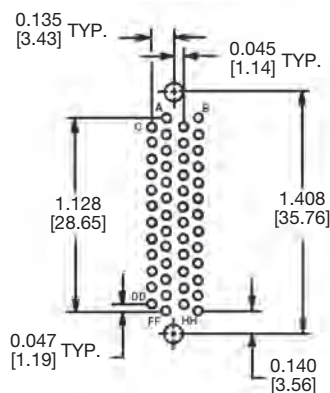
SGM 29
SGMC 29



SGM 34
SGMC 34



SGM 44
SGMC 44



SGM 50
SGMC 50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.105 [2.66] Ø holes in printed board for connector mounting holes
Suggest 0.040 [1.01] Ø holes in printed board for contact terminations



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	SGM	26	S	SC	N	0	0	J	0	-14
<div> <div> <p>STEP 1 - BASIC SERIES</p> <p>SGM series</p> </div> <div> <p>STEP 2 - CONNECTOR VARIANTS</p> <p>4, 5, 7, 9, 11, 14, 20, 26, 29, 34, 44, 50, 75</p> </div> <div> <p>STEP 3 - CONNECTOR GENDER</p> <p>M - Male S - Female - PosiBand closed entry contacts, see page 1 for more information.</p> </div> <div> <p>STEP 4 - CONTACT TERMINATION TYPE</p> <p>All female contacts "closed entry" design</p> <p>DS3 - Straight solder 0.093 [2.36] not offered on 75 variant.</p> <p>DS4 - Straight solder 0.125 [3.18] not offered on 75 variant.</p> <p>DS5 - Straight solder 0.156 [3.96] not offered on 75 variant.</p> <p>DS6 - Straight solder 0.187 [4.75] not offered on 75 variant.</p> <p>SC - Solder cup</p> <p>WW1 - Wrap post 0.225 [5.72] not offered on 75 variant.</p> <p>WW2 - Wrap post 0.355 [9.02] not offered on 75 variant.</p> <p>^{*2}98 - Straight printed circuit board mount, compliant press-in.</p> </div> <div> <p>^{*1}STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEMS</p> <p>N - Polarizing guides.</p> <p>NSS - Stainless steel polarizing guides.</p> <p>T - Fixed jackscrews.</p> <p>E - Rotating jackscrews with knobs.</p> <p>E1 - Rotating jackscrews used with cable adapter only. Not offered on 75 variant.</p> <p>ESS - Short rotating jackscrews.</p> <p>0 - If no polarizing guides or jackscrews are required.</p> </div> <div> <p>STEP 10 - SPECIAL OPTIONS</p> <p>FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 41.</p> </div> <div> <p>^{*1}STEP 9 - ADDITIONAL FEATURES</p> <p>B - For black anodized aluminum parts.</p> <p>R - For yellow chromate coating on aluminum parts.</p> <p>^{*4}V - Lock tab, not offered on 75 variant.</p> <p>^{*4}VL - Actuation lock lever, not offered on 75 variant.</p> <p>M - Jackscrews with metric threads.</p> <p>0 - If no additional options are required.</p> </div> <div> <p>^{*1}STEP 8 - CABLE ADAPTER (HOOD)</p> <p>J - Top opening cable adapter offered on all variants except 5, 11 and 75.</p> <p>0 - If no cable adapters are required.</p> </div> <div> <p>^{*1}STEP 7 - CODING (KEYING) POSITIONS OF CONNECTOR HOUSING (SHELLS)</p> <p>Select letter to designate position of male pin or female slot for coding system.</p> <p>A, B, C, D, E, F, G</p> <p>0 - If no coding is required or if no connector housings are required.</p> </div> <div> <p>^{*1}STEP 6 - CONNECTOR HOUSING (SHELLS)</p> <p>^{*3}P - Male shell.</p> <p>^{*3}R - Female shell.</p> <p>0 - If no connector housings are required.</p> </div> </div>										

NOTE:

^{*1}For details of items listed in steps 5 through 9, see Accessories section on pages 30-36.

^{*2}Contact Technical Sales for availability of size 75 connector variant.

^{*3}Contact Technical Sales for availability of 5, 11 and 29 connector variants.

^{*4}Select '0' in Step 6 when selecting 'V' and 'VL' options.

Do you need 2-D drawings or 3-D models?

See page 16 for more information!



Positronic Industries
connectpositronic.com

SMPL SERIES

INDUSTRIAL / MILITARY QUALITY

FIXED RIGHT ANGLE PCB MOUNT TERMINATION

High
Density
Rectangular



- ✓ High reliability connectors with fixed contacts.
- ✓ Contacts are high density size 22.
- ✓ Terminations: right angle (90°) solder printed board mount.
See pages 25 for details.



- ✓ Female closed entry contacts utilize the "PosiBand®" system.
See page 1 for details.

- ✓ Current ratings: signal level to 13 amperes.
See temperature rise curves on page 2 for details.



- ✓ Twelve connector variants, 4 - 50 contacts.

- ✓ A multitude of polarization and connector coding (keying) options. *See pages 30-34 for details.*

- ✓ Intermateable with SGMC and SGM series.
See page 5 for SGMC series and page 15 for SGM series.

- ✓ Thermocouple contact options available.

- ✓ A wide variety of options and accessories.

Conforms to:

- MIL-DTL-28748

Telecommunication:

- UL File # E49351

T E C H N I C A L C H A R A C T E R I S T I C S

MATERIALS AND FINISHES:

Connector insert:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black or green available.
Fixed Contacts:	Precision machined copper alloy. 0.000015 inch [0.38 µ] gold over nickel. Other finishes available upon request, <i>see page 41 for details.</i>
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Jackscrew System:	Passivated stainless steel.
Mounting Bracket:	Phosphor bronze with zinc plate and chromate seal.

Alignment Bar:

Nylon, black.

Quick Disconnect Locking Device:

Actuation lock lever and lock tab, copper alloy with nickel plate.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 22, male 0.030 inch [0.76 mm] mating diameter. Female – PosiBand closed entry design, <i>see page 1 for details.</i>
Contact Retention in Connector Insert:	6 lbs. [26.5N] minimum.
Contact Termination:	0.020 inch [0.51 mm] termination diameter.
Locking Systems:	Friction, quick disconnect locking device and jackscrews.

TECHNICAL CHARACTERISTICS, *continued*

continued from previous page. . . .

MECHANICAL CHARACTERISTICS, *continued*:

Polarization:	Polarized guides and jackscrew system.
Coding (Keying) Device:	Pin and slot system; male and female guide system.
Mechanical Operations:	1000 operations per IEC 60512-5.
Jackscrews:	Standard threads, 2-56 UNC. M2X0.4 metric threads available.

Flash over Voltage:	2200 V.AC (rms)
Test Voltage:	1000 V.AC (rms)
Insulation Resistance:	5 G ohms, minimum.
Clearance and Creepage Distance:	0.028 inch [0.71 mm], minimum.
Working Temperature:	-55°C to 135°C
Working Voltage:	250 V.AC (rms)

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

- 13 amperes, 2 contacts energized.
- 10 amperes, 6 contacts energized.
- 6 amperes, 26 contacts energized.
- 5 amperes, 104 contacts energized

See temperature rise curves on page 2 for details.

Initial Contact Resistance: 0.004 ohms, maximum.

THERMOCOUPLE CONTACTS:

Right angle (90°) printed board mount contacts are available, please contact Technical Sales for details.

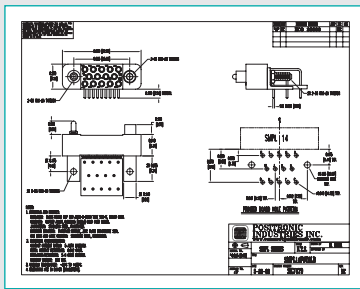
Straight printed board mount contacts are available in SGM series, see page 16 for details.

Size 22 removable crimp contacts are available in SGMC series, see page 12 for details.

*Visit our web site for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/54/HighDensityRectangular/catalogs>*

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.



2-D Drawing



3-D Model



Positronic Industries
connectpositronic.com

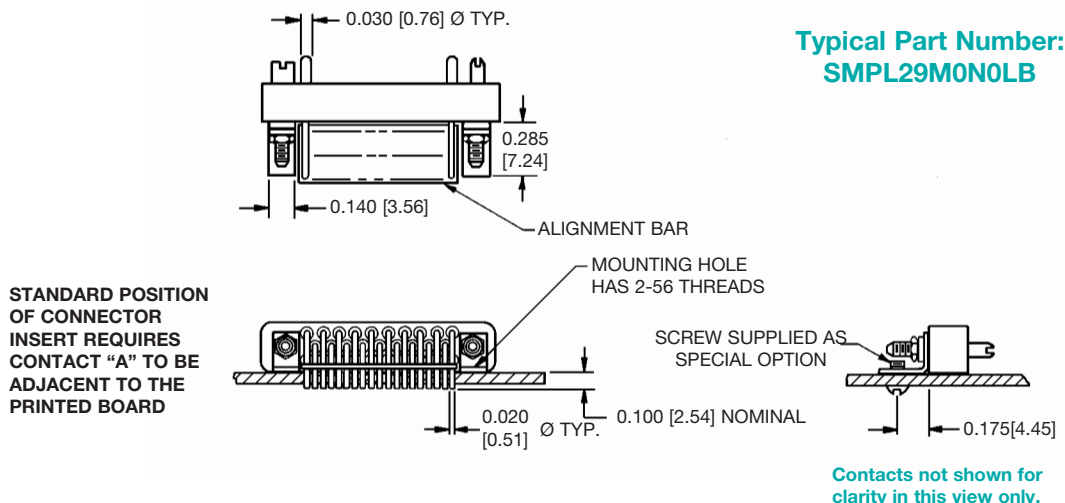
SMPL SERIES

INDUSTRIAL / MILITARY QUALITY

FIXED RIGHT ANGLE PCB MOUNT TERMINATION

High
Density
Rectangular

RIGHT ANGLE (90°) SOLDER PRINTED BOARD MOUNT TERMINATION CODE 0



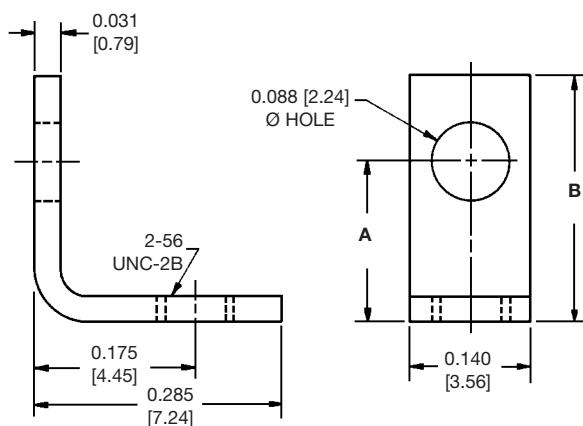
NOTE:

Add 0.030 [0.76] to the hole location dimension 0.175 [4.48] when mounting bracket (Code LB) and locking tab (Code V) are used in combination on connector.

CONNECTOR INSERT DIMENSIONS:

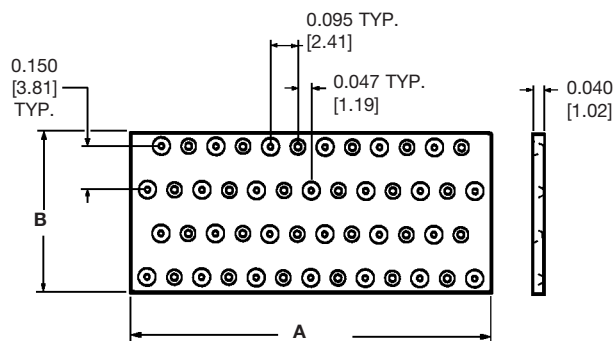
For SMPL series connector insert dimensions, refer to page 17 in SGM series.

MOUNTING BRACKET CODE LB



PART NUMBER	A	B	CONNECTOR VARIANTS
80213-0	0.105 [2.67]	0.205 [5.21]	4, 5, 7, 9
80213-1	0.140 [3.56]	0.240 [6.10]	11, 14, 20, 26, 29
80213-2	0.195 [4.95]	0.295 [7.49]	34, 44, 50

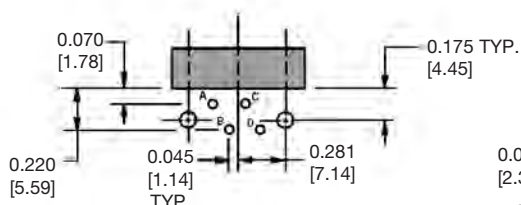
ALIGNMENT BAR DIMENSIONS



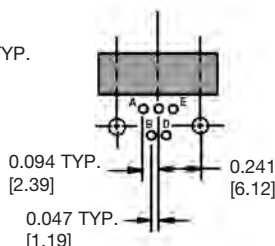
SIZE	A	B
5	0.314 [7.98]	0.290 [7.37]
7	0.394 [10.01]	0.290 [7.37]
9	0.488 [12.40]	0.290 [7.37]
11	0.364 [9.25]	0.415 [10.54]
14	0.456 [11.58]	0.415 [10.54]
20	0.646 [16.41]	0.415 [10.54]
26	0.832 [21.13]	0.415 [10.54]
29	0.926 [23.52]	0.415 [10.54]
34	0.864 [21.95]	0.550 [13.97]
44	1.112 [28.24]	0.550 [13.97]
50	1.240 [31.50]	0.550 [13.97]

RIGHT ANGLE (90°) PRINTED BOARD HOLE PATTERN

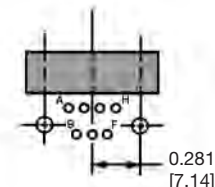
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.



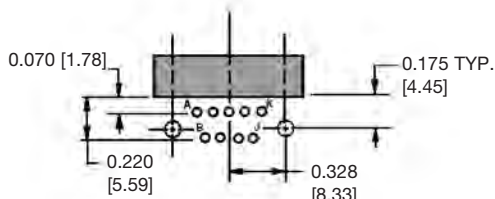
SMPL 4



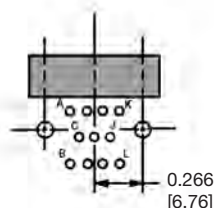
SMPL 5



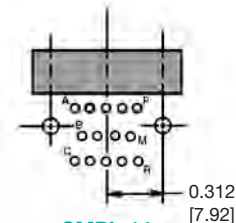
SMPL 7



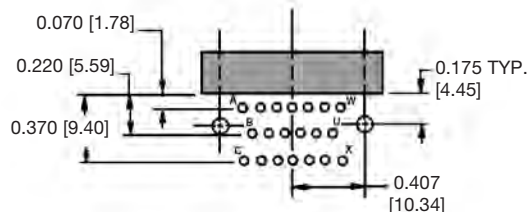
SMPL 9



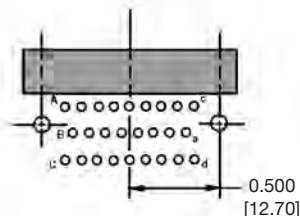
SMPL 11



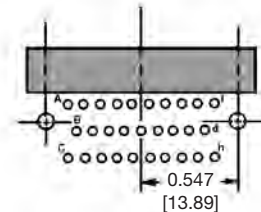
SMPL 14



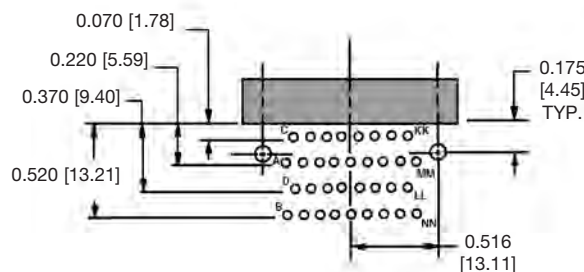
SMPL 20



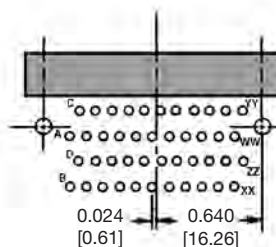
SMPL 26



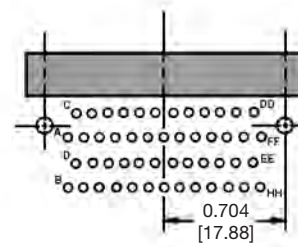
SMPL 29



SMPL 34



SMPL 44



SMPL 50

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.105 [2.66] Ø holes in printed board for connector mounting holes
Suggest 0.040 [1.01] Ø holes in printed board for contact terminations
Add 0.030 [0.76] to the hole location dimension 0.175 [4.48] when mounting bracket (Code LB) and locking tab (Code V) are used in combination on connector.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 26



Positronic Industries
connectpositronic.com

SMPL SERIES

INDUSTRIAL / MILITARY QUALITY

FIXED RIGHT ANGLE PCB MOUNT TERMINATION

High
Density
Rectangular

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	
EXAMPLE	SMPL	14	S	0	T	0	LB	-14	
STEP 1 - BASIC SERIES SMPL series.		STEP 2 - CONNECTOR VARIANTS 4, 5, 7, 9, 11, 14, 20, 26, 29, 34, 44, 50		STEP 3 - CONNECTOR GENDER M - Male S - Female - PosiBand closed entry contacts, see <i>page 1 for more information.</i>		STEP 4 - CONTACT TERMINATION TYPE 0 - Standard termination, right angle (90°).		STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEMS N - Polarizing guides. NSS - Stainless steel polarizing guides. T - Fixed jackscrews. 0 - If no polarizing guides or jackscrews are required.	
				*1 STEP 6 - QUICK DISCONNECT LOCKING DEVICES V - Lock tab. VL - Actuation lock lever. 0 - If no locking devices are required.		STEP 7 - MOUNTING BRACKETS LB - Mounting bracket. 0 - If no mounting bracket is required.		STEP 8 - SPECIAL OPTIONS <i>FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 41.</i>	

NOTE:
 *1 For details of items listed in steps 5 through 6, see Accessories section on pages 30-36.

Do you need 2-D drawings or 3-D models?

See page 24 for more information!

Visit our web site for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/54/HighDensityRectangular/catalogs>

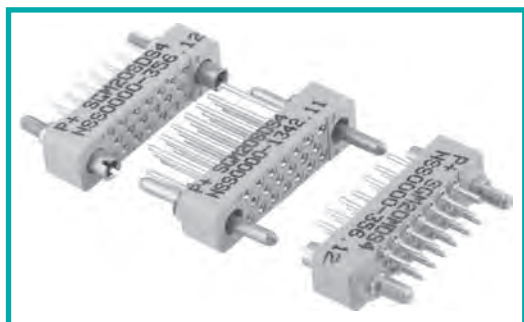
U N I Q U E F E A T U R E S E C T I O N



Positronic Industries is **known** around the world **for offering** our customers **flexibility** when choosing connectors.

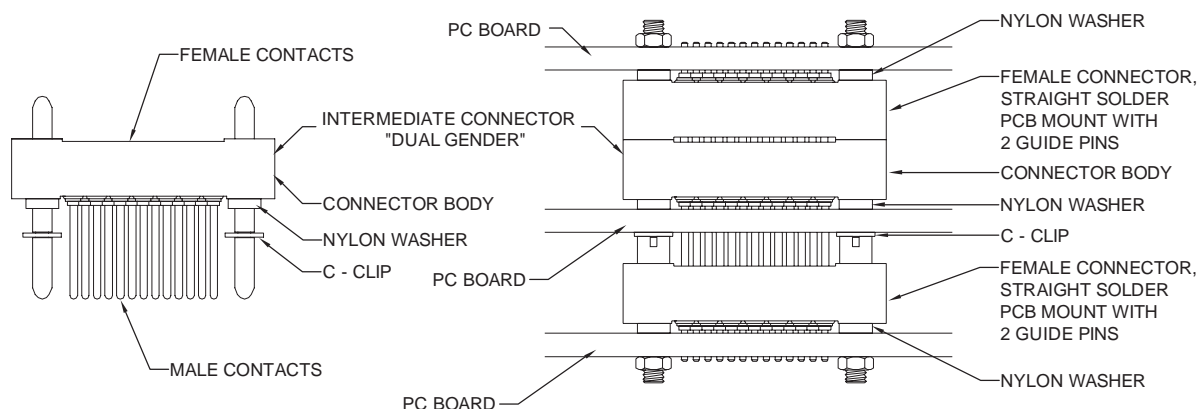
In addition to allowing **customers** to **create** part numbers for **particular applications**, Positronic offers a **wide variety** of features and accessories within our products.

Positronic is **able** to modify existing products **to meet unique customer requirements**. We are also eager to develop **custom connectors** to customer requirements. If you do not find what you need in this catalog, please contact us for **assistance**.



LOW PROFILE SPACE SAVING HIGH RELIABILITY MEZZANINE CONNECTOR SGM SERIES

*SGM connectors can be **used to stack multiple printed circuit boards** in applications requiring rugged, high density connectors.*



FOR DETAILED INFORMATION AND OPTIONS, CONTACT TECHNICAL SALES



Positronic Industries
connectpositronic.com

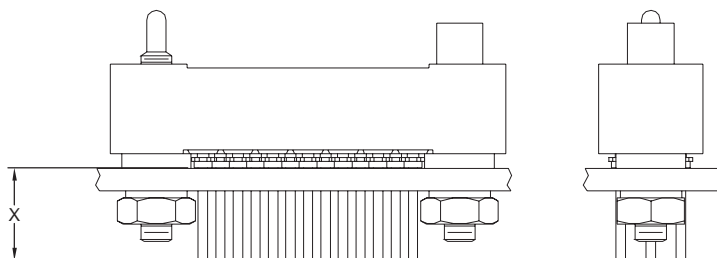
UNIQUE FEATURES

High
Density
Rectangular

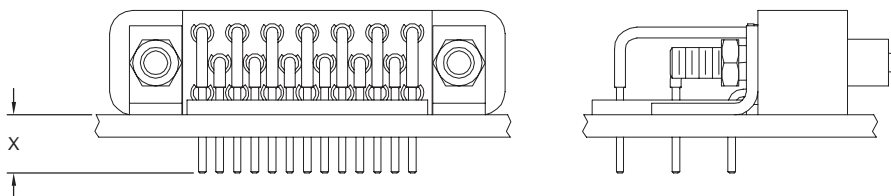
CUSTOMER SPECIFIED CONTACT TERMINATION LENGTH

Positronic can supply High Density Rectangular connectors with customer specified termination lengths. We have a wide variety of options available.

STRAIGHT PRINTED BOARD MOUNT



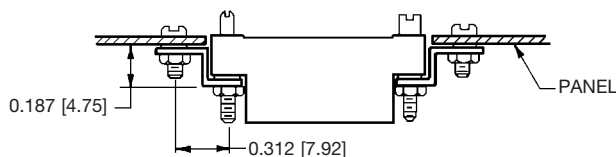
RIGHT ANGLE (90°) PRINTED BOARD MOUNT



“X” contact termination lengths can be custom designed to fit your application requirements.

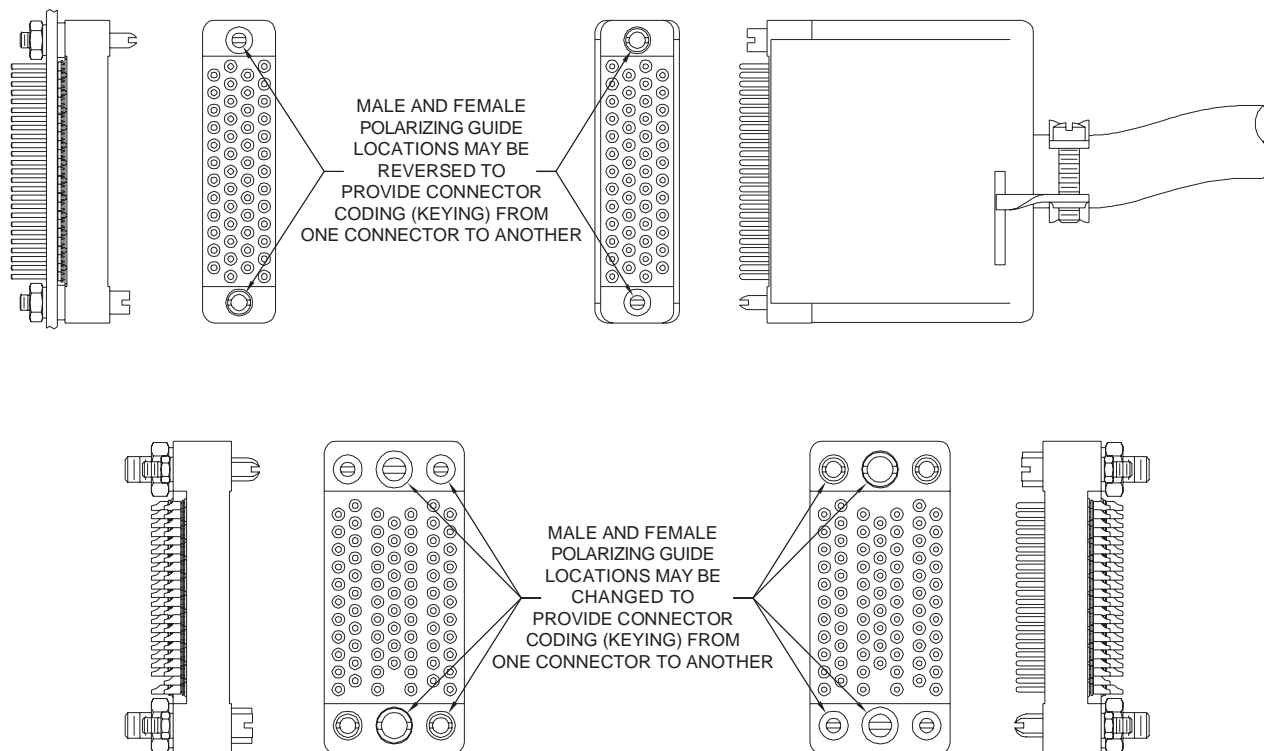
CONTACT TECHNICAL SALES FOR MORE INFORMATION!

FLUSH PANEL CONNECTOR MOUNTING BRACKETS



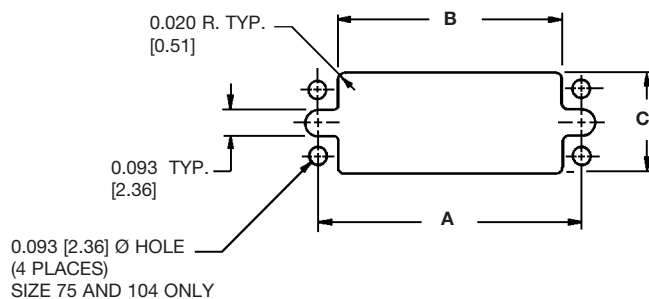
PART NUMBER 80217-0

POLARIZATION & CODING (KEYING) OPTIONS



A C C E S S O R I E S S E C T I O N

PANEL CUT-OUT DIMENSIONS FOR USE WITH SGMC OR SGM SERIES CONNECTORS



SIZE	A	B MIN.	C MIN.
4	0.562 [14.27]	0.390 [9.91]	0.215 [5.46]
5	0.482 [12.24]	0.315 [8.00]	0.215 [5.46]
7	0.562 [14.27]	0.397 [10.08]	0.215 [5.46]
9	0.656 [16.66]	0.495 [12.57]	0.215 [5.46]
11	0.531 [13.49]	0.401 [10.19]	0.285 [7.24]
14	0.625 [15.88]	0.510 [12.95]	0.285 [7.24]
20	0.814 [20.68]	0.700 [17.78]	0.285 [7.24]
26	1.000 [25.40]	0.885 [22.48]	0.285 [7.24]
29	1.094 [27.79]	0.959 [24.36]	0.285 [7.24]
34	1.032 [26.21]	0.867 [22.02]	0.395 [10.03]
44	1.281 [32.54]	1.105 [28.07]	0.395 [10.03]
50	1.408 [35.76]	1.235 [31.37]	0.395 [10.03]
75	1.375 [34.93]	1.145 [29.08]	0.755 [19.18]
104	1.750 [44.45]	1.520 [37.47]	0.755 [19.18]

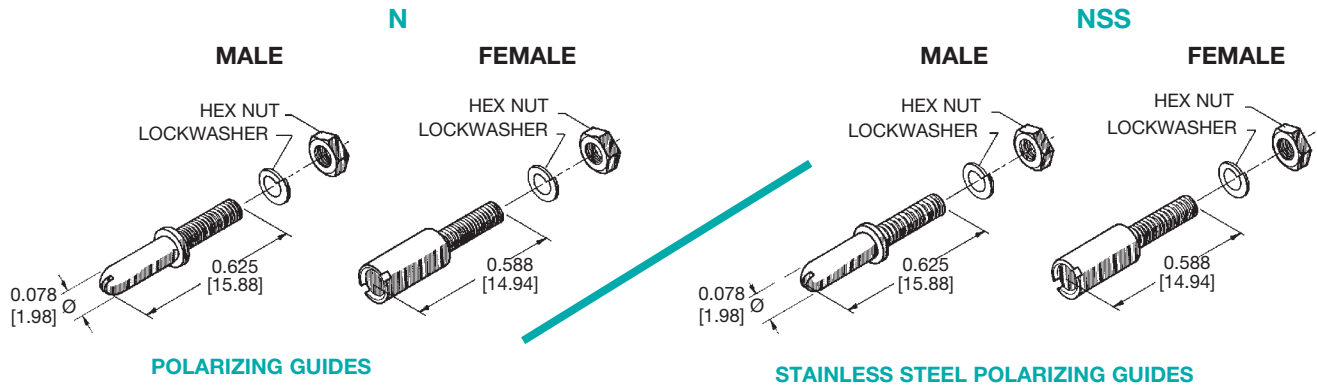


Positronic Industries
connectpositronic.com

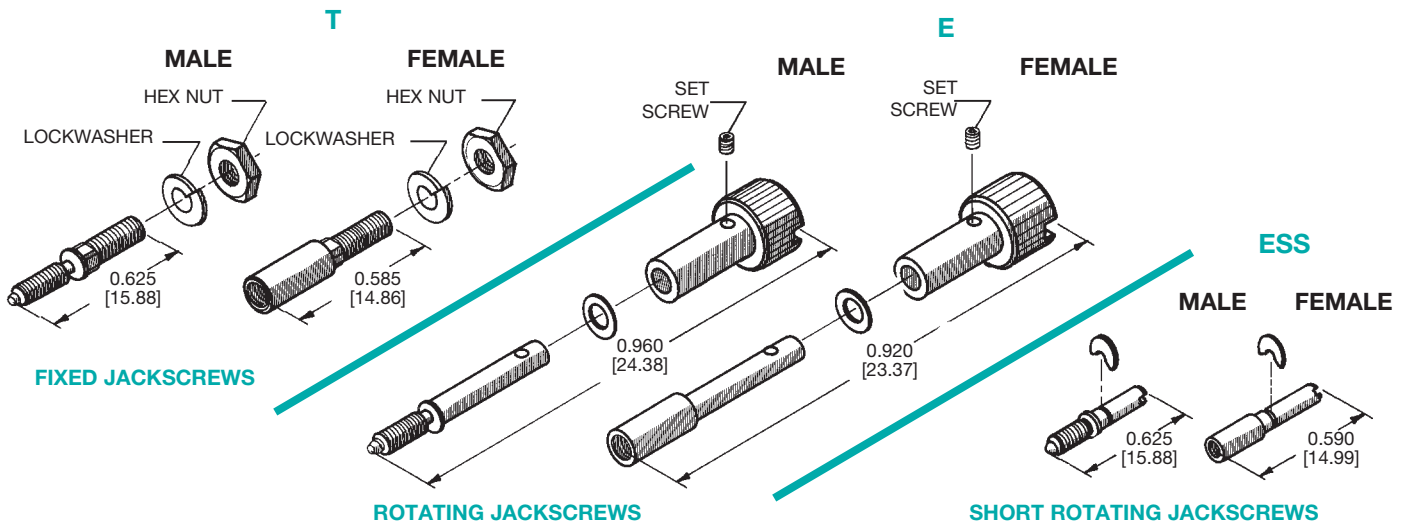
ACCESSORIES

High
Density
Rectangular

POLARIZING GUIDES CODE N OR CODE NSS



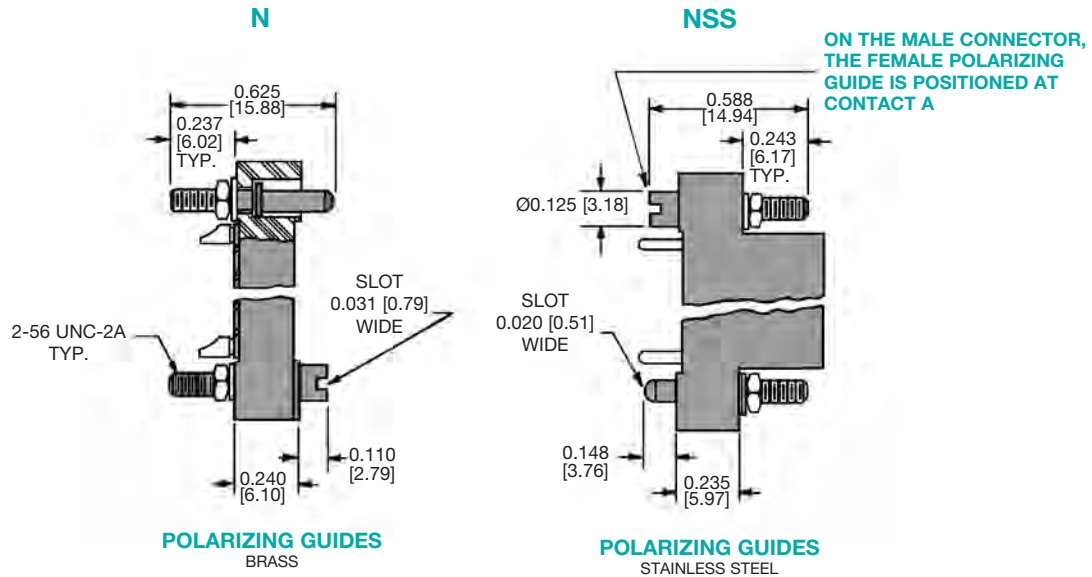
FIXED AND ROTATING JACKSCREW SYSTEMS CODE T, CODE E OR CODE ESS



POLARIZING GUIDE AND JACKSCREW THREAD AVAILABILITY CHART CODE N, CODE NSS, CODE T, CODE E OR CODE ESS

THREAD OPTIONS	POLARIZING GUIDES				FIXED AND ROTATING JACKSCREWS					
	N		NSS		T		E		*1 ESS	
	4 - 50 VARIANTS	75 &104 VARIANTS	4 - 50 VARIANTS	75 &104 VARIANTS	4 - 50 VARIANTS	75 &104 VARIANTS	4 - 50 VARIANTS	75 &104 VARIANTS	4 - 50 VARIANTS	75 &104 VARIANTS
2-56 THREAD	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	---
M2x0.4 METRIC THREAD	AVAILABLE	---	AVAILABLE	---	AVAILABLE	---	AVAILABLE	---	AVAILABLE	---
6-32 THREAD	---	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	---	SUPPLIED AS STANDARD	CONTACT TECHNICAL SALES FOR AVAILABILITY	
M3x0.5 METRIC THREAD	---	AVAILABLE	---	AVAILABLE	---	AVAILABLE	---	AVAILABLE	CONTACT TECHNICAL SALES FOR AVAILABILITY	
MATERIAL AND FINISH	COPPER ALLOY WITH NICKEL PLATE		STAINLESS STEEL PASSIVATED		STAINLESS STEEL PASSIVATED					

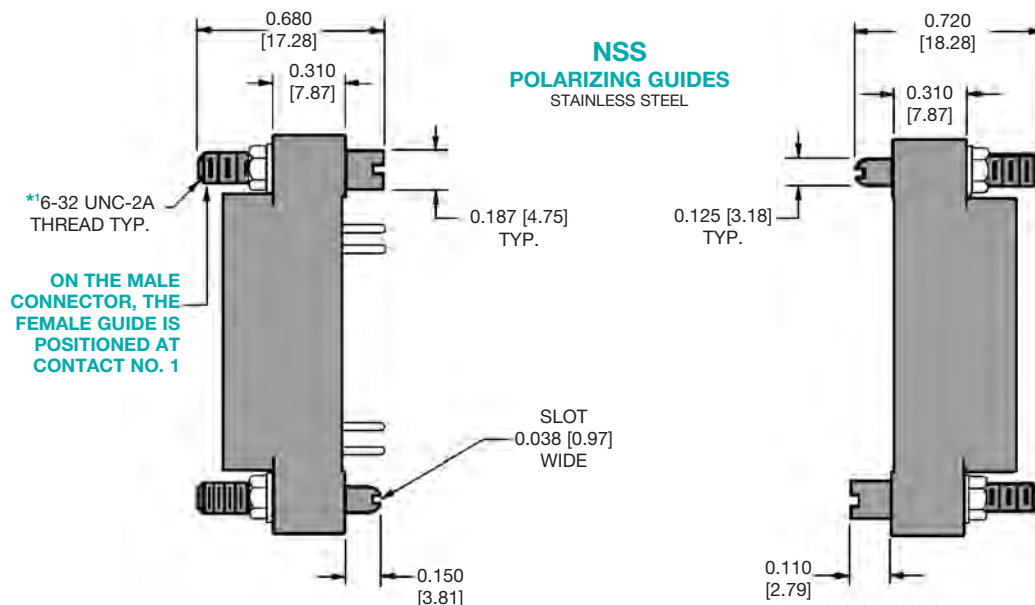
POLARIZING GUIDE
FOR USE WITH 4 TO 50 CONTACTS VARIANTS
CODE N OR CODE NSS
QUALIFIED TO MIL-DTL-28748



NOTES:

Alternative lengths of polarizing guides are available as special options, contact Technical Sales.
M2x0.4 metric threads available, see chart on page 31.

POLARIZING GUIDE
FOR USE WITH SGMC 75 OR SGMC 104 CONTACT VARIANTS
CODE NSS



NOTE:

*1 M3x0.5 metric threads available, see chart on page 31.



Positronic Industries
connectpositronic.com

ACCESSORIES

High
Density
Rectangular

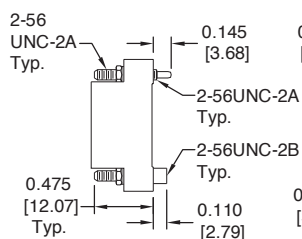
JACKSCREW SYSTEM

FOR USE WITH 4 TO 50 CONTACTS VARIANTS

CODE T, CODE E, CODE ESS, CODE ESS-756.2 OR CODE ESS-793.4

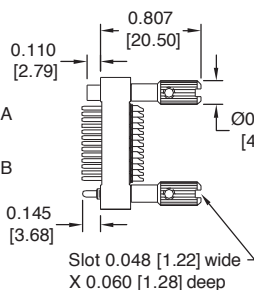
QUALIFIED TO MIL-DTL-28748

T



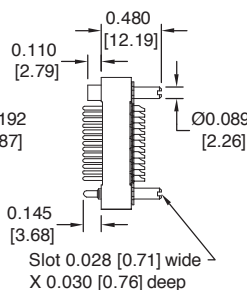
FIXED JACKSCREWS
STAINLESS STEEL

E



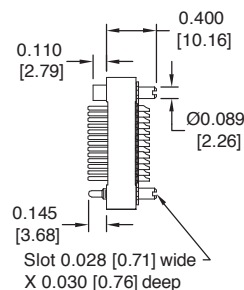
ROTATING JACKSCREWS
STAINLESS STEEL WITH
ALUMINUM KNOBS

ESS



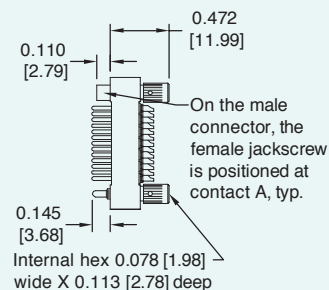
ROTATING JACKSCREWS
STAINLESS STEEL

ESS-756.2



ROTATING JACKSCREWS
STAINLESS STEEL
**CONSULT
TECHNICAL SALES
FOR ORDERING
INFORMATION**

ESS-793.4



ROTATING JACKSCREWS
STAINLESS STEEL WITH
STAINLESS STEEL KNOBS
**CONSULT
TECHNICAL SALES
FOR ORDERING
INFORMATION**

NOTES:

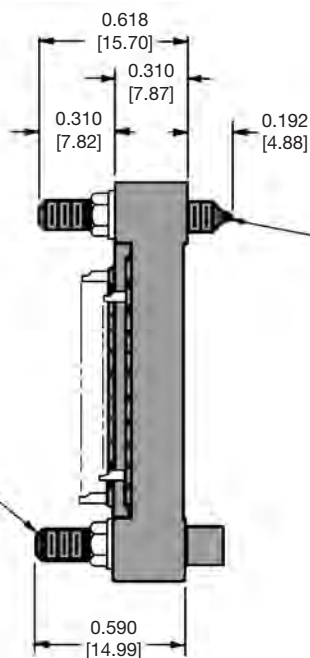
Alternative lengths of jackscrews are available as special options, contact Technical Sales.
M3x0.5 metric threads available, see chart on page 31.

JACKSCREW SYSTEM

FOR USE WITH SGM 75, SGM 75 OR SGM 104 CONTACT VARIANTS

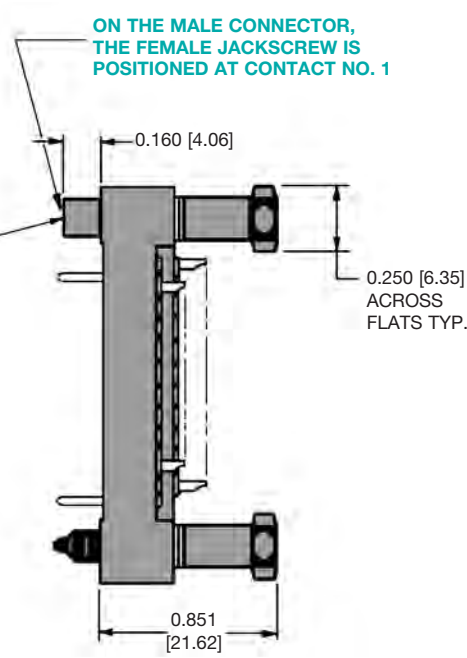
CODE T OR CODE E

T



FIXED JACKSCREWS
STAINLESS STEEL

E

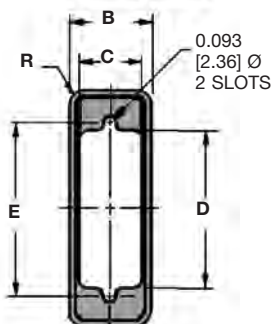
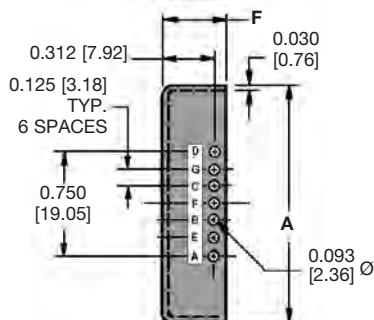
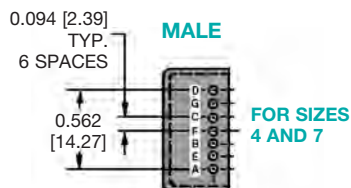
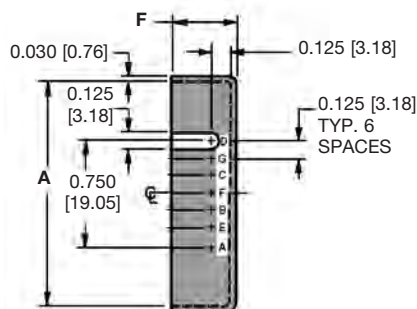
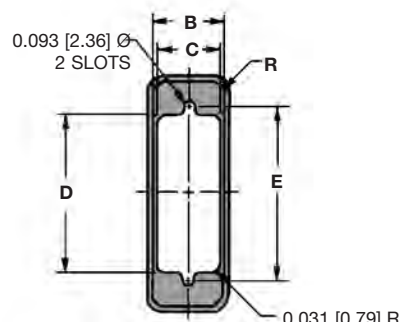
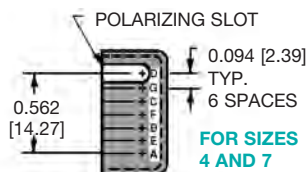


ROTATING JACKSCREWS
STAINLESS STEEL

NOTE:

*1 M3x0.5 metric threads available, see chart on page 31.

FEMALE



CONNECTOR HOUSING (SHELLS)

CODE R OR CODE P

QUALIFIED TO MIL-DTL-28748

CODING (KEYING) DEVICE OPTIONS

Coding (keying) is accomplished with connector housings by a pin and slot system. Female connector housings are slotted to accept stainless steel polarizing pins mounted on the male connector housings.

There are seven coding positions available which are designated by the letters A, B, C, D, E, F or G. Non-coded connector housings are designated by "0" and are supplied without slot and pin. See ordering chart.

FEMALE

CODE R

PART NUMBER	A MIN.	B MIN.	C MIN.	D MIN.	E	F	R
SG4000R000	0.875 [22.23]	0.305 [7.75]	0.230 [5.84]	0.430 [10.92]	0.562 [14.27]	0.437 [11.10]	0.031 [0.79]
SG7000R000	0.875 [22.23]	0.305 [7.75]	0.230 [5.84]	0.430 [10.92]	0.562 [14.27]	0.437 [11.10]	0.031 [0.79]
SG14000R000	0.975 [24.77]	0.375 [9.53]	0.300 [7.62]	0.530 [13.46]	0.625 [15.88]	0.437 [11.10]	0.062 [1.57]
SG20000R000	1.165 [29.59]	0.375 [9.53]	0.300 [7.62]	0.730 [18.54]	0.814 [20.68]	0.437 [11.10]	0.062 [1.57]
SG26000R000	1.350 [34.29]	0.375 [9.53]	0.300 [7.62]	0.910 [23.11]	1.000 [25.40]	0.437 [11.10]	0.062 [1.57]
SG34000R000	1.344 [34.14]	0.480 [12.19]	0.410 [10.41]	0.900 [22.86]	1.032 [26.21]	0.437 [11.10]	0.062 [1.57]
SG44000R000	1.595 [40.51]	0.480 [12.19]	0.410 [10.41]	1.140 [28.96]	1.281 [32.54]	0.437 [11.10]	0.062 [1.57]
SG50000R000	1.715 [43.56]	0.480 [12.19]	0.410 [10.41]	1.270 [32.26]	1.408 [35.76]	0.437 [11.10]	0.062 [1.57]
SG75000R000	1.775 [45.09]	0.840 [21.34]	0.770 [19.56]	1.180 [29.97]	1.375 [34.93]	0.512 [13.00]	0.062 [1.57]
SG104000R000	2.160 [54.86]	0.840 [21.34]	0.770 [19.56]	1.545 [39.24]	1.750 [44.45]	0.512 [13.00]	0.062 [1.57]

MALE

CODE P

PART NUMBER	A MAX.	B MAX.	C MIN.	D MIN.	E	F	R
SG4000P000	0.870 [22.10]	0.300 [7.62]	0.230 [5.84]	0.430 [10.92]	0.562 [14.27]	0.437 [11.10]	0.031 [0.79]
SG7000P000	0.870 [22.10]	0.300 [7.62]	0.230 [5.84]	0.430 [10.92]	0.562 [14.27]	0.437 [11.10]	0.031 [0.79]
SG14000P000	0.970 [24.64]	0.370 [9.40]	0.300 [7.62]	0.530 [13.46]	0.625 [15.88]	0.437 [11.10]	0.062 [1.57]
SG20000P000	1.160 [29.46]	0.370 [9.40]	0.300 [7.62]	0.730 [18.54]	0.814 [20.68]	0.437 [11.10]	0.062 [1.57]
SG26000P000	1.345 [34.16]	0.370 [9.40]	0.300 [7.62]	0.910 [23.11]	1.000 [25.40]	0.437 [11.10]	0.062 [1.57]
SG34000P000	1.340 [34.04]	0.480 [12.19]	0.410 [10.41]	0.900 [22.86]	1.032 [26.21]	0.437 [11.10]	0.062 [1.57]
SG44000P000	1.590 [40.39]	0.480 [12.19]	0.410 [10.41]	1.140 [28.96]	1.281 [32.54]	0.437 [11.10]	0.062 [1.57]
SG50000P000	1.710 [40.59]	0.480 [12.19]	0.410 [10.41]	1.270 [32.26]	1.408 [35.76]	0.437 [11.10]	0.062 [1.57]
SG75000P000	1.770 [44.96]	0.840 [21.34]	0.770 [19.56]	1.180 [29.97]	1.375 [34.93]	0.512 [13.00]	0.062 [1.57]
SG104000P000	2.145 [54.48]	0.840 [21.34]	0.770 [19.56]	1.545 [39.24]	1.750 [44.45]	0.512 [13.00]	0.062 [1.57]



Positronic Industries
connectpositronic.com

ACCESSORIES

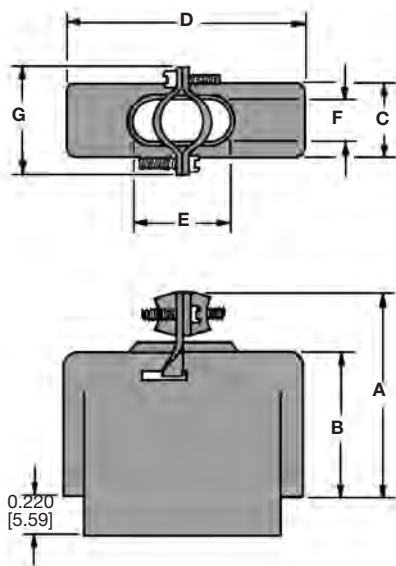
High
Density
Rectangular

ALUMINUM CABLE ADAPTER (HOOD)

FOR USE WITH 4 TO 50 CONTACTS VARIANTS

CODE J

QUALIFIED TO MIL-DTL-28748



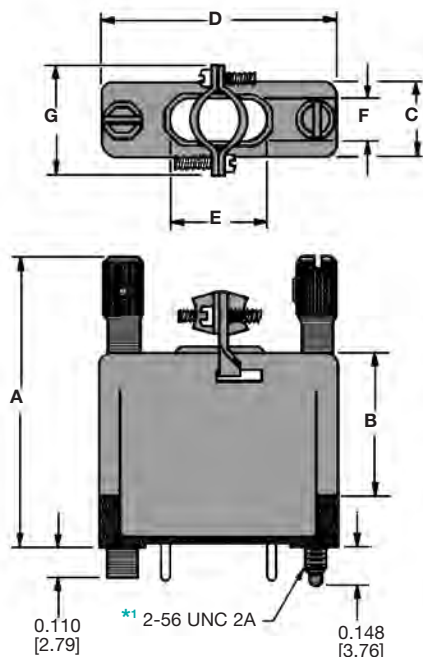
PART NUMBER	DIMENSIONS					CABLE OPENING	
	A	B	C	D	G	E	F
SG400000J0	0.943 [23.95]	0.750 [19.05]	0.250 [6.35]	0.780 [19.81]	0.410 [10.41]	0.255 [6.48]	0.188 [4.78]
SG700000J0	0.943 [23.95]	0.750 [19.05]	0.250 [6.35]	0.780 [19.81]	0.410 [10.41]	0.255 [6.48]	0.188 [4.78]
SG900000J0	1.087 [27.61]	0.750 [19.05]	0.272 [6.91]	0.880 [22.35]	0.550 [13.97]	0.375 [9.53]	0.190 [4.83]
SG1400000J0	1.087 [27.61]	0.750 [19.05]	0.340 [8.64]	0.886 [22.50]	0.550 [13.97]	0.375 [9.53]	0.255 [6.48]
SG2000000J0	1.087 [27.61]	0.750 [19.05]	0.340 [8.64]	1.062 [26.97]	0.550 [13.97]	0.375 [9.53]	0.250 [6.35]
SG2600000J0	1.076 [27.33]	0.750 [19.05]	0.340 [8.64]	1.250 [31.75]	0.550 [13.97]	0.406 [10.31]	0.250 [6.35]
SG2900000J0	1.087 [27.61]	0.750 [19.05]	0.340 [8.64]	1.344 [34.14]	0.550 [13.97]	0.406 [10.31]	0.250 [6.35]
SG3400000J0	1.077 [27.36]	0.750 [19.05]	0.453 [11.51]	1.250 [31.75]	0.710 [18.03]	0.750 [19.05]	0.375 [9.53]
SG4400000J0	1.527 [38.79]	1.190 [30.23]	0.450 [11.43]	1.500 [38.10]	0.710 [18.03]	0.750 [19.05]	0.380 [9.65]
SG5000000J0	1.527 [38.79]	1.190 [30.23]	0.450 [11.43]	1.620 [41.15]	0.710 [18.03]	1.000 [25.40]	0.388 [9.86]

ALUMINUM CABLE ADAPTER (HOOD) WITH JACKSCREW SYSTEM

FOR USE WITH 4 TO 50 CONTACTS VARIANTS

CODE E1 (IN STEP 5) AND J (IN STEP 8)

QUALIFIED TO MIL-DTL-28748



PART NUMBER	DIMENSIONS					CABLE OPENING	
	A	B	C	D	G	E	F
SG400E100J0	1.561 [39.65]	0.750 [19.05]	0.250 [6.35]	0.780 [19.81]	0.410 [10.41]	0.255 [6.48]	0.188 [4.78]
SG700E100J0	1.561 [39.65]	0.750 [19.05]	0.250 [6.35]	0.780 [19.81]	0.410 [10.41]	0.255 [6.48]	0.188 [4.78]
SG900E100J0	1.561 [39.65]	0.750 [19.05]	0.272 [6.91]	0.880 [22.35]	0.550 [13.97]	0.375 [9.53]	0.190 [4.83]
SG1400E100J0	1.561 [39.65]	0.750 [19.05]	0.340 [8.64]	0.886 [22.50]	0.550 [13.97]	0.375 [9.53]	0.255 [6.48]
SG2000E100J0	1.561 [39.65]	0.750 [19.05]	0.340 [8.64]	1.062 [26.97]	0.550 [13.97]	0.375 [9.53]	0.250 [6.35]
SG2600E100J0	1.561 [39.65]	0.750 [19.05]	0.340 [8.64]	1.250 [31.75]	0.550 [13.97]	0.406 [10.31]	0.250 [6.35]
SG2900E100J0	1.561 [39.65]	0.750 [19.05]	0.340 [8.64]	1.344 [34.14]	0.550 [13.97]	0.406 [10.31]	0.250 [6.35]
SG3400E100J0	1.561 [39.65]	0.750 [19.05]	0.453 [11.51]	1.250 [31.75]	0.710 [18.03]	0.750 [19.05]	0.375 [9.53]
SG4400E100J0	2.001 [50.83]	1.190 [30.23]	0.450 [11.43]	1.500 [38.10]	0.710 [18.03]	0.750 [19.05]	0.380 [9.65]
SG5000E100J0	2.001 [50.83]	1.190 [30.23]	0.450 [11.43]	1.620 [41.15]	0.710 [18.03]	1.000 [25.40]	0.388 [9.86]

NOTE:

*1 M2x0.4 metric threads available, see chart on page 31.

FULL ACCESS ALUMINUM CABLE ADAPTER (HOOD) WITH JACKSCREW SYSTEM

Hinged cover allows access to the inside of the hood while still installed on the connector

FOR USE WITH 104 CONTACTS VARIANTS

CODE Z OR CODE V

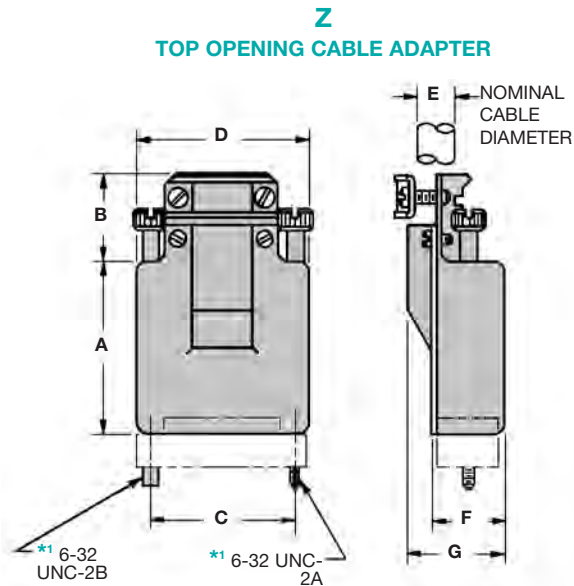


FIGURE 1

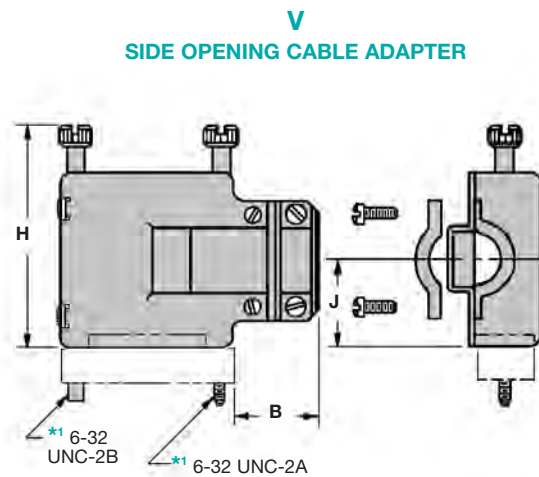


FIGURE 2

PART NUMBER	FIGURE	A	B	C	D	E	F	G	H	J
SG10400000Z0	1	2.100 [53.34]	0.812 [20.62]	1.750 [44.45]	2.100 [53.34]	0.500 [12.70]	0.860 [21.84]	1.110 [28.19]	2.645 [67.18]	-
SG10400000V0	2	2.100 [53.34]	0.812 [20.62]	1.750 [44.45]	2.100 [53.34]	0.500 [12.70]	0.860 [21.84]	1.110 [28.19]	2.645 [67.18]	1.050 [26.67]

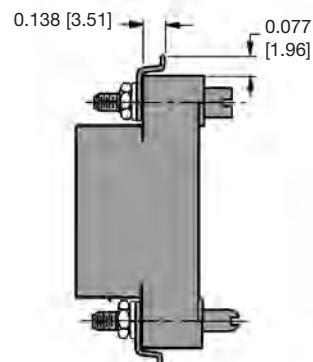
NOTE:

*1 M3x0.5 metric threads available, see chart on page 31.

QUICK DISCONNECT LOCKING DEVICE

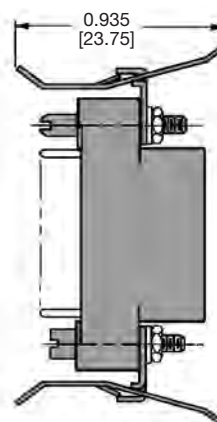
CODE V OR VL

V
LOCKING TABS



TYPICAL PART NUMBER:
SGMC14S0N000V

VL
ACTUATION LOCK LEVER ASSEMBLY



TYPICAL PART NUMBER:
SGMC14M0N000VL



Positronic Industries
connectpositronic.com

APPLICATION TOOLS

High
Density
Rectangular

A P P L I C A T I O N T O O L S S E C T I O N

SGMC connectors are offered with **removable crimp contacts**.

Positronic Industries recognizes the **importance of**
supplying **application tooling** to support our
customers' use of our products.

Information on application tooling is
available on our web site at

<http://www.connectpositronic.com/products/157/ApplicationTooling>

There you will find **downloadable PDF** cross reference
charts for removable and compliant press-in contacts. These charts
will **supply part numbers** for insertion, removal and crimping tools,
along with **information regarding use** of tools and techniques.



Connectors Designed To Customer Specifications

*Positronic **SGMC, SGM and SMPL series** connectors
can be modified to customer specifications.*

Examples: select loading of contacts for cost savings or to gain creepage and
clearance distances; longer printed circuit board terminations; customer specified hardware.

Contact Technical Sales with your particular requirements.



CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Positronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv	Insertion Tool	Mfg. Cross	Mil Equiv	Removal Tool	Mfg. Cross	Mil Equiv	Automatic Crimp Tool P/N *1 See Note
FC420P2	---	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
FC422P2	---	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
FC422P2** Thermocouple	---	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
FDS425P2	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
FDS456P2	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
FDS487P2	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
FPF467P2	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
FS420P2	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
FS422P2	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
M39029/34-440	---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
M39029/35-441	---	9507-0-0-0	AFM8	M22520/2-01	9502-13-0-0	K280	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
MC420N	---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC422N	---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC422N** Thermocouple	---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MDS425N	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
MDS456N	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
MDS487N	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
MPF467N	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
MS420N	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---
MS422N	---	---	---	---	---	---	---	9099-1-0-0	ITH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	---

*1 All male and female crimp contacts can be ordered on reels in quantities of 2,000 by adding letter "R" after the contact part number, see page 11 for more information.



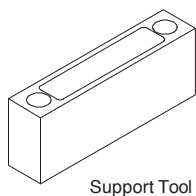
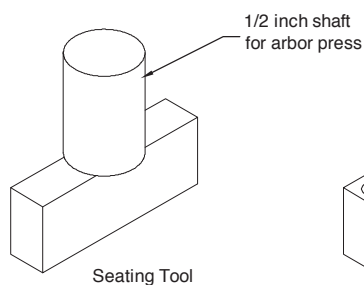
Positronic Industries
connectpositronic.com

APPLICATION TOOLS

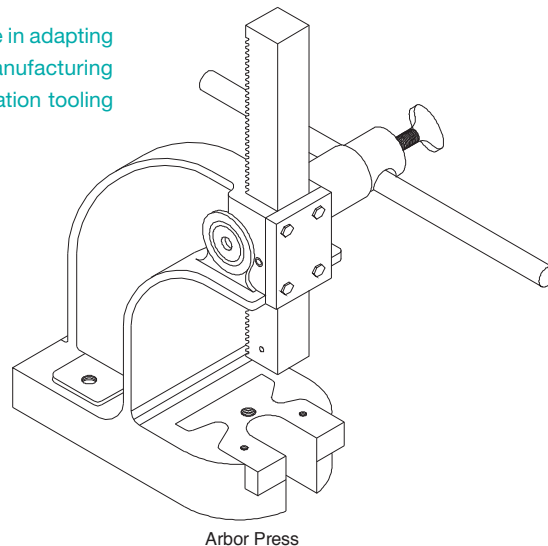
High
Density
Rectangular

COMPLIANT PRESS-IN CONNECTOR INSTALLATION TOOLS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS



Positronic offers expert assistance in adapting application tooling to your manufacturing environment. Contact our application tooling specialist for assistance.



POSITRONIC RECOMMENDED TOOLS FOR COMPLIANT PRESS-IN CONNECTORS AND CONTACTS

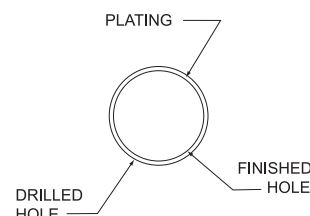
CONNECTOR VARIANT (NUMBER OF CONTACTS)	SUPPORT TOOL	CONNECTOR SEATING TOOL WITH ARBOR PRESS SHAFT		CONNECTOR SEATING TOOL WITHOUT ARBOR PRESS SHAFT		ARBOR PRESS FOR SEATING TOOLS
		FEMALE P / N	MALE P / N	FEMALE P / N	MALE P / N	
4	9513-40-4-41	9513-42-4-41	9513-41-4-41	9513-44-4-41	9513-43-4-41	Use p / n 9530-1-0 1 ton capacity 4 inch throat
5	9513-40-5-41	9513-42-5-41	9513-41-5-41	9513-44-5-41	9513-43-5-41	
7	9513-40-7-41	9513-42-7-41	9513-41-7-41	9513-44-7-41	9513-43-7-41	
9	9513-40-9-41	9513-42-9-41	9513-41-9-41	9513-44-9-41	9513-43-9-41	
11	9513-40-11-41	9513-42-11-41	9513-41-11-41	9513-44-11-41	9513-43-11-41	
14	9513-40-14-41	9513-42-14-41	9513-41-14-41	9513-44-14-41	9513-43-14-41	
20	9513-40-20-41	9513-42-20-41	9513-41-20-41	9513-44-20-41	9513-43-20-41	
26	9513-40-26-41	9513-42-26-41	9513-41-26-41	9513-44-26-41	9513-43-26-41	
29	9513-40-29-41	9513-42-29-41	9513-41-29-41	9513-44-29-41	9513-43-29-41	
34	9513-40-34-41	9513-42-34-41	9513-41-34-41	9513-44-34-41	9513-43-34-41	
44	9513-40-44-41	9513-42-44-41	9513-41-44-41	9513-44-44-41	9513-43-44-41	
50	9513-40-50-41	9513-42-50-41	9513-41-50-41	9513-44-50-41	9513-43-50-41	

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-IN CONNECTORS

Traditionally, tin-lead has been a popular plating for printed circuit boards (PCB) holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA COMPLIANT PRESS-IN CONTACT HOLE				
BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	22 OMEGA	$\phi 0.0453 \pm 0.0010$ [$\phi 1.150 \pm 0.025$]	0.0006 [15 μ] minimum solder over 0.0010 [25 μ] min. copper	$\phi 0.0394 + 0.0035 - 0.0024$ [$\phi 1.000 + 0.090 - 0.060$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
IMMERSION TIN PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000033 \pm 0.000006 [0.85 \pm 0.15 μ] immersion tin over 0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
IMMERSION SILVER PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000013 \pm 0.000007 [0.34 \pm 0.17 μ] immersion silver over 0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	22 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000002 [0.05 μ] min. immersion gold over 0.000177 \pm 0.000059 [4.5 \pm 1.5 μ] electroless nickel per IPC-4552 over 0.0010 [25 μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]

“Omega” Termination
utilized on signal contacts



COMPLIANT PRESS-IN TERMINATION CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

COMPLIANT PRESS-IN USER INFORMATION

When properly used, Positronic Industries omega compliant press-in terminations provide reliable service even under severe conditions.

Connectors utilizing this leading technology compliant press-in contact are easy to install:

1. Inexpensive installation tooling is available from Positronic, to choose the proper installation tool refer to page 39 for part number ordering information.
2. Insert the connector into the P.C. board or backplane and seat connector fully.
3. Secure the connector to the P.C. board or backplane with supplied hardware.





MODIFICATION (MOS) SUFFIXES

Specify complete connector by selecting a base part number from the desired series [Ordering Information Page](#).

Once base part number is selected, add desired modifications (MOS) number below to the end of the part number.

Example part number: SMPL34M0T0LB/AA-14-293.2

(Ordering information pages can be found at the end of each series)

SERIES	CONNECTOR VARIANT	GENDER	TERMINATION TYPE AVAILABLE	MODIFICATION OF STANDARD (MOS) SUFFIXES	DESCRIPTION OF MODIFICATION
SGMC SGM SMPL	ALL	F / M	ALL	-14	Allows connector with contacts installed, for contacts only to be plated 0.000030 [0.76 µ] gold over nickel.
SGMC SGM SMPL	ALL	F / M	ALL	-15	Allows connector with contacts installed, for contacts only to be plated 0.000050 inch [1.27µ] gold over nickel.
SGMC SGM SMPL	ALL	F / M	ALL	-293.2	Allows connector with any polarizing jackscrews to be supplied with jack-screw positions reversed.
SGMC	ALL	F / M	ALL	-650.0	Allows connector with any hardware to be supplied with MC422N or FC422P2 contacts kitted.
SGM	ALL	F / M	DS3, DS4, DS5, DS6	-672.0	Allows connector with straight solder contacts to have standard nylon hex nut and washer replaced with stainless steel hex nut and washer.
 SGM	4, 5, 7, 9, 11, 14, 20, 26, 29, 34, 44, and 50	F / M	ALL	-756.2	Allows connector to be supplied with special length "ESS" jackscrews.
 SGMC SGM	ALL	F / M	ALL	-793.4	Allows connector to be supplied with special rotating jackscrews with 0.078 [1.98] hex socket head.
SGMC SGM SMPL	ALL	F / M	ALL	/AA	Allows connector for environmental compliance per EU Directive 2002/95/EC (RoHS).

MANY OTHER SPECIAL OPTIONS ARE AVAILABLE CONSULT TECHNICAL SALES
OR VISIT OUR WEB SITE AT WWW.CONNECTPOSITRONIC.COM

Connectors Designed To Customer Specifications

*Positronic **SGMC, SGM and SMPL series** connectors
can be modified to customer specifications.*

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware.

Contact Technical Sales with your particular requirements.



Positronic® offers a variety of QPL connector products

RECTANGULAR CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/3	GMCT
MIL-DTL-28748/4	GMCT
MIL-DTL-28748/5	GM
MIL-DTL-28748/6	GM
MIL-DTL-28748/7	SGM

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-28748/8	SGM
MIL-C-28748/13	SGMC
MIL-C-28748/14	SGMC
SAE AS39029/34	SGMC, GMCT
SAE AS39029/35	SGMC, GMCT

D - SUBMINIATURE CONNECTORS

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/1	HDC
MIL-DTL-24308/2	RD, DD
MIL-DTL-24308/3	HDC
MIL-DTL-24308/4	RD, DD
MIL-DTL-24308/5	HDC
MIL-DTL-24308/6	RD, DD
MIL-DTL-24308/7	HDC
MIL-DTL-24308/8	RD, DD
MIL-DTL-24308/23	HDC, DD

MIL PREFIX	POSITRONIC SERIES
MIL-DTL-24308/24	HDC, DD
MIL-DTL-24308/25	HDC, RD, DD
MIL-DTL-24308/26	HDC, RD, DD
GSFC S-311-P4	SND, SDD, SCBC, SCBM
GSFC S-311-P10	SND, SCBM
SAE AS39029/57	DD
SAE AS39029/58	DD
SAE AS39029/63	RD
SAE AS39029/64	RD

For a complete QPL listing available to download in PDF format, visit the desired connector family home page and click on link "Qualified Product Listing (PDF)" on our website at:

www.connectpositronic.com

or enter the URL link below to download the QPL PDF file immediately!

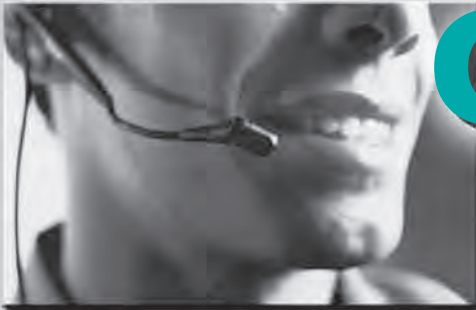
http://www.connectpositronic.com/pdf_view/222/

Easy as . . .

Connector Excellence®

Click . . .

Visit our easy-to-use web site with our new shopping cart feature to obtain quotes, samples and detailed product information.



Call . . .

Contact one of our sales offices worldwide, and your call will be answered by a real person, not a machine. We are ready to help with price, delivery and technical questions.

Consult . . .

Positronic has factory direct technical sales people in major metropolitan areas around the world. These sales professionals are ready to support you locally with face-to-face consultation.



www.connectpositronic.com



ATCA
Power



D-Subminiature

Rectangular



Circular



Cable

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
Current Ratings: To 200 amperes per contact
Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio; professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in
Configurations: Multiple variants in both standard and high densities, seven connector housing sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in
Configurations: Multiple variants in both standard and high densities, thirty package sizes
Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder
Configurations: Multiple variants in four package sizes
Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cabled connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Leakage rate: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-subminiature and circular configurations above
Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest

Positronic sales office listed on the back of this catalog.



POSITRONIC®

GLOBAL *Connector* SOLUTIONS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel 417 866 2322 • Fax 417 866 4115 • Toll Free 800 641 4054 • info@connectpositronic.com

AMERICAS LOCATIONS

NORTH AMERICA

United States, Springfield, Missouri, Corporate Headquarters	800 641 4054	info@connectpositronic.com
Factory, Sales and Engineering Offices		
Canada Sales Office	800 327 8272	info@connectpositronic.com
Mexico Sales Office	800 872 7674	info@connectpositronic.com
Puerto Rico Factory and Sales Office	800 641 4054	info@connectpositronic.com

SOUTH AMERICA

Argentina Sales Office	417 866 2322	info@connectpositronic.com
Brazil Sales Office	417 866 2322	info@connectpositronic.com
Chile Sales Office	417 866 2322	info@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone 65 6842 1419 • Fax 65 6842 1421 • singapore@connectpositronic.com

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices	65 6842 1419	singapore@connectpositronic.com
---------------------------------------	--------------	--

ASIA, Direct Sales Offices

China - Zhuhai Factory and Sales Office	86 756 362 6762	zhuhai@connectpositronic.com
Shenzhen Sales Office	86 755 2601 0941	shenzhen@connectpositronic.com
Shanghai Sales Office	86 158 2907 9779	shanghai@connectpositronic.com
Xian Sales Office	86 29 8839 5306	xian@connectpositronic.com
Beijing Sales Office	86 10 8203 7718	beijing@connectpositronic.com
Korea Sales Office	82 31 909 8047	korea@connectpositronic.com
Taiwan Sales Office	886 2 2937 8775	taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices	81 3 6310 5830	japan@connectpositronic.com
-------------------------------	----------------	--

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices	91 20 2469 9910	india@connectpositronic.com
Bangalore Sales Office	91 94 4907 3251	bangalore@connectpositronic.com
New Delhi Sales Office	91 80 1071 1175	delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Australia, Hong Kong, Malaysia, New Zealand, Philippines, Thailand and Vietnam.

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies • F-32020 Auch Cedex 9 France
Telephone 33 5 6263 4491 • Fax 33 5 6263 5117 • contact@connectpositronic.com

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices	33 5 6263 4491	contact@connectpositronic.com
---------------------------------------	----------------	--

EUROPE, Direct Sales Offices

North France Sales Office	33 1 4588 1388	jchalaux@connectpositronic.com
South France Sales Office	33 5 6263 4491	plafon@connectpositronic.com
Eire + Northern Ireland	33 5 6263 4557	tauvin@connectpositronic.com
Italy Sales Office	39 02 5411 6106	rmagni@connectpositronic.com
Germany Sales Office	49 23 5163 4739	cbouche@connectpositronic.com
UK Sales Office	44 1242 897 493	lbridwell@connectpositronic.com

EUROPE & MIDEAST, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Israel, Russia, Scandinavia, Spain, Switzerland, Turkey, Ukraine and the United Kingdom.

For most current sales office information, please visit http://www.connectpositronic.com/contact/sales_offices.html

LOCAL SOLUTIONS

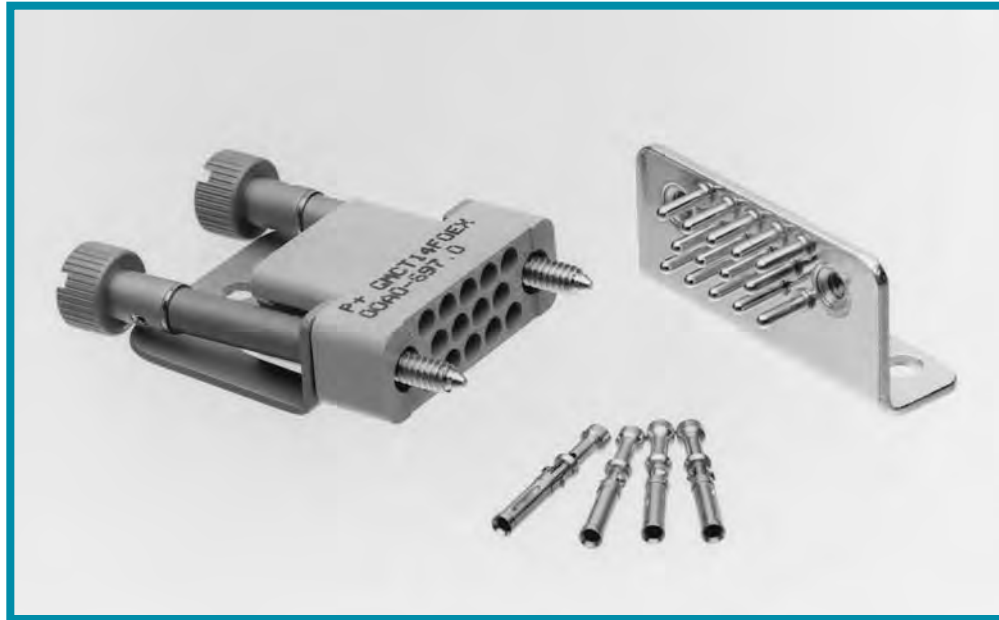
www.connectpositronic.com



Positronic Industries
connectpositronic.com

GROUNDING PLATES DESIGNED FOR AIRCRAFT APPLICATIONS

Standard
Density
Rectangular



Positronic Industries' grounding plates were designed especially for aircraft applications where shielded cable must be grounded to the aircraft frame. The ground wires of the shielded cable are piggy-backed out of the cable with ferrules and are crimped to Size 16 female contacts. The female contacts are loaded into standard 14 or 34 contact connector housings. These connectors can then be mated to the grounding plate which is fastened to the aircraft frame.

Grounding plates have Size 16 precision-machined male contacts which are swaged and soldered onto the metal plate.

The metal plates (angled and plane) have fixed female jackscrews that accept the rotating jackscrews, which are an integral part of the mating female connector. Long rotating jackscrews extend beyond the edge of the cable adapter of the 14-contact female connector which permits easy coupling to the grounding plate.

Other contact variants are available for grounding plate applications. Contact Technical Sales for information on the availability of other grounding plates offered by Positronic Industries.

GROUNDING PLATES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled DAP per MIL-M-14, Type SDG-F. Grey or black in color.
Grounding Plates:	Copper alloy with tin plate.
Contacts:	Copper alloy with 0.000010 inch [0.25 microns] gold over nickel plate.
Jackscrew System:	Stainless steel, passivated.
Strain Reliefs:	Steel with zinc plate and chromate seal or aluminum with yellow anodize.

MECHANICAL CHARACTERISTICS:

Removable	
Female Contacts:	Insert contact to rear face of insulator, release from front face of insulator. "Closed Entry" design for highest reliability.

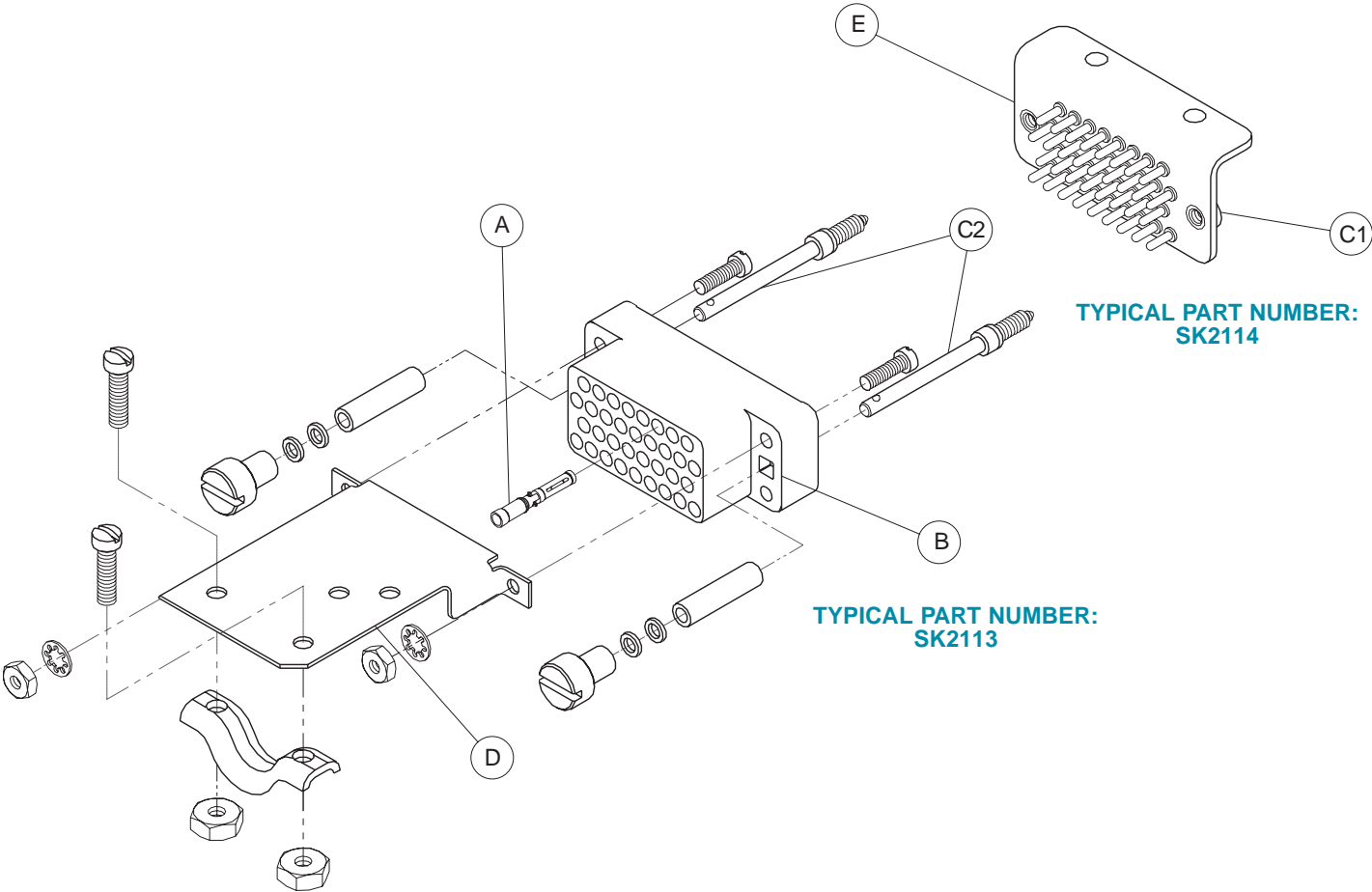
Contact Retention in Insulator:	20 lbs. (89N) after 10 cycles of contact insertion/extraction.
Female Contact Termination:	Crimp wires, Sizes 20 AWG [0.5 mm ²] through 24 AWG [0.25 mm ²].
Jackscrews:	6-32 UNC threads.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	13 amperes nominal.
Insulation Resistance:	5 G ohms.
Working Voltage:	500 VAC (rms).
Working Temperature:	-65°C to 150°C.



GROUNDING PLATE COMPONENT DESCRIPTION



CONNECTOR COMPONENT DESCRIPTIONS	
ITEM	COMPONENT DESCRIPTIONS
A	Female Contacts, Size 16, Crimp Terminations.
B	Female Connector Insulator.
C1	Fixed Jackscrew.
C2	Rotating Jackscrew.
D	Strain Relief provides cable support.
E	Grounding Plate.



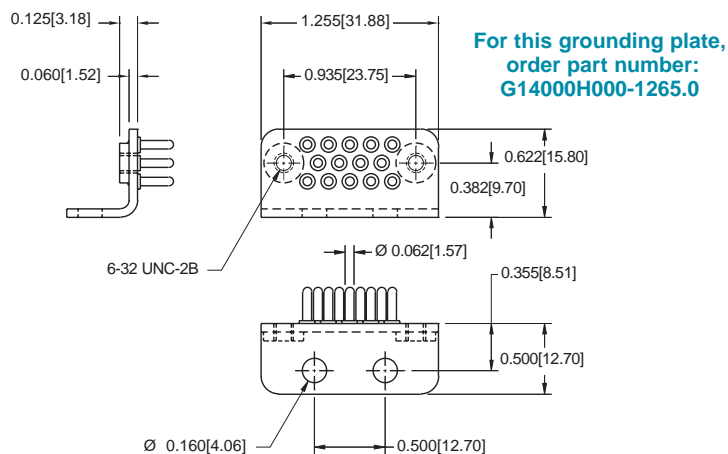
Positronic Industries
connectpositronic.com

GROUNDING PLATES DESIGNED FOR AIRCRAFT APPLICATIONS

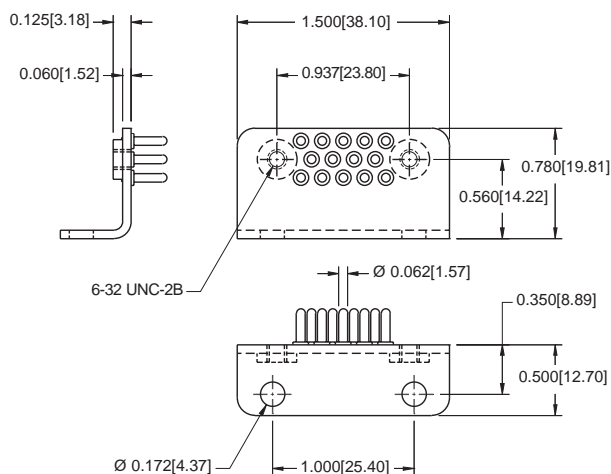
Standard
Density
Rectangular

Grounding Plate Ordering Information

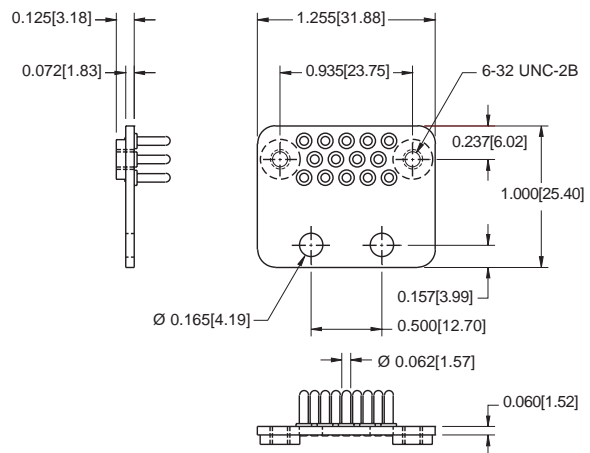
Grounding plates are offered in five (5) different configurations, as shown below. These grounding plates can be used with the connector strain relief assemblies shown to the right below. The connector strain relief assemblies are provided with an appropriate number of FC120N2 female contacts. The FC120N2 contacts feature a "Closed Entry" design and accommodate wire sizes 20 - 24 AWG (0.5 - 0.25 mm²). Reference the schematics below for dimensional information. Use the indicated part numbers below to order your grounding plate assemblies from Positronic Industries.



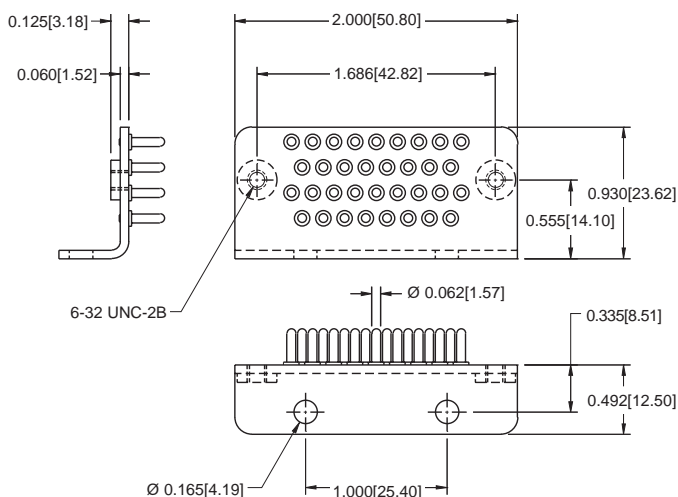
For this grounding plate, order part number: **SK2484**



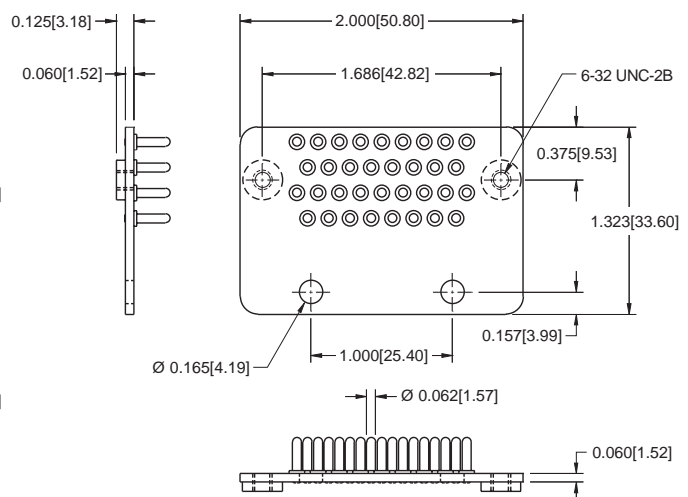
For this grounding plate, order part number: **SK2665**



GROUND PLATES



For this grounding plate, order part number: **SK2114**



For this grounding plate, order part number: **SK2664**

Standard
Density
Rectangular

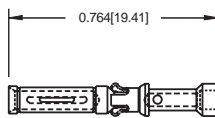
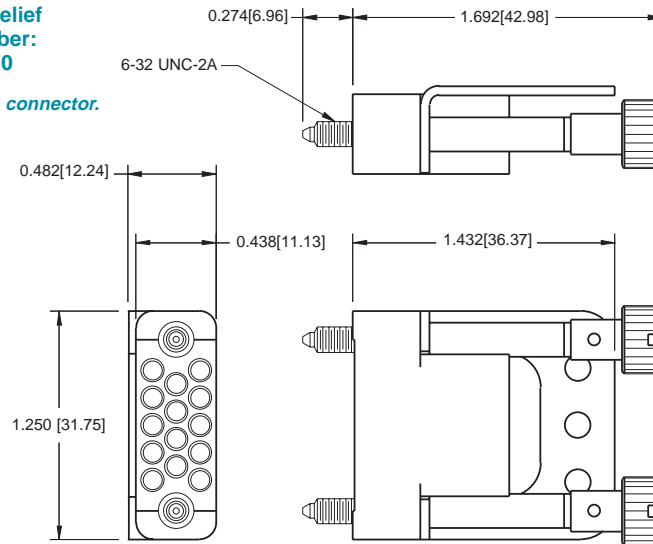
GROUNDING PLATES DESIGNED FOR AIRCRAFT APPLICATIONS



Positronic Industries
connectpositronic.com

For this connector strain relief
assembly, order part number:
GMCT14F0EX00A0-697.0

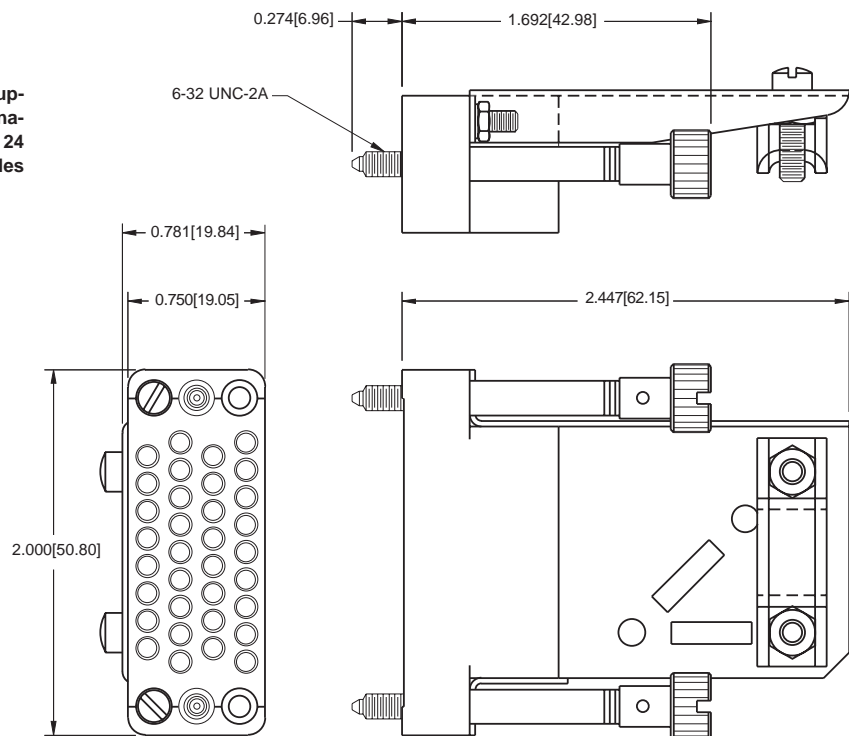
A plastic cable tie is supplied with this connector.



FC120N2 FEMALE CONTACT "CLOSED ENTRY" DESIGN

(ENLARGED)

The appropriate number of contacts are supplied with the connectors. These crimp termination contacts accommodate wire sizes 20 - 24 AWG (0.5 - 0.25 mm²). Contact Technical Sales for crimp tool ordering information.



For this connector strain relief
assembly, order part number:
SK2113

POSITRONIC PRODUCTS

Power

Contact Sizes: 0, 8, 12, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle solder, straight press-fit and right angle press-fit
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41



FEATURES: Hot swap capability • AC/DC operation in a single connector • Signal contacts for hardware management • Blind mating • Sequential mating • Large surface area contact mating system • Wide variety of accessories • Customer specified contact arrangements

D-Subminiature

Contact Sizes: 8, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle solder and straight press-fit
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-24308, Goddard Space Flight 311P, SAE AS 39029, IP65, IP67



FEATURES: Three performance levels available: professional quality, military quality and space-flight quality provide multiple performance-to-cost choices • Options include thermocouple contacts, environmentally sealed and dual port package including mixed density • Broad selection of accessories

Rectangular

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes
Terminations: Crimp, wire solder, straight solder and right angle solder
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-28748, SAE AS 39029, CCITT V.35



FEATURES: Two performance levels available: industrial quality and military quality provide two performance to cost choices • Large surface area contact mating system • A wide variety of accessories • Broad selection of contact variants and package sizes

Circular

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder and right angle solder
Configurations: Multiple variants in two package sizes
Qualifications: Environmental protection to IP67



FEATURES: Non-corrodible / lightweight composite construction • EMI/RFI shielded versions • Thermocouple contacts • Environmentally sealed versions • Rear insertion/front release of removable contacts • Two level sequential mating • Overmolding available on full assemblies

Cable

All Positronic connector products can be supplied as part of cable assemblies whose technical characteristics would reflect those of the connectors being used within the assembly.



FEATURES: Shorten the supply chain and reduce additional costs and delays by "cabling" • Overmolding available • Shielded and environmentally sealed versions available • Power cables and access boxes which meet the SAE J2496 specification

Hermetic

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-Subminiature and Circular Configurations above
Qualifications: Space-D32



FEATURES: Intended for use as an electrical feedthrough in high vacuum applications • Leakage rate: 5×10^{-9} mbar.l/s @ vacuum 1.5×10^{-5} atm • Signal, power, coax and high voltage versions available • Connectors can be mounted on flange assembly per customer specification

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office as given on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices (800) 641-4054

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices (800) 641-4054

MEXICO

Factory Sales and Engineering Offices (800) 872-7674

CANADA

Factory Sales and Engineering Offices (800) 327-8272

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices (65) 6842-1419

ASIA, Direct Sales Offices

Taiwan Sales Office (88) 62-2937-8775

China Sales Office (86) 755-2643-7578

Korea Sales Office (82) 31-909-8047/8

JAPAN

Sales and Engineering Offices (81) 3-5812-7720

INDIA

Factory Sales and Engineering Offices (91) 20-2439-4810

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines,
Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 (0)5 62 63 44 91

EUROPE, Direct Sales Offices

Northern France Sales Office 33 (0)1 45 88 13 88

Southern France Sales Office 33 (0)4 67 72 80 28

Italy Sales Office 39 (0)2 54 116 106

Northern Germany Sales Office 49 (0)30 34 504 307

Southern Germany Sales Office 49 (0)2351 63 47 39

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece,
Ireland, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC INDUSTRIES, INC.

423 N Campbell Ave • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 (0)5 62 63 44 91 • Fax 33 (0)5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

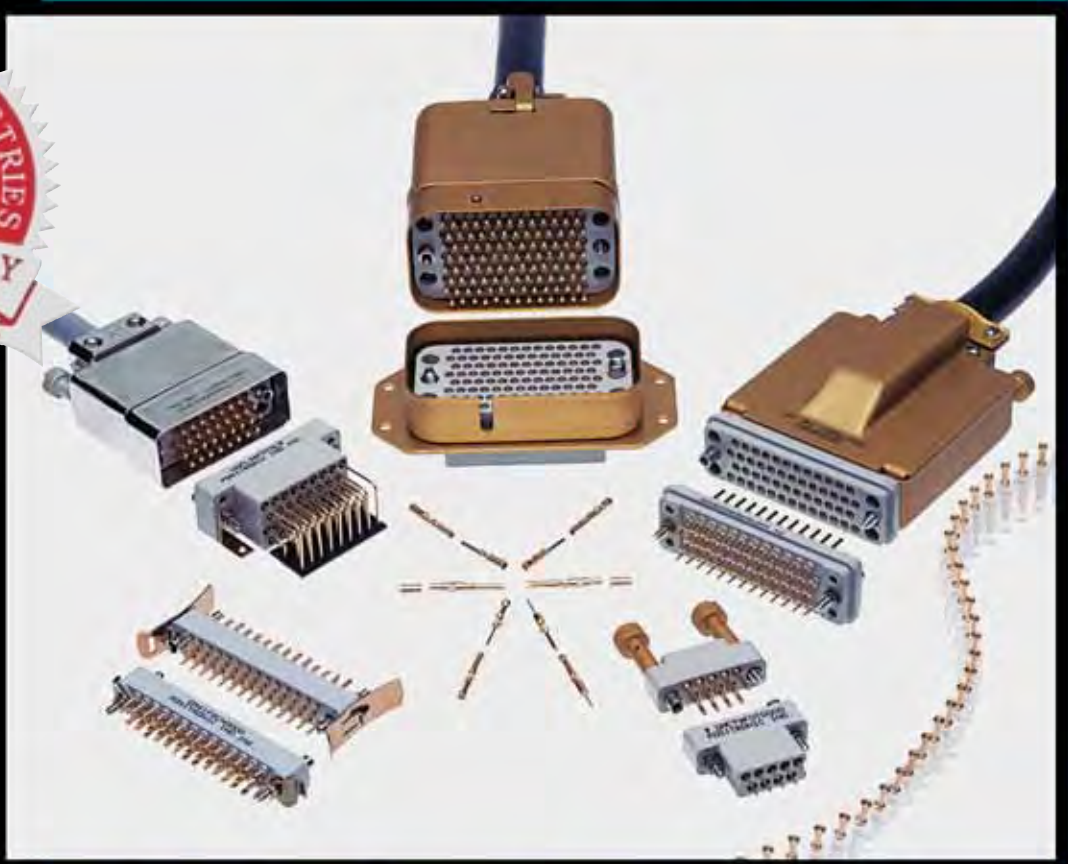
3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com



Positronic Industries



Standard Density Rectangular Connectors



**For Direct Current, Low Frequency Analog
and Digital High Speed Data Applications**



**RoHS Compliant
options available!**

Catalog C-009 Rev. D

www.connectpositronic.com

ABOUT US

Founded in 1966, Positronic Industries is a vertically integrated manufacturer of high quality interconnect products. Positronic has earned the worldwide reputation as a service oriented, quick-reaction, top quality connector supplier. We are committed to maintaining this reputation by continuous implementation of our **Complete Capability** concept.

COMPLETE CAPABILITY

Design & Development

- Designs new connectors and modifies existing connectors to meet industry requirements
- Continuously conducts marketing studies to identify industry needs for new products
- Ongoing interest in unique connector designs

Tooling

- Tooling support for all manufacturing areas within company
- Provides 80% of new tooling, punch press dies, molds, jigs and fixtures used at Positronic factory locations worldwide

Machining

- Automatic screw machines produce finely crafted contacts and hardware for connector bodies
- Trained technicians operate machines from Tornos, Bechler and Brown & Sharpe

Molding

- Molds all plastic connector components such as insulators, hoods, angle brackets and more
- Overmold capability available

Plating

- Applies gold and other metal finishes to connector components to any required thickness
- Plating conforms to all military specifications

Quality Assurance

- Select factories certified to ISO 9001:2000, AS9100 Rev.B 2004 and ISO 14001 (Singapore)
- Maintains aggressive TQM program
- Able to test to IEC, EIA, UL, MIL-DTL-24308, MIL-DTL-28748, SAE AS 39029 and MIL-C-85049 requirements

Finished Stock Inventory

- Each main factory location maintains a large inventory of connector components and accessories
- Same day shipments available on many standard connector products
- Stocking agreements available for qualified customers

Worldwide Sales & Service

- Responsive attitude toward customer needs
- Fully trained sales staff located worldwide
- Facilities located in USA, France, India, Puerto Rico, and Singapore.



Machining



Molding



Finished Stock Inventory

Products described within this catalog may be protected by one or more of the following US. patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic Industries' FEDERAL SUPPLY CODE (Cage Code) FOR MANUFACTURERS is 28198

POSITRONIC IS AN ITAR REGISTERED COMPANY



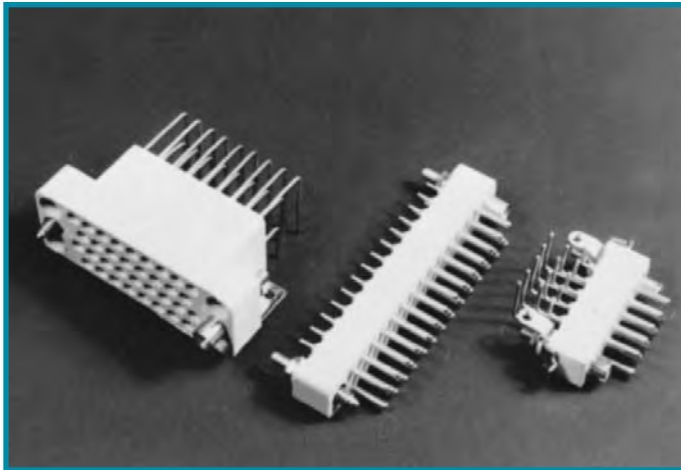
CONNECTOR DESCRIPTIONS

GMCT SERIES CONNECTORS

Heavy duty, rectangular connectors with removable contacts. Multipurpose connectors offering power, signal and shielded contacts. Thirteen connector variants, 9 through 104 poles, qualified to MIL-DTL-28748.

GMCT SERIES CONTACTS

Size 16 contacts, 13 ampere nominal rated, and size 20 contacts, 7.5 ampere nominal rated, qualified to SAE AS 39029. Terminations are crimp 14 AWG [2.5mm²] through 32 AWG [0.03mm²], solder cup, wrap post, printed board, press-fit and shielded.



GAP SERIES CONNECTORS

Heavy duty, rectangular, printed board connectors with straight solder, size 16 contacts, 7.5 ampere nominal rated. Eight connector variants, 9 through 50 poles.

GAPL SERIES CONNECTORS

Heavy duty, rectangular, printed board mount connectors with size 16, right angle solder cup contacts, 7.5 ampere nominal rated. Seven connector variants, 9 through 50 poles.

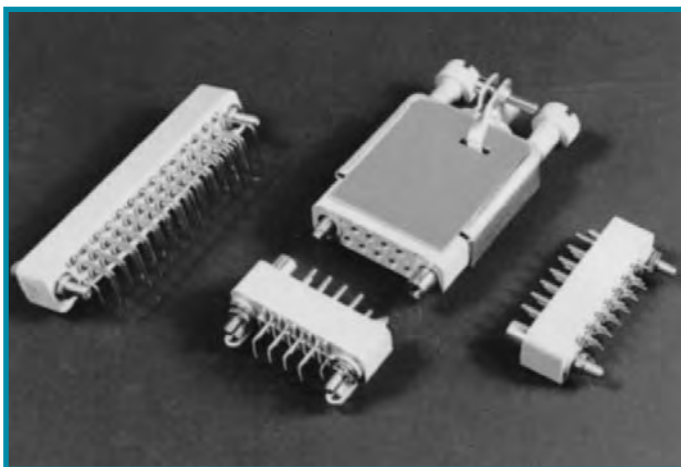


VMCT AND VAPL SERIES CONNECTORS

Heavy duty, rectangular, CCITT V.35 recommended interface connectors with size 16 contacts, 13 ampere nominal rated. Terminations are crimp, solder cup, right angle printed board mount and press-fit.

GM SERIES CONNECTORS

Rectangular connectors with size 20 fixed solder contacts, 7.5 ampere nominal rated. Solder cup and printed board terminations. Eleven connector variants, 7 through 50 poles. Qualified to MIL-DTL-28748.



**RoHS Compliant
options available!**



Positronic Industries
.connectpositronic.com

TABLE OF CONTENTS

Standard
Density
Rectangular

G M C T S E R I E S

TECHNICAL CHARACTERISTICS	1
TYPICAL MATING ASSEMBLIES AND CONNECTOR MATING DIMENSIONS.....	2
EXPLODED VIEWS OF TYPICAL MATED CONNECTOR ASSEMBLIES	3
CONNECTOR COMPONENT DESCRIPTION AND TERMINOLOGY AND INSULATOR DIMENSIONS.....	4
INSULATOR DIMENSIONS.....	5-6
CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN.....	7-8
LARGE SURFACE AREA CONTACT MATING SYSTEM	9
CURRENT-TEMPERATURE DERATING CURVE AND TEMPERATURE RISE CURVE.....	10
CRIMP CONTACTS AND REELS FOR AUTOMATIC CRIMP TOOLS	11
SOLDER CUP CONTACTS AND MILITARY CRIMP CONTACTS	12
COMPLIANT TERMINATION PRESS-FIT CONTACTS AND SUGGESTED PRINTED BOARD HOLE SIZES FOR PRESS-FIT CONNECTORS.....	13
STRAIGHT SOLDER CONTACTS AND WRAP POST CONTACTS.....	14
CRIMP SHIELDED CONTACTS AND TECHNICAL CHARACTERISTICS.....	15
CRIMPING INFORMATION AND CRIMPING INSTALLATION TOOLS	16-19
REMOVABLE CONTACT ORDERING ASSISTANCE CHART.....	20
ORDERING INFORMATION.....	21

G A P S E R I E S

TECHNICAL CHARACTERISTICS	22
STRAIGHT SOLDER CONTACTS	23
CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN.....	24
ORDERING INFORMATION.....	25

G A P L S E R I E S

TECHNICAL CHARACTERISTICS	26
RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS.....	27
MALE RIGHT ANGLE PRINTED BOARD HOLE PATTERN.....	28
FEMALE RIGHT ANGLE PRINTED BOARD HOLE PATTERN	29
MOUNTING BRACKET AND PUSH-ON FASTENER FOR RIVETED ON RIGHT ANGLE MOUNTING BRACKETS	30
ORDERING INFORMATION.....	31

V . 3 5 S E R I E S

V.35 SERIES TECHNICAL CHARACTERISTICS	32
VAPL SERIES TECHNICAL CHARACTERISTICS AND VMCT/VAPL SERIES TYPICAL CONNECTOR MATING ASSEMBLY.....	33
VMCT SERIES INSULATOR DIMENSIONS AND VAPL SERIES RIGHT ANGLE PRINTED BOARD HOLE PATTERN	34
VMCT SERIES ORDERING INFORMATION.....	36
VAPL SERIES ORDERING INFORMATION	37

B A P L S E R I E S

TECHNICAL CHARACTERISTICS	38
STRAIGHT PRINTED BOARD MOUNT SOLDER CONNECTORS	39
ORDERING INFORMATION.....	40

B A P L S E R I E S

TECHNICAL CHARACTERISTICS	41
RIGHT ANGLE PRINTED BOARD MOUNT SOLDER CONNECTORS.....	42-43
90° MOUNTING BRACKETS AND PUSH-ON FASTENERS.....	43
ORDERING INFORMATION.....	44

G M S E R I E S

TECHNICAL CHARACTERISTICS	45
SOLDER CUP CONTACTS, STRAIGHT SOLDER CONTACTS FOR PRINTED BOARD MOUNT, AND TYPICAL MATING ASSEMBLY	46
INSULATOR DIMENSIONS.....	47
CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN.....	48-49
ORDERING INFORMATION.....	50

A C C E S S O R I E S

VIBRATION LOCKS, TYPICAL MATING ASSEMBLY, AND FLUSH PANEL CONNECTOR MOUNTING BRACKETS	51
JACKSCREW SYSTEM DIMENSIONS AND POLARIZING GUIDE DIMENSIONS.....	52
POLARIZING GUIDES	53
FIXED AND TURNABLE JACKSCREW SYSTEM	54-55
POLARIZATION OF MALE AND FEMALE SHELLS AND DIMENSION FOR FEMALE SHELLS	56
DIMENSIONS FOR MALE SHELLS.....	57
DIMENSIONS FOR MOUNTING PLATES	58
CABLE ADAPTERS DIMENSIONS FOR TOP OPENING HOODS	59
CABLE ADAPTERS DIMENSIONS FOR SIDE OPENING HOODS	60
CABLE ADAPTERS DIMENSIONS FOR TOP OPENING HOODS WITH JACKSCREW SYSTEM	61
CABLE ADAPTERS DIMENSIONS FOR SIDE OPENING HOODS WITH JACKSCREW SYSTEM	62
CABLE ADAPTERS DIMENSIONS FOR SIDE ACCESS HOODS WITH JACKSCREW SYSTEM	63
EMI/RFI SHIELDED HOOD AND TOP OPENING HOODS WITH JACKSCREW SYSTEM AND PLASTIC CABLE CLAMPS	64
EMI/RFI SHIELDED CABLE ADAPTERS (HOODS) AND SHELLS	65
PANEL CUT-OUT DIMENSIONS FOR GM SERIES AND GMCT SERIES CONNECTORS.....	66

G R O U N D I N G P L A T E S

TECHNICAL CHARACTERISTICS	67
COMPONENT DESCRIPTION.....	68
ORDERING INFORMATION.....	69-70

Q. P. L. L I S T I N G

ORDERING INFORMATION FOR MIL-DTL-28748/3, MIL-DTL-28748/4, MIL-DTL-28748/5 AND MIL-DTL-28748/6.....	71-72
MIL-DTL-28748 & SAE AS 39029 QUALIFIED PRODUCTS LISTING.....	73



Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

Size 16 and 20 Contacts
Connectors Qualified to
MIL-DTL-28748

Contacts Qualified to
SAE AS 39029

IEC Publication 807-7

U.L. Recognized,
File #E49351

Telecommunication
U.L. File #E140980



GMCT Series connectors are heavy-duty, multi-pole, high reliability connectors qualified to MIL-DTL-28748 specifications. Termination styles are crimp, solder cup, straight solder, wrap post, press-fit, and crimp shielded. According to contact size selected, GMCT Series connectors are interchangeable with Positronic GAP and GAPL series connectors.

Thirteen contact variants, 9 through 104 poles, are offered. Contacts can have 0.062 inch [1.57mm] diameters, rated to 13 amperes per contact, or have 0.040 inch [1.02mm] diameters, rated to 7.5 amperes per contact. GMCT Series crimp

contacts are qualified to SAE AS 39029.

A wide array of mounting, locking, shrouding and polarizing accessories is available for this series. For details, see the Heavy-Duty Rectangular Connector Accessories section.

Due to its many termination styles, its wide range of contact variants, and an array of cable support accessories, GMCT Series connectors are widely utilized in navigational systems, robotics, mainframe and peripheral computers, medical equipment, telecommunications, instrumentation and process control applications.

GMCT SERIES TECHNICAL CHARACTERISTICS

MILITARY SPECIFICATIONS:

Qualified to MIL-DTL-28748/3 and MIL-DTL-28748/4. Contacts qualified to SAE AS 39029/34 and SAE AS 39029/35.

UNDERWRITERS LABORATORY RECOGNIZED:

File No. E49351.

INTERNATIONAL STANDARDS:

IEC 807-7.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
Removable Contacts:	Copper alloy, gold flash over nickel. Military contacts plated 0.000050 inch [1.27 microns] gold over copper. Other finishes available upon request.
Hoods, Cable Adapters:	Aluminum with yellow or black anodize.
Shells:	Aluminum with yellow or black anodize.
Jackscrew System:	Passivated stainless steel.
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Vibration Locks:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator, release from front face of insulator. Both size 16 [13 amps] and size 20 [7.5 amps] contacts available. Female contact has "closed entry" design for highest reliability.
Contact Retention in Insulator:	20 lbs. [89N] after 10 cycles of contact insertion/extraction.
Contact Termination:	Crimp all wire sizes from 14 AWG [2.5 mm ²] through 28 AWG [0.08 mm ²]. Also, solder cup, press-fit, wrap post and solder printed board terminations. Also, crimp and shielded contacts.

Locking Systems:

Friction, vibration locks and jackscrews.

Polarization:

Polarized guides, polarized shells and jackscrew system.

Mechanical Operations:

1000 operations per IEC 512-5.

Jackscrews:

Standard threads, 6-32 UNC on all sizes, except 60 and 104 connector variant, which uses 8-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating (maximum):

Size 16: 0.062 inch [1.57 mm] diameter.
- 13 amps maximum.
Size 20: 0.040 inch [1.02 mm] diameter.
- 7.5 amps maximum.

Initial Contact Resistance:

Size 16 – 0.003 ohms.
Size 20 – 0.007 ohms.

Flash over Voltage:

2700 V.AC [rms].

Test Voltage:

Size 16 - 2000 V.AC [rms].
Size 20 - 1200 V.AC [rms].

Insulation Resistance (minimum):

5 G ohms.

Clearance and Creepage Distance (minimum):

0.080 inch [2.03 mm].

Working Temperature:

-65°C to 150°C.

Working Voltage:

500 V.AC [rms].

Coaxial Contacts:

Characteristic Impedance: 50 ohms.

Initial Contact Resistance: 0.012 ohms max.



**For RoHS options
see page 21.**

TYPICAL MATING ASSEMBLIES

PICTURES ARE 80% OF ACTUAL SIZE

GMCT26F0E100JB



GAP26MDS4T0000

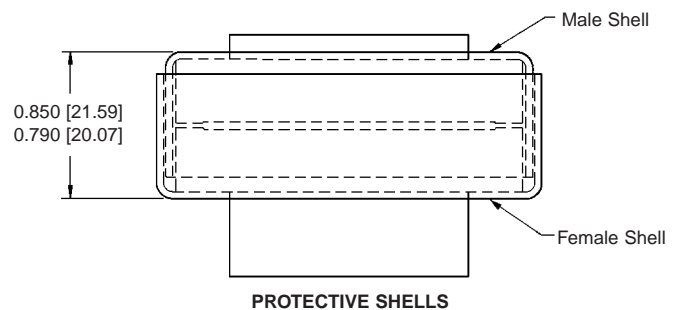
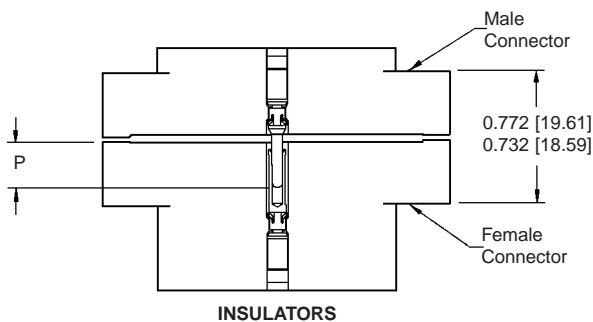


GMCT34F00RAZ0



GMCT34M0TWA00

CONNECTOR MATING DIMENSIONS



P: 0.276 [7.01] MINIMUM PENETRATION OF MALE CONTACT
IN "CLOSED ENTRY" DESIGN FEMALE CONTACT TO
ENSURE MINIMUM CONTACT RESISTANCE.

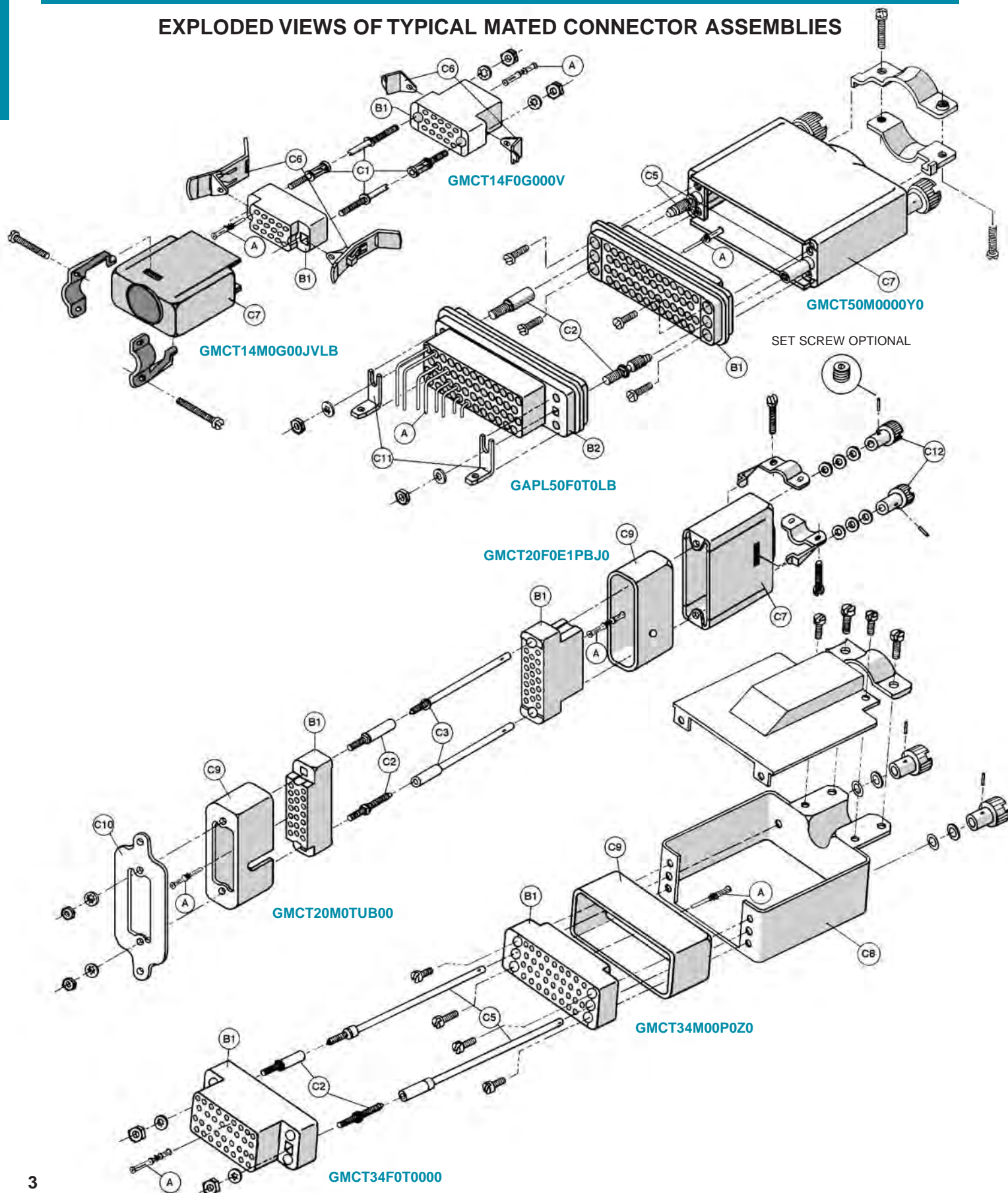


Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

EXPLODED VIEWS OF TYPICAL MATED CONNECTOR ASSEMBLIES

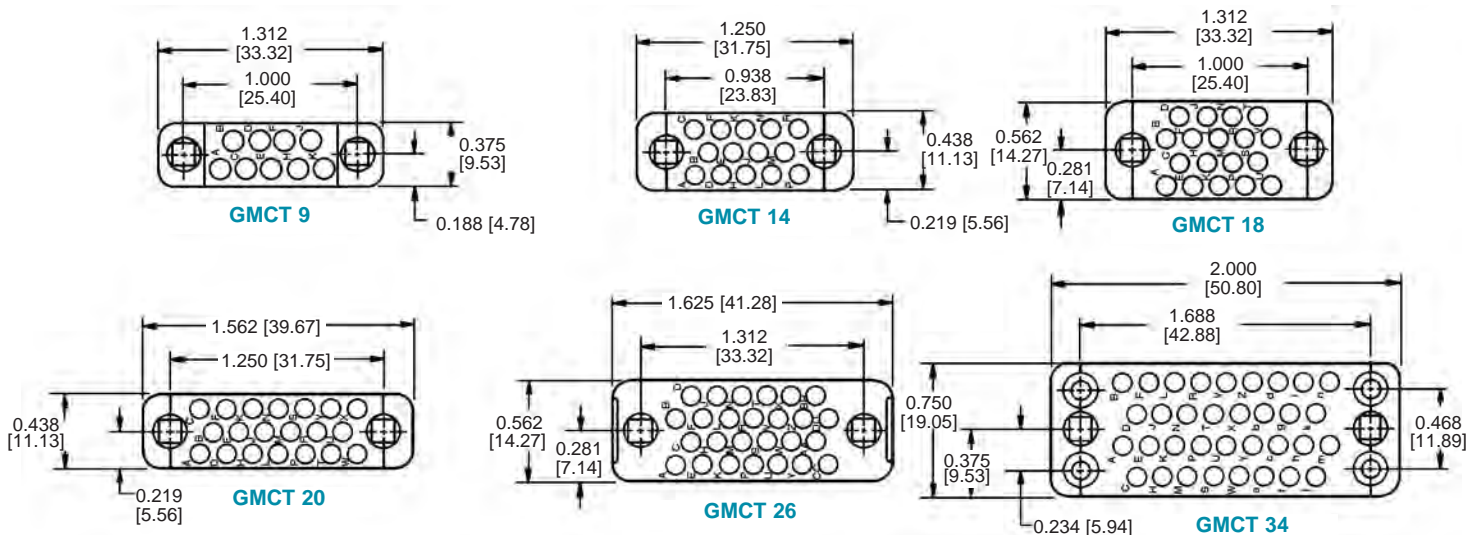


CONNECTOR COMPONENT DESCRIPTION AND TERMINOLOGY

- A** - Male and female contacts, size 16 and size 20. Power, signal and shielded. Terminations are crimp, solder cup, wrap post, printed board straight solder and press-fit.
- B1** - Unloaded connector insulators, male and female. Insulator retention system retains all contact termination types. Insulator may be used as a free or fixed connector.
- B2** - Loaded connector insulators, male and female. Insulators may be preloaded per customer requirements with contacts having terminations of 90° or straight solder printed board mount, wrap post and press-fit. Insulator contact positions may be selectively loaded with contacts. Unloaded insulator contact positions remain unloaded and reserved for future use. Connectors are normally fixed panel or printed board connectors.
- C1** - Polarizing guides, male and female, ensure correct alignment and coupling of male and female connectors. They may also be used for keying when used in corner positions of connector variants 34, 42, 50, 60, 66, 75 and 104 poles.
- C2** - Fixed jackscrews are the stationary threaded members of the jackscrew system. Threaded pilots and sockets of the jackscrew system also provide connector polarization to ensure correct connector coupling.
- C3** - Long turnable jackscrews, the rotating threaded members of the jackscrew system, are used with a free connector having a hood for cable support. Used on connector variants 9, 14, 18, 20, 21, 26 and 41 poles. Knobs, C-12, may be affixed to turnable jackscrews using either roll pins or set screws.
- C4** - Short turnable jackscrews are used to polarize and mechanically assist with the coupling of the male and female connectors when the free connector is not equipped with a hood.
- C5** - Long turnable jackscrews, factory assembled to hood (cable adapter) for polarization and mechanical assistance in the coupling of the free connector to the fixed connector. Used on connector variants with 34, 42, 50, 60, 66, 75 and 104 poles.
- C6** - Vibration locking system consists of lock tabs on fixed connector and locking levers on free cable connectors. Normally used on connector variants 7, 9, 14, 18, 20, 21 and 26 poles. Locks connectors in coupled position.
- C7** - Hoods (cable adapters) are used on the free connector to provide cable support and contact protection. May also mechanically support either the turnable or fixed members of the jackscrew system.
- C8** - Side access hoods (cable adapters). Extra strength, quick cable assembly to connector, fixed or free, to provide cable support and relieve stress on contact termination. Supplied with both turnable and fixed jackscrew systems.
- C9** - Shells (shrouds), both male and female, protect male and female contacts from damage. Also used to provide additional polarization combinations.
- C10** - Mounting plates, with or without float bushings, provide a stronger mechanical method of mounting the fixed connector to a panel. May be used with shells.
- C11** - Mounting angle brackets provide a means of mechanically affixing the fixed connector to the printed board.
- C12** - Knobs of turnable jackscrews may be affixed to the jackscrews by using either the roll pin or set screw method. Specify method desired in step 9 of order numbering system.

INSULATOR DIMENSIONS

MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR





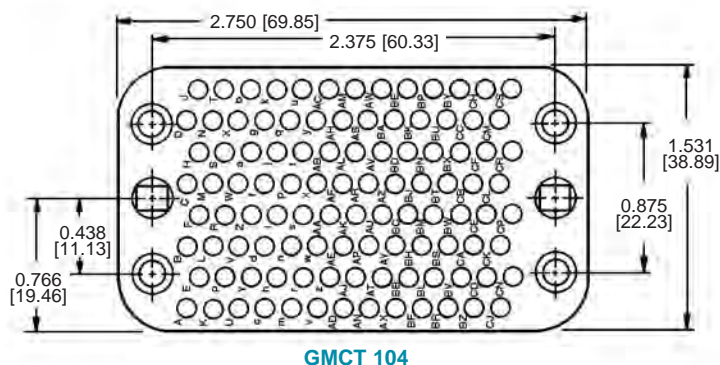
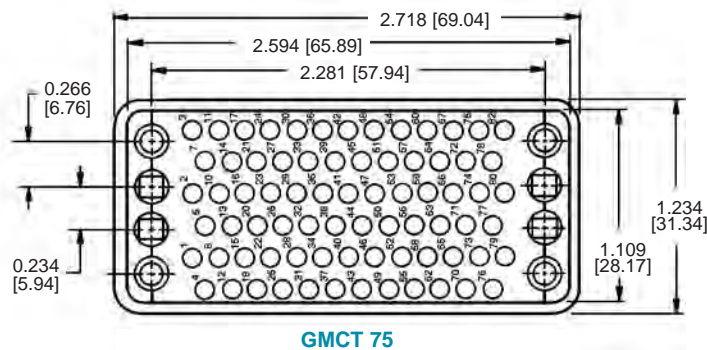
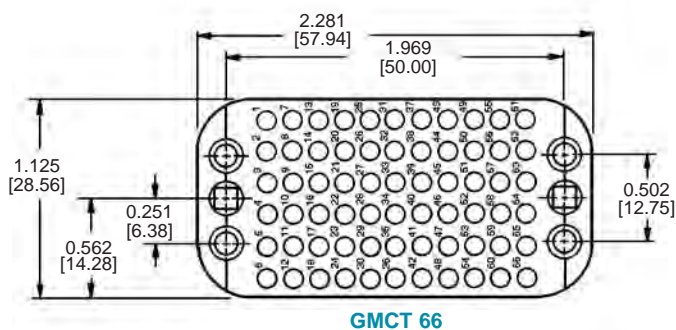
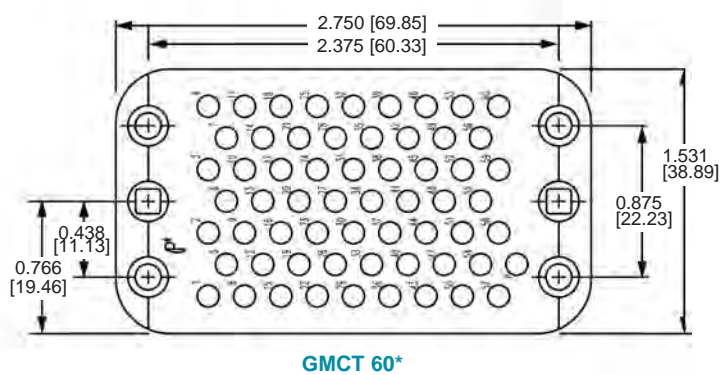
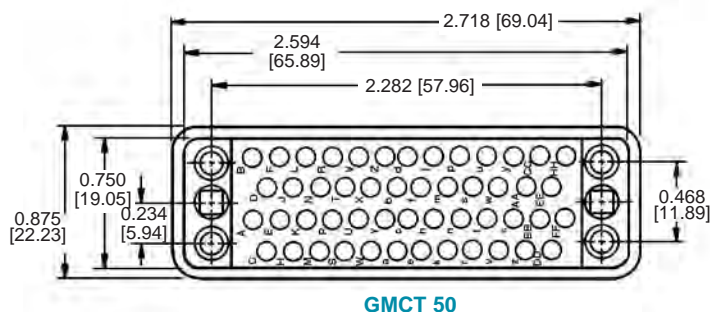
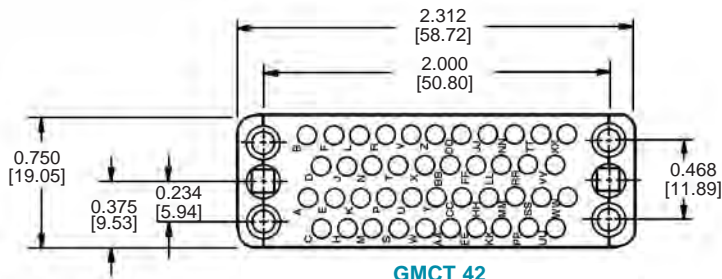
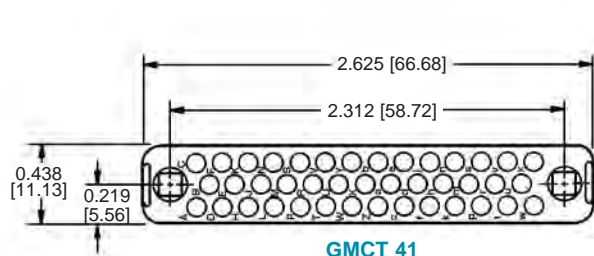
Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

INSULATOR DIMENSIONS

MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



*CONTACT TECHNICAL SALES FOR U.L.
APPROVAL STATUS OF GMCT60 VARIANT.

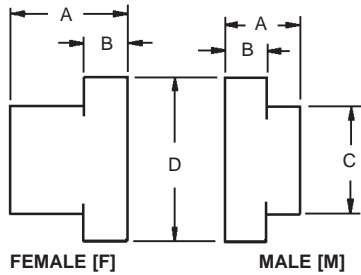
MATERIAL: GLASS FILLED DIALYL PHTHALATE PER
ASTM-D-5948 TYPE SDG-F

SEE GMCT SERIES PRINTED BOARD HOLE PATTERN PAGE
FOR CONNECTOR VARIANT CONTACT HOLE POSITIONS

INSULATOR DIMENSIONS

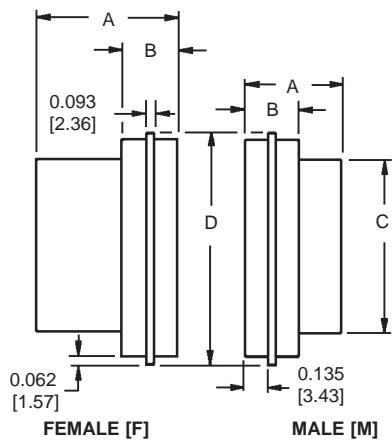
MATERIAL: GLASS FILLED DIALLYL PHTHALATE PER ASTM-D-5948 TYPE SDG-F

FIGURE 1



FEMALE [F] MALE [M]

FIGURE 2



FEMALE [F] MALE [M]

CATALOG NUMBER	FIGURE	A	B	C	D
GMCT9F	1	0.856 [21.74]	0.370 [9.40]	0.810 [20.57]	1.312 [33.32]
GMCT9M	1	0.511 [12.98]	0.370 [9.40]	0.810 [20.57]	1.312 [33.32]
GMCT14F	1	0.856 [21.74]	0.370 [9.40]	0.778 [19.76]	1.250 [31.75]
GMCT14M	1	0.511 [12.98]	0.370 [9.40]	0.778 [19.76]	1.250 [31.75]
GMCT18F	1	0.856 [21.74]	0.370 [9.40]	0.772 [19.61]	1.312 [33.32]
GMCT18M	1	0.511 [12.98]	0.370 [9.40]	0.772 [19.61]	1.312 [33.32]
GMCT20F	1	0.856 [21.74]	0.370 [9.40]	1.072 [27.23]	1.562 [39.67]
GMCT20M	1	0.511 [12.98]	0.370 [9.40]	1.072 [27.23]	1.562 [39.67]
GMCT26F	1	0.856 [21.74]	0.370 [9.40]	1.072 [27.23]	1.625 [41.28]
GMCT26M	1	0.511 [12.98]	0.370 [9.40]	1.072 [27.23]	1.625 [41.28]
GMCT34F	1	0.856 [21.74]	0.370 [9.40]	1.375 [34.93]	2.000 [50.80]
GMCT34M	1	0.511 [12.98]	0.370 [9.40]	1.375 [34.93]	2.000 [50.80]
GMCT41F	1	0.856 [21.74]	0.370 [9.40]	2.125 [53.98]	2.625 [66.68]
GMCT41M	1	0.511 [12.98]	0.370 [9.40]	2.125 [53.98]	2.625 [66.68]
GMCT42F	1	0.866 [22.00]	0.370 [9.40]	1.672 [42.47]	2.312 [58.72]
GMCT42M	1	0.525 [13.34]	0.370 [9.40]	1.672 [42.47]	2.312 [58.72]
GMCT50F	2	0.856 [21.74]	0.370 [9.40]	1.972 [50.09]	2.718 [69.04]
GMCT50M	2	0.511 [12.98]	0.370 [9.40]	1.972 [50.09]	2.718 [69.04]
GMCT60F	1	0.856 [21.74]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]
GMCT60M	1	0.511 [12.98]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]
GMCT66F	1	0.856 [21.74]	0.370 [9.40]	1.673 [42.49]	2.281 [57.94]
GMCT66M	1	0.525 [13.34]	0.370 [9.40]	1.673 [42.49]	2.281 [57.94]
GMCT75F	2	0.856 [21.74]	0.370 [9.40]	1.980 [50.29]	2.718 [69.04]
GMCT75M	2	0.511 [12.98]	0.370 [9.40]	1.980 [50.29]	2.718 [69.04]
GMCT104F	1	0.856 [21.74]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]
GMCT104M	1	0.511 [12.98]	0.370 [9.40]	2.048 [52.02]	2.750 [69.85]





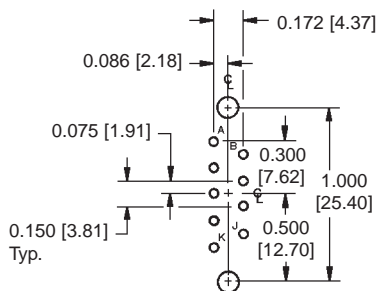
Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

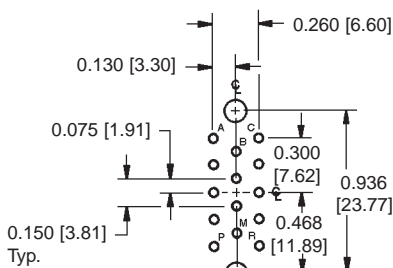
Standard
Density
Rectangular

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

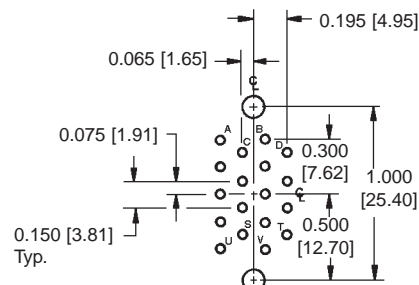
FOR STRAIGHT SOLDER CONTACTS AND COMPLIANT TERMINATION PRESS-FIT CONTACTS
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



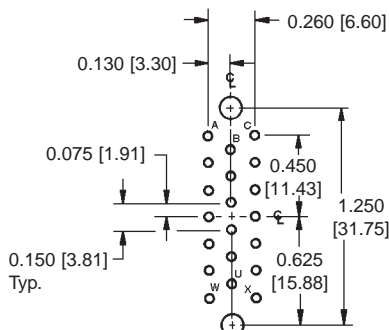
SIZE 9



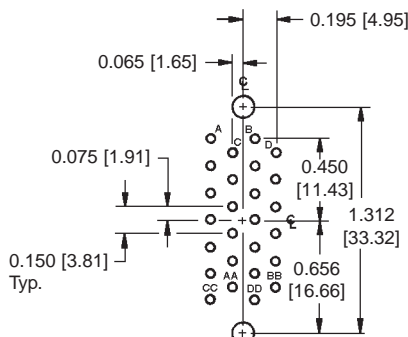
SIZE 14



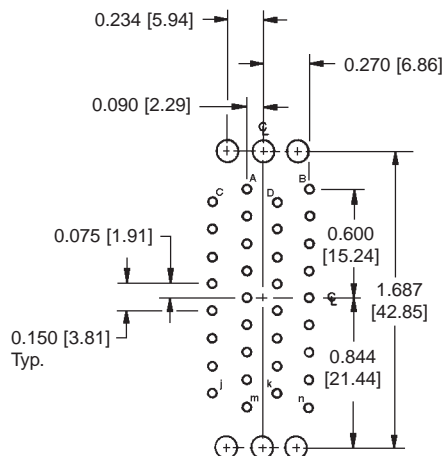
SIZE 18



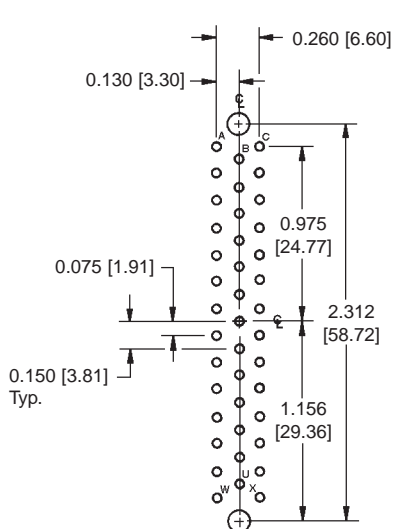
SIZE 20



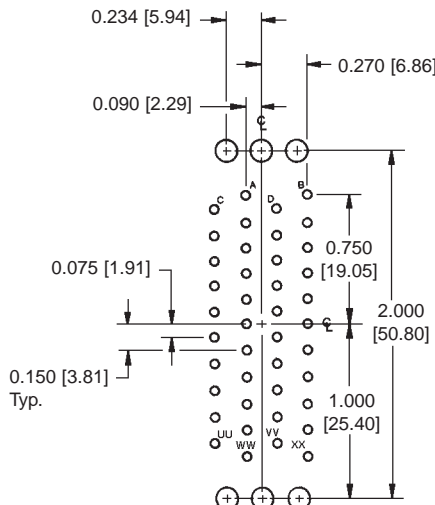
SIZE 26



SIZE 34



SIZE 41



SIZE 42

HOLE IDENTIFICATION FOR REFERENCE ONLY

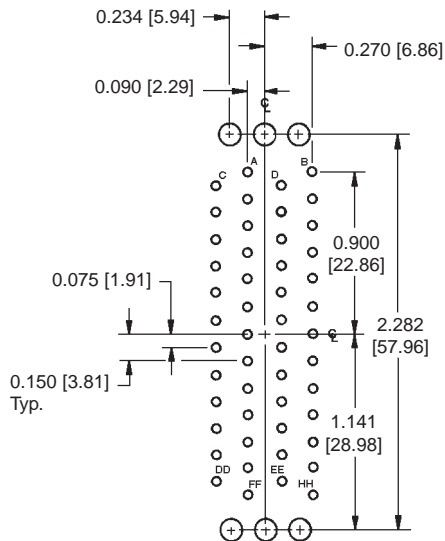
SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 9 THROUGH 50, 66 AND 75. SUGGEST 0.149 [3.78] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 60 AND 104.

SUGGEST 0.040 [1.02] Ø HOLES IN PRINTED BOARD FOR GMCT SERIES STRAIGHT SOLDER CONTACTS

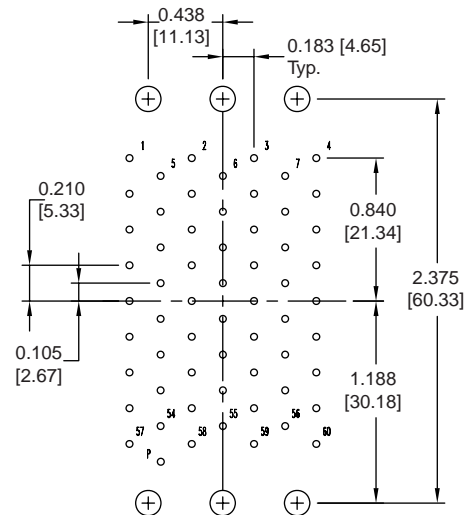
SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT TERMINATION PRESS-FIT CONTACTS, SEE PAGE 13.

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

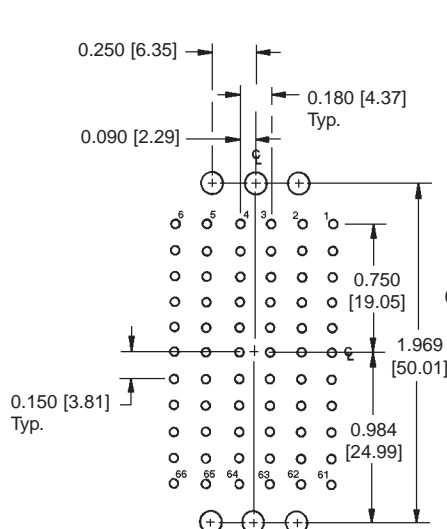
FOR STRAIGHT SOLDER CONTACTS AND COMPLIANT TERMINATION PRESS-FIT CONTACTS
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



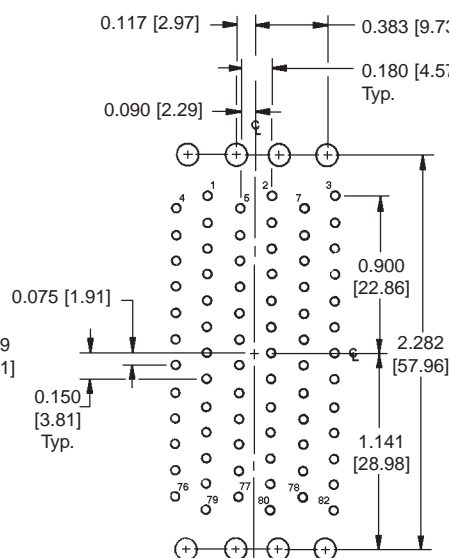
SIZE 50



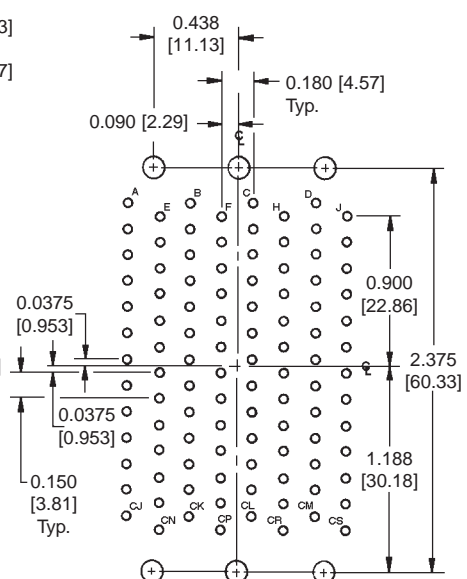
SIZE 60



SIZE 66



SIZE 75



SIZE 104

HOLE IDENTIFICATION FOR REFERENCE ONLY

SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 9 THROUGH 50, 66 AND 75. SUGGEST 0.149 [3.78] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR CONNECTOR VARIANTS 60 AND 104.

SUGGEST 0.040 [1.02] Ø HOLES IN PRINTED BOARD FOR GMCT SERIES STRAIGHT SOLDER CONTACTS

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT TERMINATION PRESS-FIT CONTACTS, SEE PAGE 13.



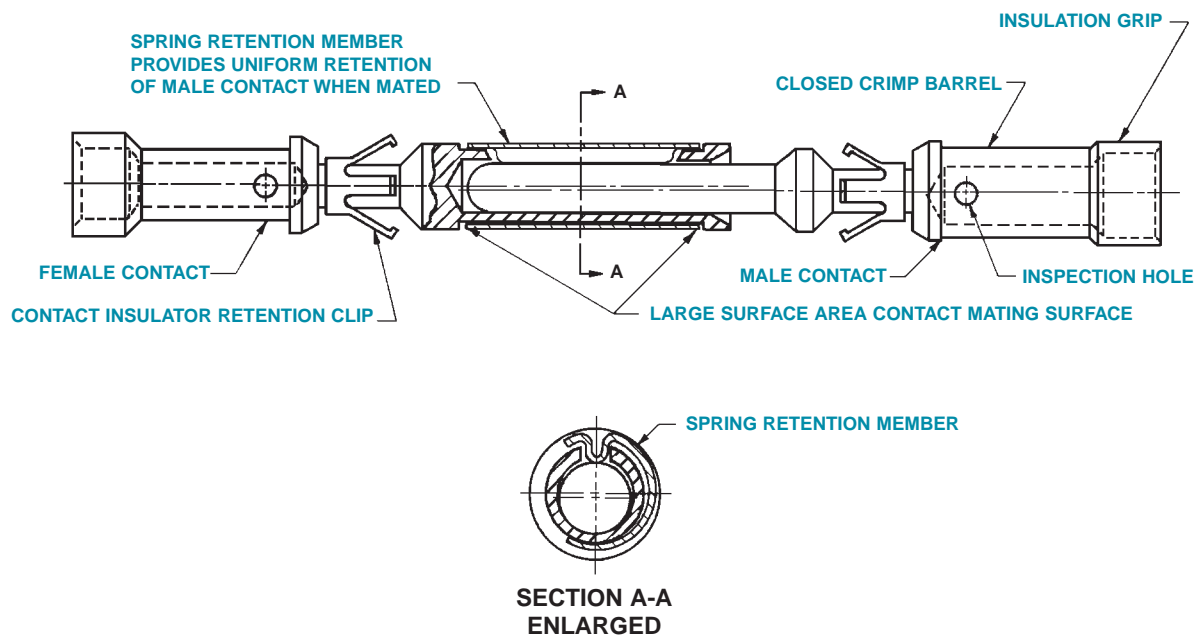
Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

“LARGE SURFACE AREA CONTACT MATING SYSTEM” HIGH RELIABILITY “CLOSED ENTRY” DESIGN

PRECISION MACHINED, SOLID COPPER ALLOY



All contacts of the GMCT series connector family utilize the “Large Surface Area (L.S.A.) Contact Mating System.” The “L.S.A. Contact Mating System” insures the lowest level of contact resistance during mechanical endurance tests of 1000 coupling cycles or more. Contact insertion/withdrawal forces remain substantially the same during the life of the connector.

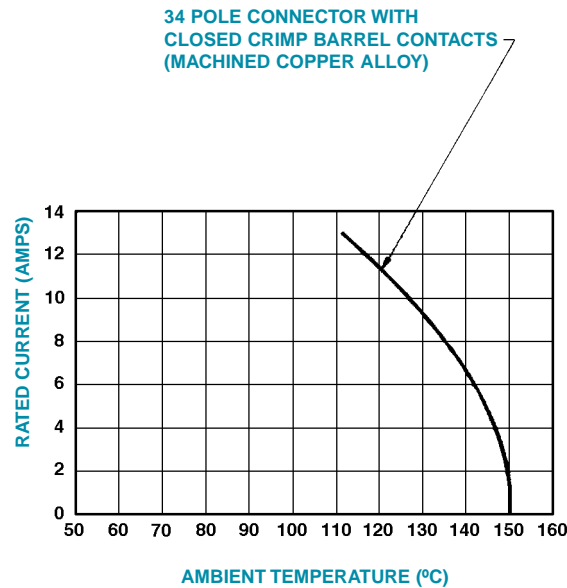
The GMCT series uses only “Closed Entry” design female contacts. The “Closed Entry” design prevents probe damage to the female contacts, and will not allow the female contact to accept misaligned or bent male contacts.

All GMCT series contacts are precision machined from solid, copper alloy barstock. They are durable, smooth in construc-

tion, and have greater amperage capacities than hollow, sheet metal style contacts. This is graphically illustrated by the amperage-temperature rise curves developed for the 34 pole GMCT insulator using 16 AWG [1.5 mm²] wire [see diagram page 10]. The precision machined, removable contact also has a more durable insulator retention system than the hollow, sheet metal style contact. After ten removal cycles from its insulator, the precision machined contact will withstand axial forces in excess of 20 lbs. [89N]. In comparison, the hollow, sheet metal style contact is limited to 10 lbs. [44.5N] after ten removal cycles from its insulator retention system.

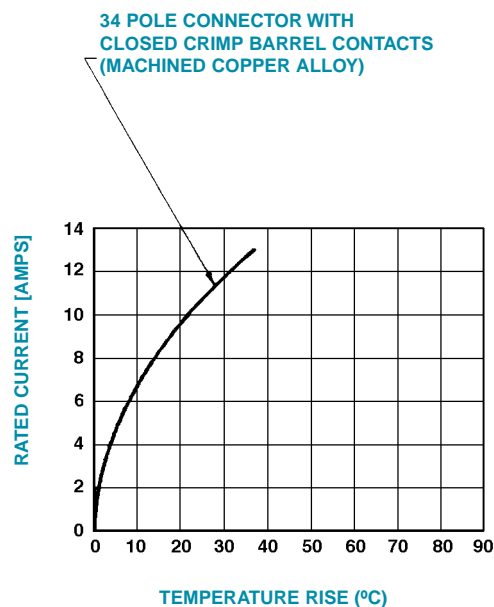
CURRENT-TEMPERATURE DERATING CURVE

(TESTED PER IEC PUBLICATION 512-3, TEST 5b)



CURVE DEVELOPED USING SIZE 16 CONTACT WITH 16 AWG (1.5 mm²) SIZE WIRE

TEMPERATURE RISE CURVE





Positronic Industries
connectpositronic.com

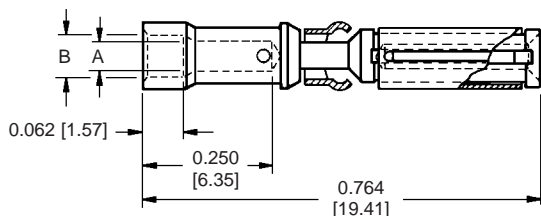
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

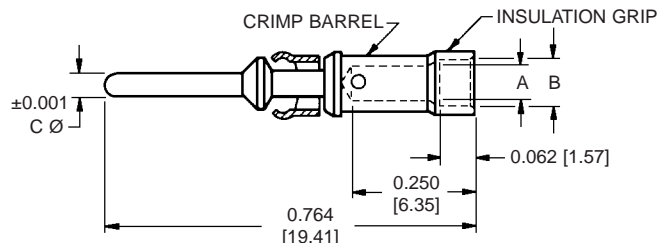
CRIMP CONTACTS

CLOSED CRIMP BARREL WITH INSULATION GRIP (SUPPORT)
PRECISION MACHINED, SOLID COPPER ALLOY

FEMALE CONTACT ("CLOSED ENTRY" DESIGN)



MALE CONTACT



POWER AND SIGNAL CONTACTS

PART NUMBER	WIRE SIZE AWG/[mm ²]	A	B	NOMINAL RATING
FC114N2	14 / 16 [2.5/1.5]	0.081 [2.06]	0.105 [2.67]	13 AMP
FC116N2	16 / 18 [1.5/1.0]	0.067 [1.70]	0.093 [2.36]	13 AMP
FC120N2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	13 AMP
FC124N2	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	13 AMP
FC126N2	26 / 28 / 30 / 32 [0.12-0.03]	0.025 [0.64]	0.046 [1.17]	13 AMP
FC216N2	16 / 18 [1.5/0.8]	0.067 [1.70]	0.093 [2.36]	7.5 AMP
FC220N2	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	7.5 AMP
FC224N2	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	7.5 AMP

PART NUMBER	WIRE SIZE AWG/[mm ²]	A	B	C	NOMINAL RATING
MC114N	14 / 16 [2.5/1.5]	0.081 [2.06]	0.105 [2.67]	0.062 [1.57]	13 AMP
MC116N	16 / 18 [1.5/1.0]	0.067 [1.70]	0.093 [2.36]	0.062 [1.57]	13 AMP
MC120N	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	0.062 [1.57]	13 AMP
MC124N	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	0.062 [1.57]	13 AMP
MC126N	26 / 28 / 30 / 32 [0.12-0.03]	0.025 [0.64]	0.046 [1.17]	0.062 [1.57]	13 AMP
MC216N	16 / 18 [1.5/0.8]	0.067 [1.70]	0.093 [2.36]	0.040 [1.02]	7.5 AMP
MC220N	20 / 22 / 24 [0.5/0.3/0.25]	0.045 [1.14]	0.065 [1.65]	0.040 [1.02]	7.5 AMP
MC224N	24 / 26 / 28 [0.25/0.12/0.08]	0.027 [0.69]	0.055 [1.40]	0.040 [1.02]	7.5 AMP

MATERIAL: COPPER ALLOY FINISH:
GOLD FLASH OVER NICKEL

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR
AND MUST BE ORDERED SEPARATELY

For GMCT crimping information, see page 16 and 17.

Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FC220N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MC120N-50

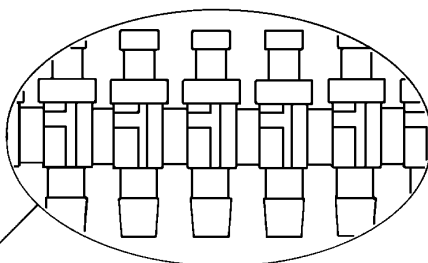
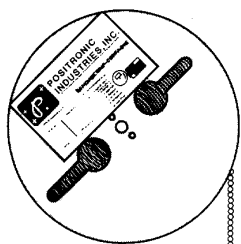


FC120N2



MC120N

REELS FOR AUTOMATIC CRIMP TOOLS



ENLARGED SECTION
OF PLASTIC CONTACT CARRIER

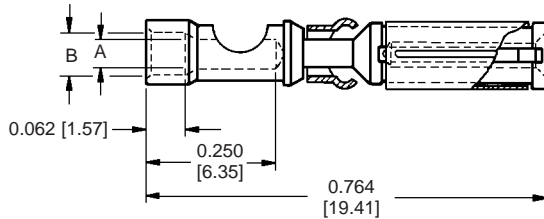
REELED CONTACTS

Contacts may be supplied on plastic carriers, packaged on reels of 2,000 contacts for use with bench mounted automatic strip and crimp tool part number 9550-0 for contact sizes 14 AWG [2.5 mm²] through 24 AWG [0.25 mm²] or part number 9550-1 for contact size 26 AWG [0.12 mm²]. The same type carrier is used for both male and female contacts of the same size and type, and requires no change in crimping tool.

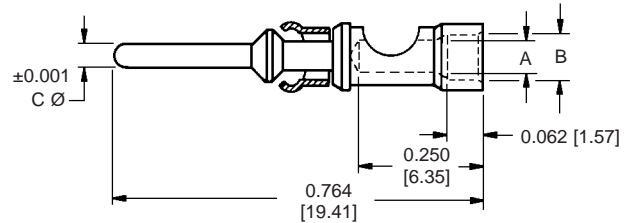
All male and female crimp style contacts can be ordered in reels by adding the letter "R" after the contact part number, such as MC116NR for a male contact and FC120N2R for a female contact. Wire sizes 14 AWG [2.5 mm²] to 28 AWG [0.08 mm²] can be accommodated by the crimping.

SOLDER CUP CONTACTS

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



MALE CONTACT



PART NUMBER	WIRE SIZE MAX.	A	B	NOMINAL RATING
FS114N2	14 AWG [2.5 mm ²]	0.081 [2.06]	0.105 [2.67]	13 AMP
FS116N2	16 AWG [1.5 mm ²]	0.067 [1.70]	0.093 [2.36]	13 AMP
FS120N2	20 AWG [0.5 mm ²]	0.045 [1.14]	0.065 [1.65]	13 AMP
FS124N2	24 AWG [0.25 mm ²]	0.027 [0.69]	0.055 [1.40]	13 AMP
FS216N2	16 AWG [1.5 mm ²]	0.067 [1.70]	0.093 [2.36]	7.5 AMP
FS220N2	20 AWG [0.5 mm ²]	0.045 [1.14]	0.065 [1.65]	7.5 AMP
FS224N2	24 AWG [0.25 mm ²]	0.027 [0.69]	0.055 [1.40]	7.5 AMP

PART NUMBER	WIRE SIZE MAX.	A	B	C	NOMINAL RATING
MS114N	14 AWG [2.5 mm ²]	0.081 [2.06]	0.105 [2.67]	0.062 [1.57]	13 AMP
MS116N	16 AWG [1.5 mm ²]	0.067 [1.70]	0.093 [2.36]	0.062 [1.57]	13 AMP
MS120N	20 AWG [0.5 mm ²]	0.045 [1.14]	0.065 [1.65]	0.062 [1.57]	13 AMP
MS124N	24 AWG [0.25 mm ²]	0.027 [0.69]	0.055 [1.40]	0.062 [1.57]	13 AMP
MS216N	16 AWG [1.5 mm ²]	0.067 [1.70]	0.093 [2.36]	0.040 [1.02]	7.5 AMP
MS220N	20 AWG [0.5 mm ²]	0.045 [1.14]	0.065 [1.65]	0.040 [1.02]	7.5 AMP
MS224N	24 AWG [0.25 mm ²]	0.027 [0.69]	0.055 [1.40]	0.040 [1.02]	7.5 AMP

MATERIAL: COPPER ALLOY
FINISH: GOLD FLASH OVER NICKEL

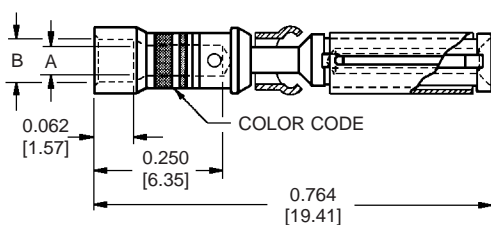
CONTACTS ARE NOT SUPPLIED WITH CONNECTORS
AND MUST BE ORDERED SEPARATELY

Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FS220N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MS120N-50

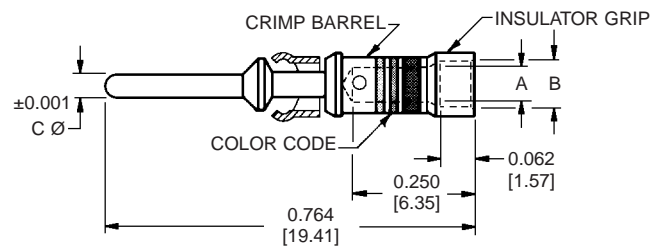
MILITARY CRIMP CONTACTS

QUALIFIED TO SAE AS 39029/34 AND SAE AS 39029/35

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



MALE CONTACT



PART NUMBER	A	B	COLOR CODE
M39029/35-274	0.045 [1.14]	0.068 [1.73]	RED/ VIOLET/ YELLOW
M39029/35-275	0.045 [1.14]	0.068 [1.73]	RED/ VIOLET/ GREEN
M39029/35-276	0.067 [1.70]	0.093 [2.36]	RED/ VIOLET/ BLUE

PART NUMBER	A	B	C	COLOR CODE
M39029/34-271	0.045 [1.14]	0.068 [1.73]	0.040 [1.02]	RED/ VIOLET/ BROWN
M39029/34-272	0.045 [1.14]	0.068 [1.73]	0.062 [1.57]	RED/ VIOLET/ RED
M39029/34-273	0.067 [1.70]	0.093 [2.36]	0.062 [1.57]	RED/ VIOLET/ ORANGE

MATERIAL: COPPER ALLOY
FINISH: 0.000050 [1.27 MICRONS] GOLD OVER COPPER

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 12



Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

MATERIAL: COPPER
ALLOY

FINISH: GOLD FLASH
OVER NICKEL

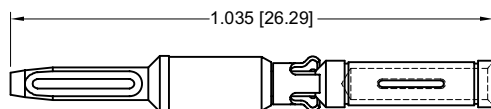
CONTACTS ARE NOT
SUPPLIED WITH
CONNECTORS AND
MUST BE ORDERED
SEPARATELY.

SEE PAGE 7 FOR PRINTED
BOARD CONTACT HOLE
POSITIONS.

COMPLIANT TERMINATION PRESS-FIT CONTACTS

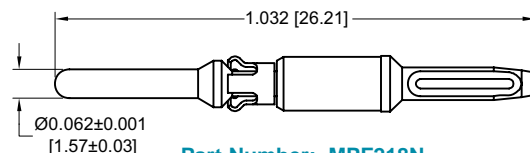
PRECISION MACHINED, COPPER ALLOY

FEMALE CONTACT "CLOSED ENTRY" DESIGN



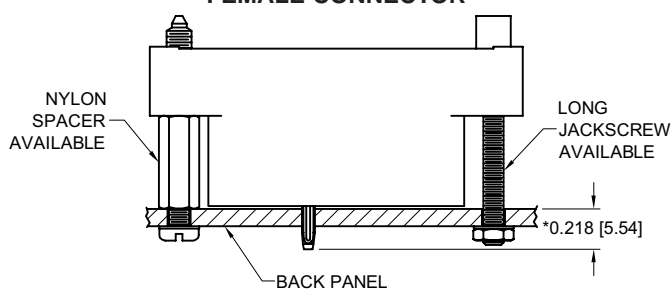
Part Number: FPF218N2

MALE CONTACT

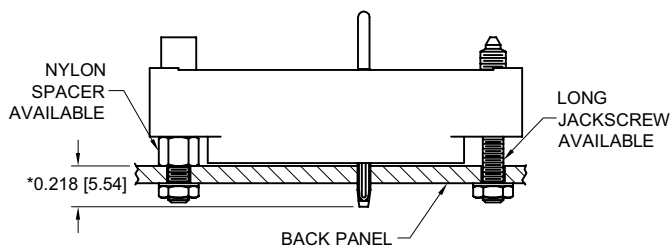


Part Number: MPF218N

FEMALE CONNECTOR



MALE CONNECTOR



Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel.
Example: FPF218N2-14
add -50 for 0.000050 [1.27 microns] gold over copper.
Example: MPF218N-50

CONSULT TECHNICAL SALES FOR PRESS-FIT INSTALLATION TOOL.

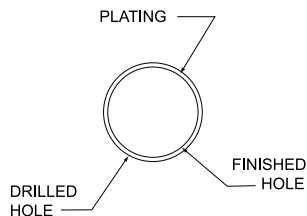
CONSULT TECHNICAL SALES FOR PART NUMBERS FOR THE LONG JACKSCREW
OR NYLON SPACER.

*ADDITIONAL CONTACT EXTENSION LENGTHS AVAILABLE.

CONSULT TECHNICAL SALES FOR AVAILABILITY OF SOLID PRESS-FIT CONTACTS.

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

Traditionally, tin-lead has been a popular plating for PBC holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.



PRESS-FIT CONTACT HOLE

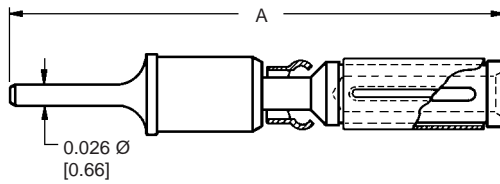
Note: For PCB plating
compositions not shown,
consult Technical Sales.

BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	16 BI-SPRING	$\varnothing 0.069 \pm 0.001$ [$\varnothing 1.750 \pm 0.025$]	0.0006 [15 μ] minimum solder over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	16 BI-SPRING	$\varnothing 0.069 \pm 0.001$ [$\varnothing 1.750 \pm 0.025$]	0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
IMMERSION TIN PCB	16 BI-SPRING	$\varnothing 0.069 \pm 0.001$ [$\varnothing 1.750 \pm 0.025$]	0.000033 \pm 0.000006 [0.85 \pm 0.15 μ] immersion tin over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
IMMERSION SILVER PCB	16 BI-SPRING	$\varnothing 0.069 \pm 0.001$ [$\varnothing 1.750 \pm 0.025$]	0.000013 \pm 0.000007 [0.34 \pm 0.17 μ] immersion silver over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	16 BI-SPRING	$\varnothing 0.069 \pm 0.001$ [$\varnothing 1.750 \pm 0.025$]	0.000002 [0.05 μ] min. immersion gold over 0.000177 \pm 0.000059 [4.5 \pm 1.5 μ] electroless nickel per IPC-4552 over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]

STRAIGHT SOLDER CONTACTS

PRECISION MACHINED, SOLID COPPER ALLOY

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MATERIAL: COPPER ALLOY
FINISH: GOLD FLASH OVER NICKEL

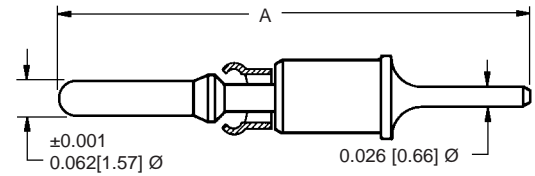
PART NUMBER	A	B
FDS125N2	0.950 [24.13]	0.125 [3.18]
FDS156N2	0.981 [24.92]	0.156 [3.96]
FDS187N2	1.012 [25.70]	0.187 [4.75]

CONSULT TECHNICAL SALES FOR
CONTACTS OF DIFFERENT
LENGTHS AND TAIL DIAMETERS

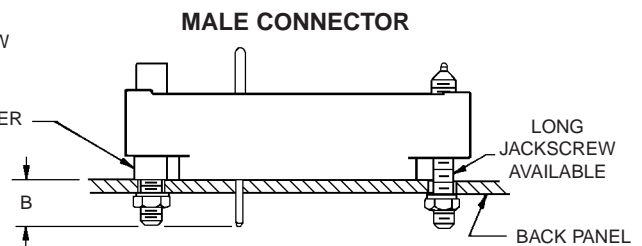
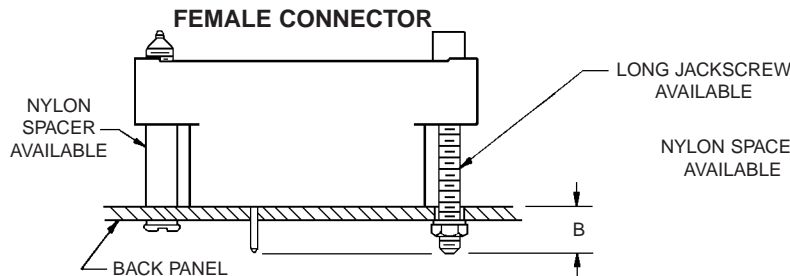
UNLESS SPECIFIED OTHERWISE,
STRAIGHT SOLDER CONTACTS ARE
NOT SUPPLIED WITH CONNECTORS
AND MUST BE ORDERED SEPARATELY

CONTACTS MAY BE INSTALLED IN
CONNECTOR TO CUSTOMER ORDER

MALE CONTACT



PART NUMBER	A	B
MDS125N	0.950 [24.13]	0.125 [3.18]
MDS156N	0.981 [24.92]	0.156 [3.96]
MDS187N	1.012 [25.70]	0.187 [4.75]



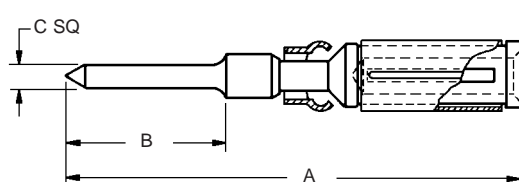
Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FDS156N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MDS187N-50

CONSULT TECHNICAL SALES FOR PART NUMBERS FOR THE
LONG JACKSCREW OR NYLON SPACER

WRAP POST CONTACTS

PRECISION MACHINED, SOLID COPPER ALLOY

FEMALE CONTACT "CLOSED ENTRY" DESIGN

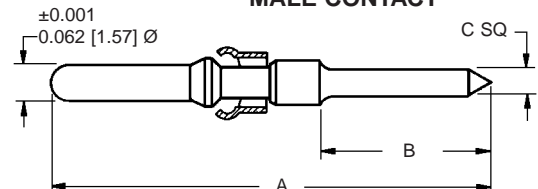


CONTACTS ARE NOT
SUPPLIED WITH
CONNECTOR AND
MUST BE ORDERED
SEPARATELY

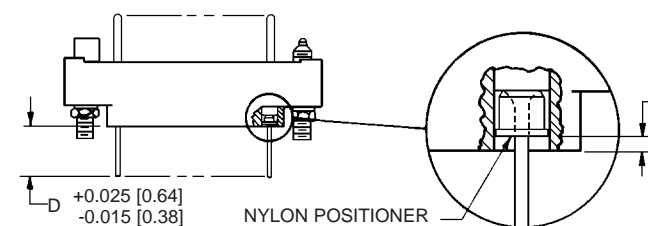
PART NUMBER	A	B	C	D
FW814N2	1.335 [33.91]	0.695 [17.65]	0.025 [0.64]	0.500 [12.70]
FW845N2	1.335 [33.91]	0.695 [17.65]	0.045 [1.14]	0.500 [12.70]

MATERIAL: COPPER ALLOY
FINISH: GOLD FLASH OVER NICKEL

MALE CONTACT



PART NUMBER	A	B	C	D
MW814N	1.335 [33.91]	0.695 [17.65]	0.025 [0.64]	0.500 [12.70]
MW845N	1.335 [33.91]	0.695 [17.65]	0.045 [1.14]	0.500 [12.70]



ORDER POSITIONER 9167-1
WITH THE 0.025 SQ.
CONTACT AND 9167-2 WITH
THE 0.045 SQ. CONTACT

CONSULT TECHNICAL SALES FOR CONTACTS
OF DIFFERENT TAIL LENGTHS
CONSULT TECHNICAL SALES FOR NYLON
POSITIONER INSTALLATION TOOL

Additional plating options available by adding suffix to part number
add -14 for 0.000030 [0.76 microns] gold over nickel. Example: FW814N2-14
add -50 for 0.000050 [1.27 microns] gold over copper. Example: MW845N-50

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 14



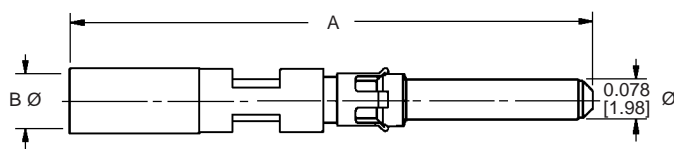
Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

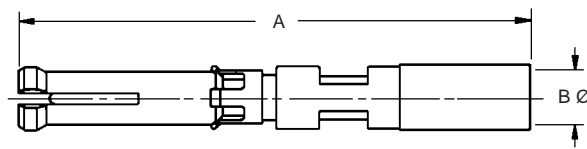
Standard
Density
Rectangular

CRIMP SHIELDED CONTACTS

MALE CONTACT



FEMALE CONTACT



FCS126N2



MCS126N

CONTACT DESIGNATION	PART NUMBER	A	B Ø	CABLE SIZE
MALE	MCS126N	0.993 [25.22]	0.045 [1.14]	RG 178 B/U RG 196 A/U
FEMALE	FCS126N2	0.967 [24.56]	0.045 [1.14]	RG 178 B/U RG 196 A/U
MALE	MCS226N	1.048 [26.62]	0.070 [1.78]	RG 179 B/U RG 316 /U
FEMALE	FCS226N2	1.022 [25.96]	0.070 [1.78]	RG 179 B/U RG 316 /U

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulating Material:	(Dielectric) PCTFE.
Inner Contacts:	Phosphor bronze, 0.000030 inch [0.75 microns] gold over nickel.
Outer Contacts:	Brass and beryllium copper, gold flash over nickel. Other finishes available upon request.

MECHANICAL CHARACTERISTICS:*

Contact Retention In Insulator:	20 lbs. [89N].
Removable Contacts:	Rear insertion, front removable.
Insertion Force Per Contact:	8 oz. [2.2N] per contact maximum.
Durability:	100 cycles minimum.
Vibration:	20g from 10 HZ to 500 HZ.
Shock:	30g - 11 ms.

ELECTRICAL CHARACTERISTICS:

MICRO-COAXIAL CONTACTS	Contact/Wire Combinations			
	126N		226N	
	RG178	RG196	RG179	RG316
Characteristic Impedance (ohms)	50	50	75	50
Frequency Range	0-500 MHz			
VSWR				
0 to 200 MHz	1.25			
200 to 500 MHz	1.70		2.25	
Insertion Loss @ 500 MHz	0.2 dB		1.0 dB	

Dielectric Strength At Sea Level:	600 V rms.
Initial Contact Resistance:	0.012 ohms maximum.
Insulator Resistance:	5 G ohms.

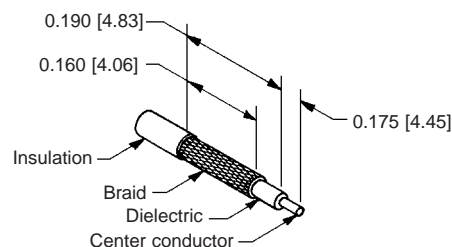
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
---------------------------	------------------



9506-0 CRIMP TOOL

SHIELDED CABLE STRIP LENGTH

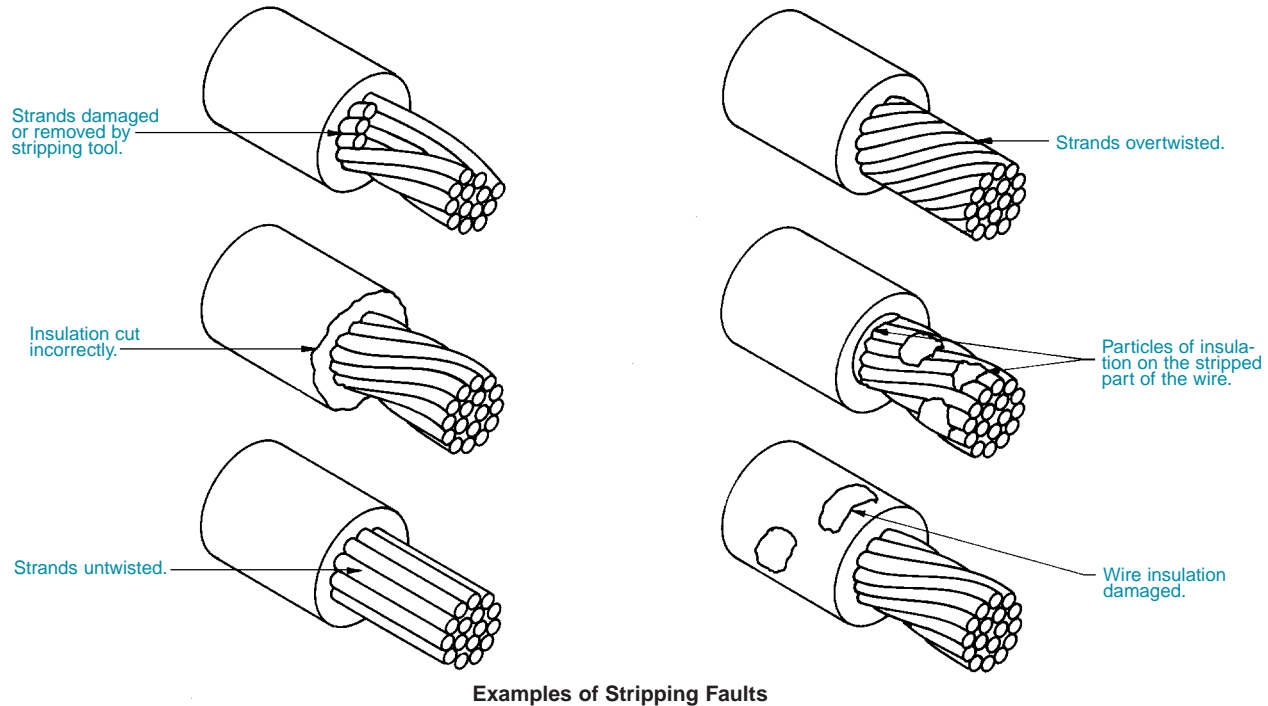
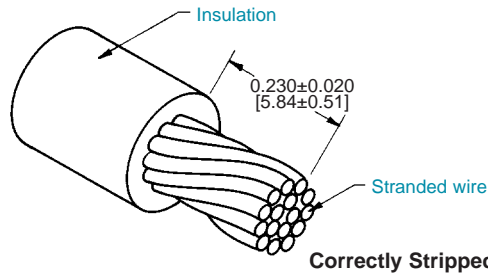


CRIMPING INFORMATION FOR GMCT SERIES CRIMP CONTACTS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

Step 1: Strip wire to indicated length.

- Take Care Not To:
- Damage or remove strands.
 - Untwist or overtwist strands.
 - Leave insulation particles on strands.
 - Damage insulation.



Step 2: Crimp wire to contact.

- For Hand Crimp Tool:
- Place contact into crimping tool.
 - Insert wire into contact.
 - Center contact by slowly closing the crimping tool until the crimp indenters make contact with the crimp barrel.
 - Complete the cycle of the crimping tool in one smooth motion.
 - Remove the crimped contact.

- For Automatic Crimp Tool:
- Insert the wire into the contact, positioned in the crimp tool by the plastic carrier.
 - Depress the activating device of the crimping tool to start the crimping cycle.
 - Remove the crimped contact.



Positronic Industries
connectpositronic.com

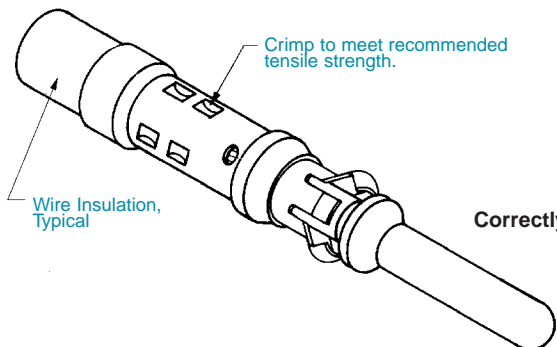
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

CRIMPING INFORMATION FOR GMCT SERIES CRIMP CONTACTS

Step 3: Inspect the crimp.

- For All Tools:
- Strands to be visible through the inspection hole.
 - Strands not to be visible beyond the insulation support.
 - Crimped contact to meet recommended conductor tensile force shown in chart.
 - Check for peeled gold and bent contacts.

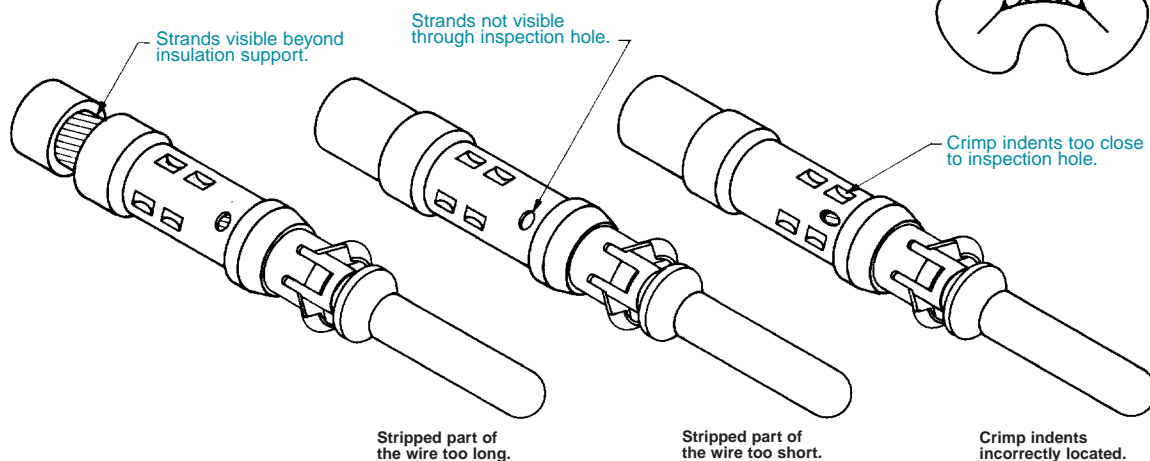


Correctly Crimped Contact

Cross Section
of Correctly Crimped Contact

Stripped wires compressed
for improved conduction.

8 Crimp
Indents



Examples of Crimping Faults

Positronic Recommended Conductor Tensile Strength	
WIRE SIZE AWG/[mm ²]	AXIAL LOAD POUNDS/[N]
14 [2.5]	70 [311]
16 [1.5]	50 [222]
18 [1.0]	28 [125]
20 [0.5]	20 [89]
22 [0.3]	12 [53]
24 [0.25]	8 [36]
26 [0.12]	5 [22]
28 [0.08]	3 [13]

POSITRONIC RECOMMENDED TOOLS		
TOOL TYPE	CONTACT SIZE AWG [mm ²]	TOOL NUMBERS
AUTOMATIC CRIMP TOOL:	14-24 [2.5-0.25]	9550-0-0-0
	26-28 [0.12-0.08]	9550-1-0-0
HAND CRIMP TOOL:	14-24 [2.5-0.25]	9501-0-0-0 WITH 9502-1-0-0 POSITIONER
	26-28 [0.12-0.08]	9507-0-0-0 WITH 9502-18-0-0 POSITIONER
INSERTION TOOL:	N/A	9099-0-0-0
EXTRACTION TOOL:	N/A	9081-0-0-0

Conductor tensile strength values are derived using silver-tin plated copper wires.
Values may change depending upon what type of wire is used.

Standard
Density
Rectangular

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS



Positronic Industries
connectpositronic.com

GMCT SERIES

CYCLE-CONTROLLED STEP ADJUSTABLE HAND CRIMP TOOL

****M22520/1-01**
****Part No. 9501-0-0-0**

Features of this positive ratchet action tool include accommodations for wire sizes 14 AWG [2.5 mm²] through 28 AWG [0.08 mm²] and eight (8) impression crimp on wires and contacts of various compositions. Required for use with this basic tool is the turret head part number 9502-1-0-0.



CONTACT CARRIERS FOR AUTOMATIC CRIMP TOOL

Molded thermoplastic carriers in a continuous belt feed contacts to the crimp station of the automatic crimp tool. They also locate the contacts in respect to the tool's indenters. The carriers are color coded red, blue, yellow, green, orange or natural for contact identification for both MS and proprietary applications.



AUTOMATIC CRIMP TOOL, PNEUMATICALLY ACTUATED

Part No. 9550-0-0-0

This fast cycling automatic crimp tool produces an 8 indent crimp on wire sizes 14 AWG [2.5 mm²] through 28 AWG [0.08 mm²].

*To order, specify part number 9550-0-0-0. Foot control valve is supplied as a standard accessory.



*Specify part number 9550-1-0-0 for FC126N2 and MC126N contacts only for automatic feed crimp tool.

**Specify part number 9507-0-0-0 crimp tool and 9502-18-0-0 positioner for cycle controlled step adjustable hand crimp tool for FC126N2 and MC126N contacts only.



Positronic Industries
connectpositronic.com

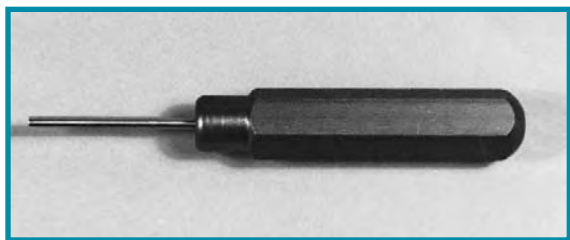
HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

CONTACT INSERTION TOOL

Part No. 9099-0-0-0

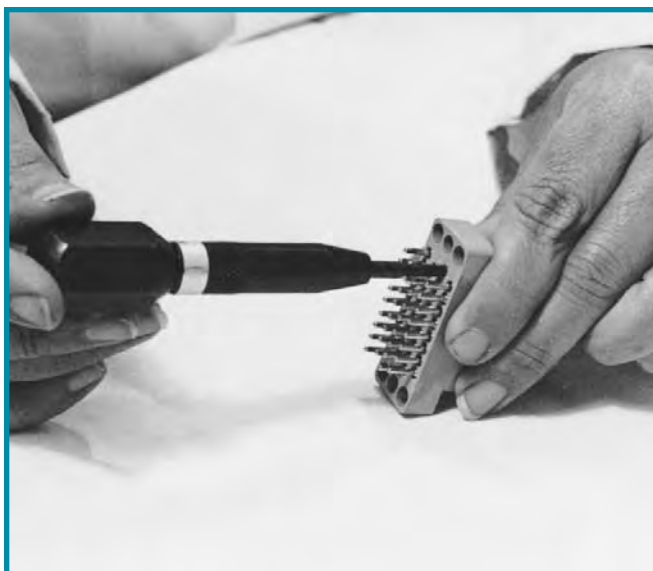
An easy-to-use contact insertion tool for 14 AWG [2.5 mm²] and smaller wires. See photographic demonstration shown below for recommended insertion procedure.



CONTACT EXTRACTION TOOL

Part No. 9081-0-0-0

The spring loaded contact extraction tool simplifies the extraction of removable contacts from the connector insulators. Simply insert the hollow tool tip over the male or female contact from the front face of the insulator, rotate the tool slightly while increasing the pushing force against the butt of the extraction tool. The contact will be released from the insulator retention system and "pop out" of the rear face of the insulator. See photo below for recommended removal procedure.





REMOVABLE CONTACT ORDERING ASSISTANCE CHART

GMCT SERIES CRIMP AND SOLDER CUP CONTACT TERMINATIONS

TERMINATION TYPE	CONTACT FUNCTION	CONTACT SIZE	WIRE SIZE	MALE PART NUMBER	FEMALE PART NUMBER
CRIMP	POWER	16	14 AWG [2.5 mm ²] - 16 AWG [1.5 mm ²]	MC114N	FC114N2
			16 AWG [1.5 mm ²] - 18 AWG [1.0 mm ²]	MC116N	FC116N2
		20	16 AWG [1.5 mm ²] - 18 AWG [1.0 mm ²]	MC216N	FC216N2
	SIGNAL	16	20 AWG [0.5 mm ²] - 24 AWG [0.25 mm ²]	MC120N	FC120N2
			24 AWG [0.25 mm ²] - 28 AWG [0.08 mm ²]	MC124N	FC124N2
			26 AWG [0.12 mm ²] - 28 AWG [0.08 mm ²]	MC126N	FC126N2
		20	20 AWG [0.5 mm ²] - 24 AWG [0.25 mm ²]	MC220N	FC220N2
			24 AWG [0.25 mm ²] - 28 AWG [0.08 mm ²]	MC224N	FC224N2
	MILITARY	16	16 AWG [1.5 mm ²] - 20 AWG [0.5 mm ²]	M39029/34-273	M39029/35-276
			20 AWG [0.5 mm ²] - 24 AWG [0.25 mm ²]	M39029/34-272	M39029/35-275
		20	20 AWG [0.5 mm ²] - 24 AWG [0.25 mm ²]	M39029/34-271	M39029/35-274
	COAX	--	RG 178 B/U, RG 196 A/U	MCS126N	FCS126N2
			RG 179 A/U, RG 316 /U	MCS226N	FCS226N2
SOLDER CUP	POWER	16	14 AWG [2.5 mm ²] max.	MS114N	FS114N2
			16 AWG [1.5 mm ²] max.	MS116N	FS116N2
		20	16 AWG [1.5 mm ²] max.	MS216N	FS216N2
	SIGNAL	16	20 AWG [0.5 mm ²] max.	MS120N	FS120N2
			24 AWG [0.25 mm ²] max.	MS124N	FS124N2
		20	20 AWG [0.5 mm ²] max.	MS220N	FS220N2
			24 AWG [0.25 mm ²] max.	MS224N	FS224N2

FOR ORDERING CRIMP CONTACTS ON REELS, ADD R TO PART NUMBER.
EXAMPLES: MC114NR OR FC114N2R.

GMCT SERIES PRINTED BOARD MOUNT CONTACT TERMINATIONS

TERMINATION TYPE	CONTACT SIZE	USABLE TERMINATION LENGTH	TERMINATION DIMENSION	MALE PART NUMBER	FEMALE PART NUMBER
STRAIGHT	16	0.125 [3.18]	0.026 Ø [0.66]	MDS125N	FDS125N2
		0.156 [3.96]	0.026 Ø [0.66]	MDS156N	FDS156N2
		0.187 [4.75]	0.026 Ø [0.66]	MDS187N	FDS187N2
WRAP POST	16	0.695 [17.65]	0.025 SQUARE [0.64]	MW814N	FW814N2
		0.695 [17.65]	0.045 SQUARE [1.14]	MW845N	FW845N2
COMPLIANT PRESS FIT	16	0.218 [5.54]		MPF218N	FPF218N2



Positronic Industries
.connectpositronic.com

HEAVY-DUTY RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

Standard
Density
Rectangular

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	GMCT	34	F	0	0	R	A	Z	0	/AA	
STEP 1 - BASIC SERIES GMCT Series											STEP 11 - SPECIAL OPTIONS CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS
STEP 2 - CONNECTOR VARIANTS 9, 14, 18, 20, 26, 34, 41, 42, 50, 60, 66, 75, 104											STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS)
STEP 3 - CONNECTOR GENDER M - Male Insulator F - Female Insulator											
STEP 4 - CONTACT TERMINATION TYPE All Female contacts "closed entry" design. 0 - Contacts to be ordered separately, see Contact ordering charts.											*STEP 9 - ADDITIONAL FEATURES B - For black anodized aluminum parts. C - Set screw option, offered on the E, EL and E1. R - For yellow chromate coating on aluminum parts. V - Lock tab, offered on 9, 14, 18, 20, 26, 34, 41 and 42 variants. VL - Lock lever, offered on 9, 14, 18, 20, 26, 34, 41 and 42 variants. FB - Floating bushings for mounting plate. 0 - If no additional options are required.
*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM G - Polarizing grounding guides. N - Polarizing guides. NSS - Stainless steel polarizing guides. T - Fixed jackscrews. E - Short turnable jackscrews, offered with set screw option. EL - Long turnable jackscrews, offered with set screw option. E1 - Turnable jackscrews used on 9, 14, 18, 20, 26 and 41 variant hoods, offered with set screw option. 0 - If no polarizing guides or jackscrews are required. Also, use "0" if ordering hoods equipped with jackscrews, for variants 34, 42, 50, 60, 66, 75 and 104, see STEP 8.											
*STEP 6 - SHELLS AND MOUNTING PLATES P - Male shell, not available on 41 variant. R - Female shell, not available on 41 variant. H - Mounting plate, not available on 41 variant. W - Male shell with mounting plate. U - Female shell with mounting plate. 0 - If no shells or mounting plates are required.											*STEP 8 - CABLE ADAPTERS (HOODS) J - Top opening hood (formed), not offered on 60, 66 and 104 variants. L - Side opening hood (formed), not offered on 60, 66 and 104 variants. Q - Top opening hood (drawn), offered on 60, 66 and 104 variants. S - Side opening hood (drawn), offered on 60, 66 and 104 variants. Y - Top opening hood (formed), equipped with stainless steel jackscrew system, offered on 34, 42, 50 and 75 variants. I - Side opening hood (formed), equipped with stainless steel jackscrew system, offered on 34, 42, 50 and 75 variants. Z - Top opening hood (drawn), equipped with stainless steel jackscrew system, offered on 34, 50, 60, 66, 75 and 104 variants. V - Side opening hood (drawn), equipped with stainless steel jackscrew system, offered on 34, 50, 60, 66, 75 and 104 variants. 0 - If no hoods are required.
*STEP 7 - POLARIZATION POSITIONS OF SHELLS Select letter to designate position of male pin and female slot for polarization system. A, B, C, D, E, F, G 0 - If no polarization is required or if no shells are required.											

***NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 9, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 51-66.

Standard
Density
Rectangular

HEAVY-DUTY RECTANGULAR PRINTED BOARD CONNECTORS WITH STRAIGHT SOLDER CONTACTS



Positronic Industries
connectpositronic.com

Size 16 Contacts
Conforms to
MIL-DTL-28748
IEC Publication 807-1

U.L. Recognized,
File #E49351

Telecommunication
U.L. File #E140980



GAP SERIES

GAP Series connectors are heavy-duty, multi-pole, low profile, high reliability connectors. Contacts are male only with 0.062 inch [1.57mm] diameters, rated to 7.5 amperes per contact. Termination style is straight solder printed board mount. GAP Series connectors are intermateable with Positronic GMCT Series connectors.

A wide array of mounting, locking and polarizing acces-

series is available for this series. For details, see the Heavy-Duty Rectangular Connector Accessories section.

Due to its printed board mount termination style, and its 0.062 inch [1.57mm] diameter contacts, the GAP Series is ideal for heavy-duty applications found in avionics, medical equipment, telecommunications, instrumentation and process control applications.

GAP SERIES TECHNICAL CHARACTERISTICS

MILITARY SPECIFICATIONS:

Conforms to MIL-DTL-28748.

INTERNATIONAL STANDARDS:

IEC 807-1.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
Fixed Contacts:	Copper alloy with gold flash over nickel. Other finishes available upon request.
Jackscrew System:	Passivated stainless steel.
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Vibration Locks:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Male – Size 16: 0.062 inch [1.57 mm] diameter.
Contact Retention in Insulator:	10 lbs. [44.5N] minimum.
Contact Termination:	Straight printed board mounted.
Locking Systems:	Friction, vibration locks and jackscrews.
Polarization:	Guide pins and guide sockets, and jackscrew system.
Mechanical Operations:	1000 operations per IEC 512-5.
Jackscrews:	Standard threads, 6-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating (maximum):	7.5 amperes limited at contact termination diameter.
Initial Contact Resistance:	0.003 ohms.
Flash over Voltage:	2500 V.AC [rms].
Test Voltage:	1200 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.047 inch [1.19 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	250 V.AC [rms].



**For RoHS options
see page 25.**



Positronic Industries
connectpositronic.com

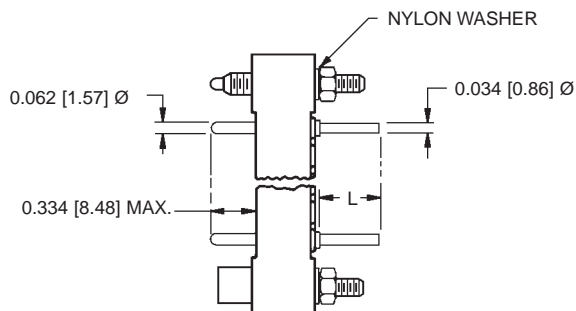
HEAVY-DUTY RECTANGULAR PRINTED BOARD CONNECTORS WITH STRAIGHT SOLDER CONTACTS

Standard
Density
Rectangular

STRAIGHT SOLDER CONTACTS

MALE ONLY

CONTACT MATERIAL: COPPER ALLOY
CONTACT FINISH: GOLD FLASH OVER NICKEL



CONTACT CODE	L
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]
DS6	0.187 [4.75]

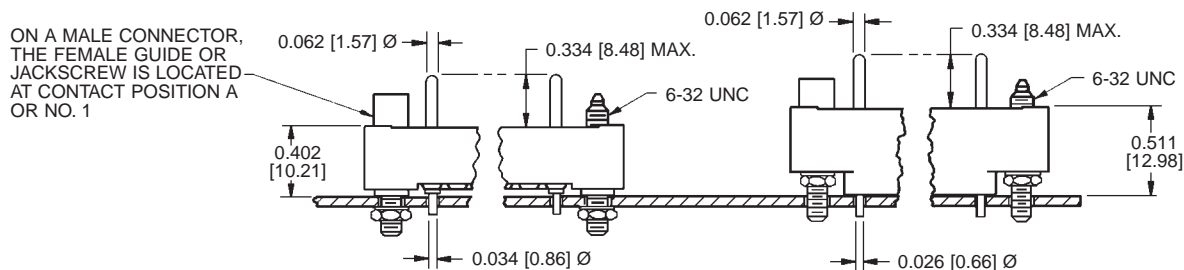
Typical Part Number: GAP34MDS6T0000

SEE GMCT SERIES PRINTED BOARD HOLE
PATTERN PAGE FOR CONNECTOR VARIANT
CONTACT HOLE POSITIONS

SPECIFY CONTACT CODE IN STEP 4 OF
ORDERING INFORMATION FOR DESIRED
LENGTH OF CONTACT TERMINATION

GAP SERIES, LOW PROFILE, PRINTED BOARD MOUNT CONNECTOR

GMCT SERIES, HIGH PROFILE, PRINTED BOARD MOUNT CONNECTOR

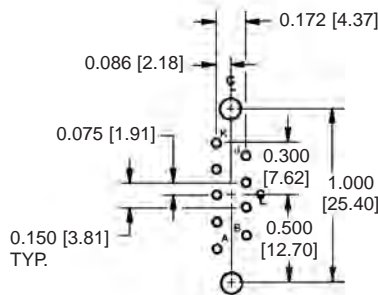


GAP34MDS4T0000

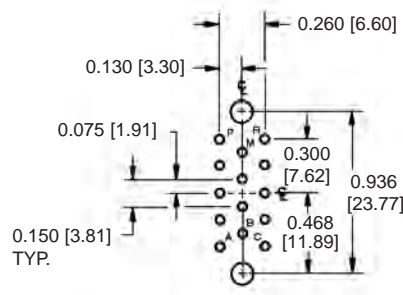
GMCT34M0T0000 WITH
MDS125N CONTACTS INSTALLED

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

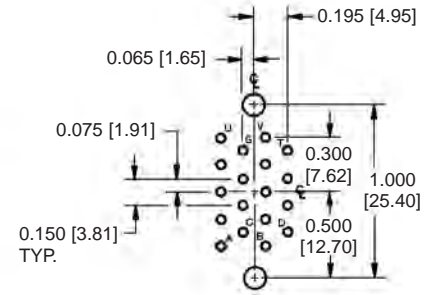
MATING FACE OF MALE CONNECTOR



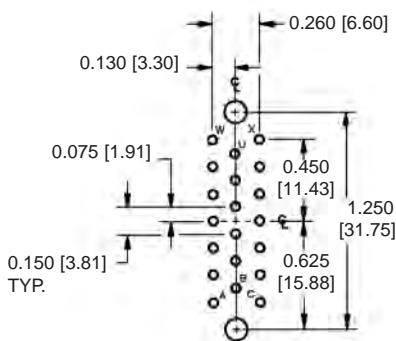
SIZE 9



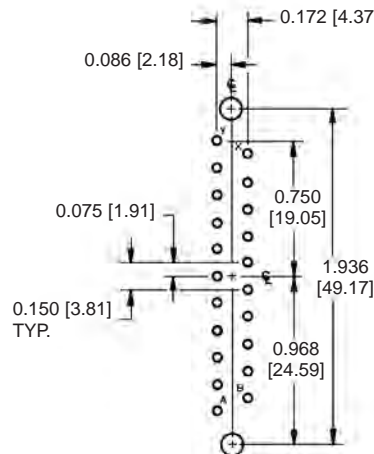
SIZE 14



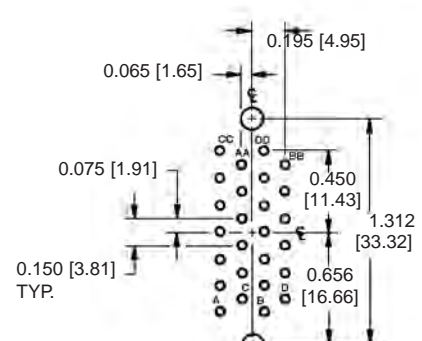
SIZE 18



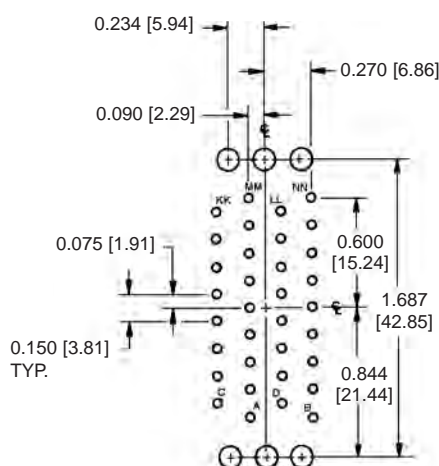
SIZE 20



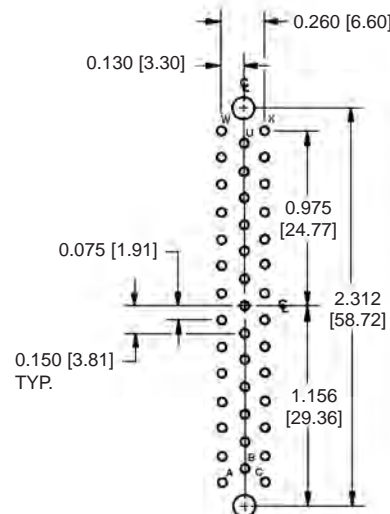
SIZE 21



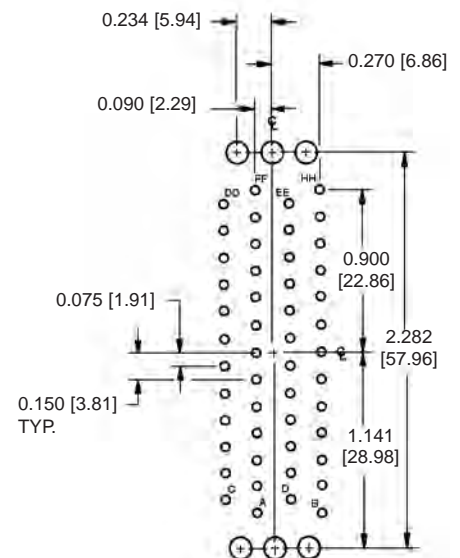
SIZE 26



SIZE 34



SIZE 41



SIZE 50

HOLE IDENTIFICATION FOR REFERENCE ONLY

SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES

SUGGEST 0.052 [1.32] Ø HOLES IN PRINTED BOARD FOR GAP SERIES CONNECTOR CONTACT TERMINATIONS

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
.connectpositronic.com

HEAVY-DUTY RECTANGULAR PRINTED BOARD CONNECTORS WITH STRAIGHT SOLDER CONTACTS

Standard
Density
Rectangular

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	GAP	26	M	DS4	T	0	0	0	0	/AA	-14

STEP 1 - BASIC SERIES

GAP Series
(Male Connector Only).

STEP 2 - CONNECTOR VARIANTS

9, 14, 18, 20, 21, 26, 34, 41, 50

STEP 3 - CONNECTOR GENDER

M - Male insulator only

STEP 4 - CONTACT TERMINATION TYPE

DS3 - Straight solder 0.093 [2.36]
DS4 - Straight solder 0.125 [3.18]
DS5 - Straight solder 0.156 [3.96]
DS6 - Straight solder 0.187 [4.75]

*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM

G - Polarizing grounding guides.
N - Polarizing guides.
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
0 - If no polarizing guides or jackscrews are required.

*STEP 6 - SHELLS

P - Male shell, not available on 41 variant.
R - Female shell, not available on 41 variant.
0 - If no shells or mounting plates are required.

STEP 11 - SPECIAL OPTIONS

-14 - Contacts plated 0.000030 [0.76μ] gold over nickel.
-50 - Contacts plated 0.000050 [1.27μ] gold over copper.

**CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS**

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)



NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: GAP26MDS4T0000

*STEP 9 - ADDITIONAL FEATURES

B - For black anodized aluminum parts.
R - For yellow chromate coating on aluminum parts.
V - Lock tab, offered on 9, 14, 18, 20, 21, 26, 34 and 41 variants.
0 - If no additional options are required.

*STEP 8 - CABLE ADAPTERS (HOODS)

0 - Not offered for GAP series.

*STEP 7 - POLARIZATION POSITIONS OF SHELLS

Select letter to designate position of male pin or female slot for polarization system.

A, B, C, D, E, F, G
0 - If no polarization is required or if no shells are required.

***NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 9, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 51-66.

Standard
Density
Rectangular

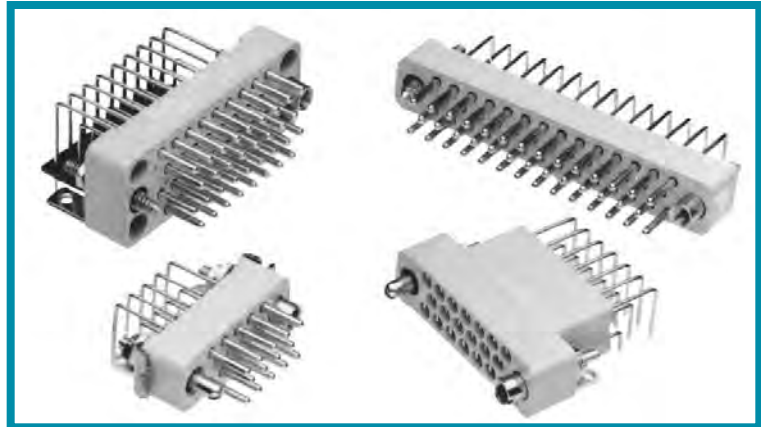
HEAVY-DUTY RECTANGULAR RIGHT ANGLE PRINTED BOARD CONNECTORS



Positronic Industries
connectpositronic.com

Size 16 Contacts
Conforms to
MIL-DTL-28748
IEC Publication 807-1

U.L. Recognized,
File #E49351
Telecommunication
U.L. File #E140980



GAPL Series connectors are heavy-duty, multi-pole, high reliability connectors conforming to MIL-DTL-28748 specifications. Termination style is right angle printed board mount. GAPL Series connectors are intermateable with Positronic GMCT Series connectors.

GAPL Series connectors are offered with a variety of mounting, locking and polarizing accessories. For details, see

the Heavy-Duty Rectangular Connector Accessories section.

GAPL Series connectors are ideal for high reliability, heavy-duty applications which require a printed board mounted connector. They are widely utilized in navigational systems, robotics, mainframe and peripheral computers, medical equipment, telecommunications, instrumentation and process control applications.

GAPL SERIES TECHNICAL CHARACTERISTICS

MILITARY SPECIFICATIONS:

Conforms to MIL-DTL-28748.

INTERNATIONAL STANDARDS:

IEC 807-1.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
Fixed Contacts:	Copper alloy with gold over nickel. Other finishes available upon request.
Jackscrew System:	Passivated stainless steel.
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Vibration Locks:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Male – Size 16: 0.062 inch [1.57 mm] diameter. Female – “Closed entry” design for highest reliability.
Contact Retention in Insulator:	10 lbs. [44.5N] minimum.
Contact Termination:	Right angle printed board mounted.
Locking Systems:	Friction, vibration locks and jackscrews.
Polarization:	Guide pins and guide sockets, and jackscrew system.
Mechanical Operations:	1000 operations per IEC 512-5.
Jackscrews:	Standard threads, 6-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating (maximum):	7.5 amperes limited at contact termination diameter.
Initial Contact Resistance:	0.003 ohms.
Flash over Voltage:	2500 V.AC [rms].
Test Voltage:	1200 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.047 inch [1.19 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	250 V.AC [rms].



**For RoHS options
see page 31.**



Positronic Industries
connectpositronic.com

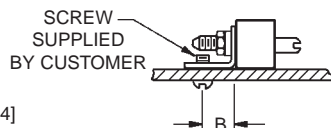
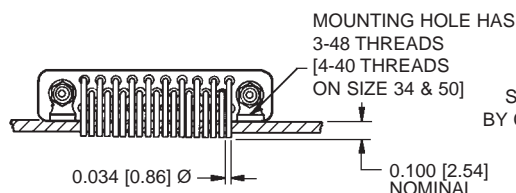
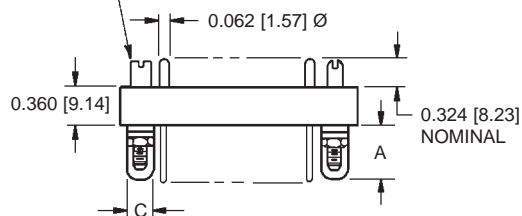
HEAVY-DUTY RECTANGULAR RIGHT ANGLE PRINTED BOARD CONNECTORS

Standard
Density
Rectangular

RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS

MALE CONNECTOR

ON MALE CONNECTOR THE FEMALE GUIDE OR FEMALE JACKSCREW IS LOCATED AT CONTACT POSITION A



CONTACTS NOW SHOWN FOR CLARITY

SIZE	A	B	C
9	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
14	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
18	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
20	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
26	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
34	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]
41	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
50	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]

ADD 0.030 [0.76] TO "B" DIMENSION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR

(V) TAB NOT AVAILABLE ON SIZE 50

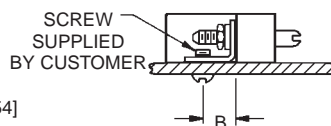
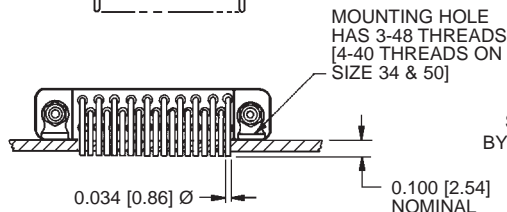
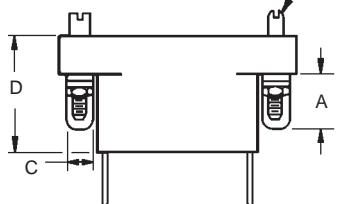
STANDARD POSITION OF INSULATOR REQUIRES CONTACT "A" TO BE ADJACENT TO THE PRINTED BOARD

FOR FACE DIMENSIONS OF INSULATOR VARIANT DESIRED, SEE GM SERIES INSULATOR DIMENSION PAGE

RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS

FEMALE CONNECTOR

ON FEMALE CONNECTOR, THE MALE GUIDE OR JACKSCREW IS LOCATED AT CONTACT POSITION A



CONTACTS NOW SHOWN FOR CLARITY

SIZE	A	B	C	D
9	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.856 [21.74]
14	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
18	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
20	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.856 [21.74]
26	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
34	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]	0.856 [21.74]
41	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
50	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]	0.856 [21.74]

ADD 0.030 [0.76] TO "B" DIMENSION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR

(V) TAB NOT AVAILABLE ON SIZE 50

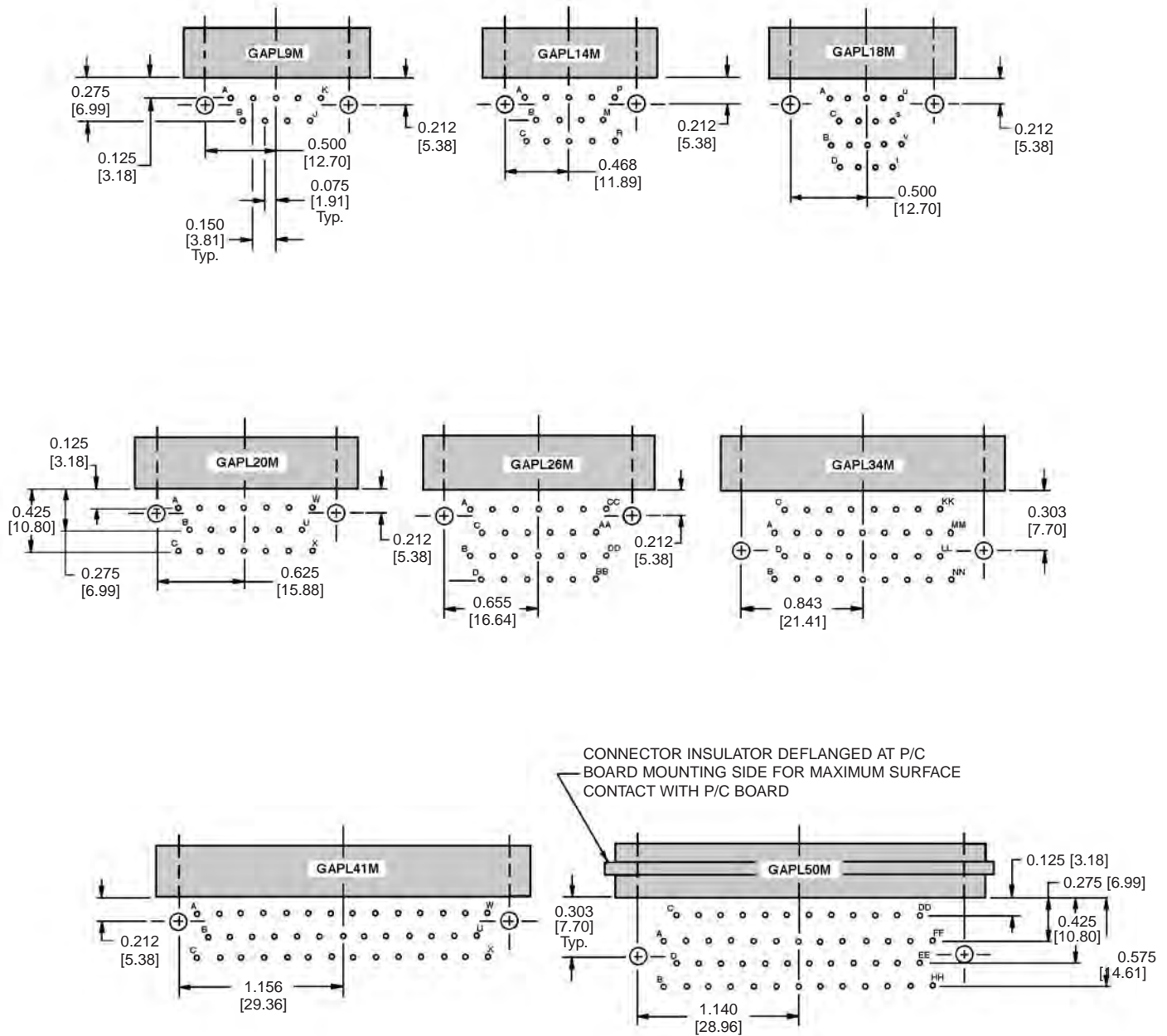
STANDARD POSITION OF INSULATOR REQUIRES CONTACT "A" TO BE ADJACENT TO THE PRINTED BOARD

FOR FACE DIMENSIONS OF INSULATOR VARIANT DESIRED, SEE GMCT SERIES INSULATOR DIMENSION PAGE

CONTACT MATERIAL: COPPER ALLOY

CONTACT FINISH: GOLD FLASH OVER NICKEL

MALE RIGHT ANGLE PRINTED BOARD HOLE PATTERN



SUGGEST 0.109 [2.77] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 9, 14, 18, 20, 26 AND 41

SUGGEST 0.125 [3.18] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 34 AND 50

SUGGEST 0.052 [1.32] Ø HOLES IN PRINTED BOARD FOR CONTACT TERMINATIONS

ADD 0.030 [0.76] TO THE MOUNTING HOLE POSITION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR

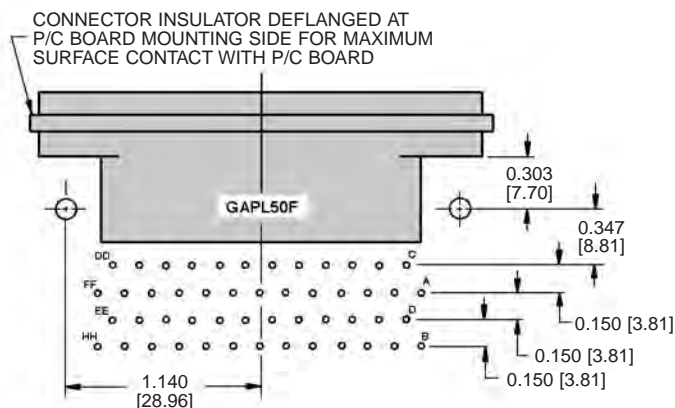
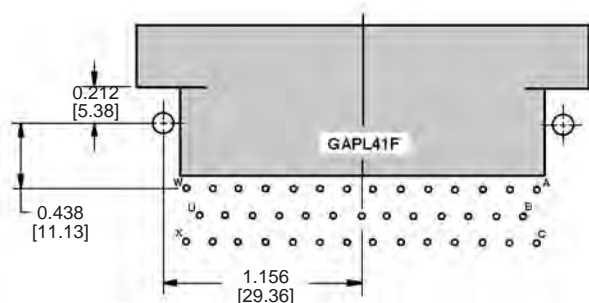
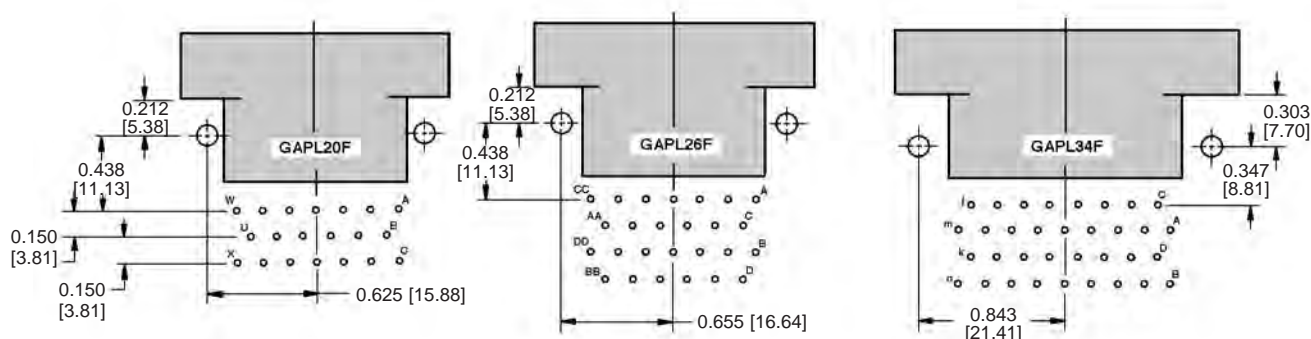
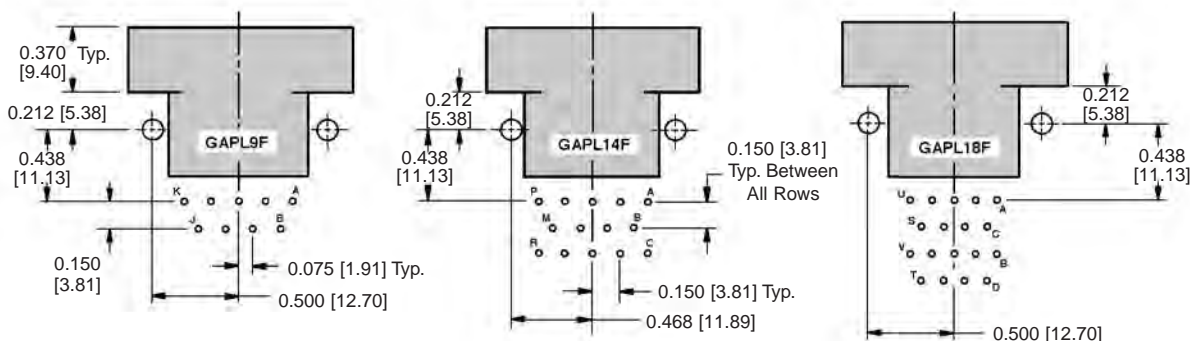


Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR RIGHT ANGLE PRINTED BOARD CONNECTORS

Standard
Density
Rectangular

FEMALE RIGHT ANGLE PRINTED BOARD HOLE PATTERN



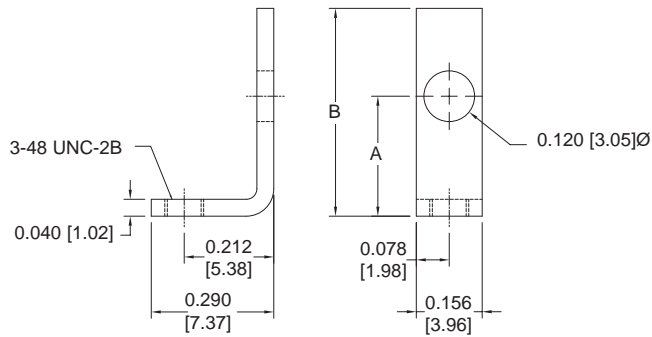
SUGGEST 0.109 [2.77] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 9, 14, 18, 20, 26 AND 41

SUGGEST 0.125 [3.18] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 34 AND 50

SUGGEST 0.052 [1.32] Ø HOLES IN PRINTED BOARD FOR CONTACT TERMINATIONS

ADD 0.030 [0.76] TO THE MOUNTING HOLE POSITION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR

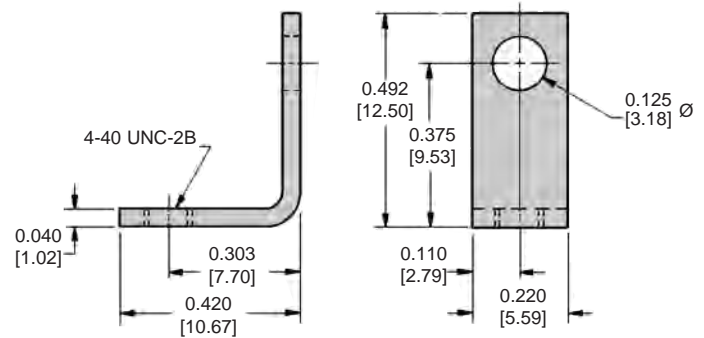
MOUNTING BRACKET (LB)



SIZE	A	B
9	0.188 [4.78]	0.299 [7.59]
14	0.219 [5.56]	0.330 [8.38]
18	0.284 [7.21]	0.395 [10.03]
20	0.219 [5.56]	0.330 [8.38]
26	0.284 [7.21]	0.395 [10.03]
41	0.219 [5.556]	0.330 [8.38]

USE ON CONNECTOR VARIANTS 9, 14, 18, 20, 26 AND 41

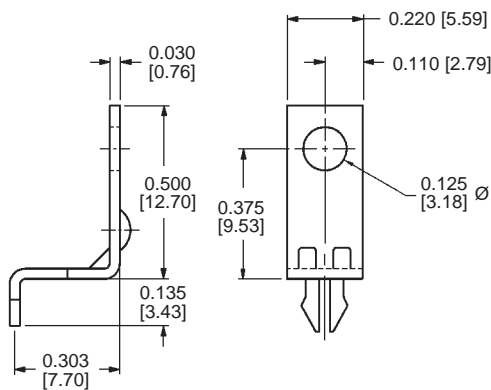
MATERIAL: COPPER ALLOY
FINISH: ZINC PLATE WITH CHROMATE SEAL



USE ON CONNECTOR VARIANTS 34 AND 50

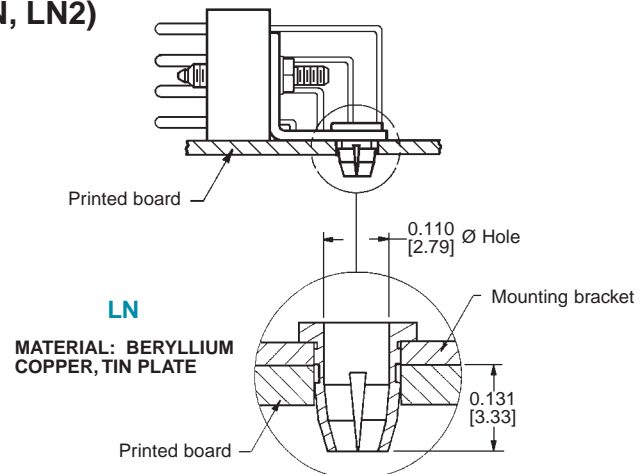
MATERIAL: COPPER ALLOY
FINISH: ZINC PLATE WITH CHROMATE SEAL

PUSH-ON FASTENER FOR RIVETED ON RIGHT ANGLE MOUNTING BRACKETS (LN, LN2)



LN2

MATERIAL: COPPER ALLOY, TIN PLATE
SUGGEST 0.123 ±0.003 [3.12] Ø HOLE FOR MOUNTING
CONNECTOR WITH PUSH-ON FASTENER



LN

MATERIAL: BERYLLIUM
COPPER, TIN PLATE

SAMPLE #	PRINTED BRD. HOLE Ø	INSERTION FORCE (lbs.)	RETENTION FORCE (lbs.)
1	0.120 [3.05]	7 1/4	5 3/4
2	0.123 [3.12]	5 3/4	5 1/2
3	0.125 [3.18]	2 3/4	2 1/2
4	0.128 [3.25]	1 3/4	2 1/4
5	0.126 [3.20] PLATED	1 3/4	2 1/4



Positronic Industries
.connectpositronic.com

HEAVY-DUTY RECTANGULAR RIGHT ANGLE PRINTED BOARD CONNECTORS

Standard
Density
Rectangular

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8		9
EXAMPLE	GAPL	14	M	0	N	V	LB	/AA	—	-14

STEP 1 - BASIC SERIES

GAPL Series.

STEP 2 - CONNECTOR VARIANTS

9, 14, 18, 20, 26, 34, 41, 50

STEP 3 - CONNECTOR GENDER

M - Male Insulator
F - Female Insulator

STEP 4 - CONTACT TERMINATION TYPE

0 - Standard termination.

*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM

G - Polarizing grounding guides.
N - Polarizing guides.
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
0 - If no polarizing guides or jackscrews are required.

STEP 9 - SPECIAL OPTIONS

-14 - Contacts plated 0.000030
[0.76μ] gold over nickel.
-50 - Contacts plated 0.000050
[1.27μ] gold over copper.

**CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS**

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive
2002/95/EC (RoHS)



NOTE: If compliance to environmental
legislation is not required, this step will not be
used. Example: GAPL14M0NVLB

*STEP 7 - MOUNTING BRACKET

LB - Mounting bracket.
LN - Mounting bracket with push-on fastener,
offered on size 34 and 50 only.
LN2 - Mounting bracket with push-on fastener,
offered on size 34 and 50 only.
0 - If no mounting bracket is required.

*STEP 6 - LOCKING DEVICES

V - Lock tab.
VL - Lock lever.
0 - If no locking devices are required.

***NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5
THROUGH 7, SEE HEAVY-DUTY RECTANGULAR
CONNECTOR ACCESSORIES SECTION ON
PAGES 51-66.

Standard
Density
Rectangular

HEAVY-DUTY RECTANGULAR CCITT V.35 INTERFACE CONNECTORS



Positronic Industries
connectpositronic.com

**Size 16 Contacts
Connectors Qualified to
MIL-DTL-28748**

**Contacts Qualified to
SAE AS 39029**

**IEC Publication 807-7
ISO International
Standard 2593**

**U.L. Recognized, File #E49351
Telecommunication U.L. File #E140980**



VMCT and VAPL series connectors are high reliability connectors meeting international standards for CCITT V.35 interfacing. To meet these specifications, VMCT and VAPL series connectors come in 34 position glass filled DAP insulators with 0.062 inch [1.57mm] diameters, size 16 contacts rated to 13 amperes.

VMCT Series connectors are offered in crimp, solder cup, printed board mount, press-fit and wrap post terminations. VAPL Series connectors have right angle printed board mount terminations. VMCT and VAPL series connectors meet performance requirements for MIL-DTL-28748 and SAE AS 39029.

A wide array of mounting, locking, shrouding and polarizing accessories is available for these connectors. For details, see the Heavy-Duty Rectangular Connector Accessories section, GMCT 34 variant.

VMCT and VAPL series connectors were specifically designed to satisfy requirements for V.35 interfacing and high speed data transmission found in the telecommunications, modem and computer industries. These connectors fully comply with the contact and jackscrew system requirements of ISO standard 2593, as revised by ISO TC 97/SC6 N 2599 and 3236.

V.35 SERIES TECHNICAL CHARACTERISTICS

VMCT SERIES CONNECTORS WITH REMOVABLE CONTACTS

MILITARY SPECIFICATIONS:

Qualified to MIL-DTL-28748/3 and MIL-DTL-28748/4. Contacts qualified to SAE AS 39029/34 and SAE AS 39029/35.

INTERNATIONAL STANDARDS:

IEC 807-1 and IEC 807-7.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
Removable Contacts:	Copper alloy with gold flash over nickel. Military contacts plated 0.000050 inch [1.27 microns] gold over copper. Other finishes available upon request.
Hoods, Cable Adapters:	Aluminum with yellow or black anodize. Steel with zinc plate and chromate seal.
Shells:	Aluminum with yellow or black anodize.
Jackscrew System:	Passivated stainless steel.
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Vibration Locks:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator, release from front face of insulator. Size 16 [13 amps.] contacts available. Female contact has "closed entry" design for highest reliability.
Contact Retention in Insulator:	20 lbs. [89N] after 10 cycles of contact insertion extraction.

Contact Termination:

Crimp all wire sizes from 14 AWG [2.5 mm²] through 32 AWG [0.03 mm²]. Solder cup, wrap post, press-fit and printed board mount.

Locking Systems:

Friction, vibration locks and jackscrews.

Polarization:

Polarized guides, polarized shells and jackscrew system.

Mechanical Operations:

1000 operations per IEC 512-5.

Jackscrews:

Standard threads, 6-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	Size 16: 0.062 inch [1.57 mm] diameter – 13 amps nominal.
Initial Contact Resistance:	Size 16 – 0.003 ohms.
Flash over Voltage:	2700 V.AC [rms].
Test Voltage:	Size 16 – 2000 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.080 inch [2.03 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	250 V.AC [rms].



**For RoHS options
see page 36.**

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 32**



Positronic Industries
connectpositronic.com

TECHNICAL INFORMATION AND TYPICAL MATING ASSEMBLY

Standard
Density
Rectangular

VAPL SERIES TECHNICAL CHARACTERISTICS

MILITARY SPECIFICATIONS:

Conforms to MIL-DTL-28748.

INTERNATIONAL STANDARDS:

IEC 807-1 and IEC 807-7.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
Fixed Contacts:	Copper alloy, gold flash over nickel.
Jackscrew System:	Passivated stainless steel.
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Vibration Locks:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Male – Size 16: 0.062 inch [1.57 mm] diameter. Female – “Closed entry” design for highest reliability.
Contact Retention in Insulator:	10 lbs. [44.5N] minimum.
Contact Termination:	Right angle printed board mounted.
Locking Systems:	Friction, vibration locks and jackscrews.
Polarization:	Polarized guides and jackscrew system.
Mechanical Operations:	1000 operations per IEC 512-5.
Jackscrews:	Standard threads, 6-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

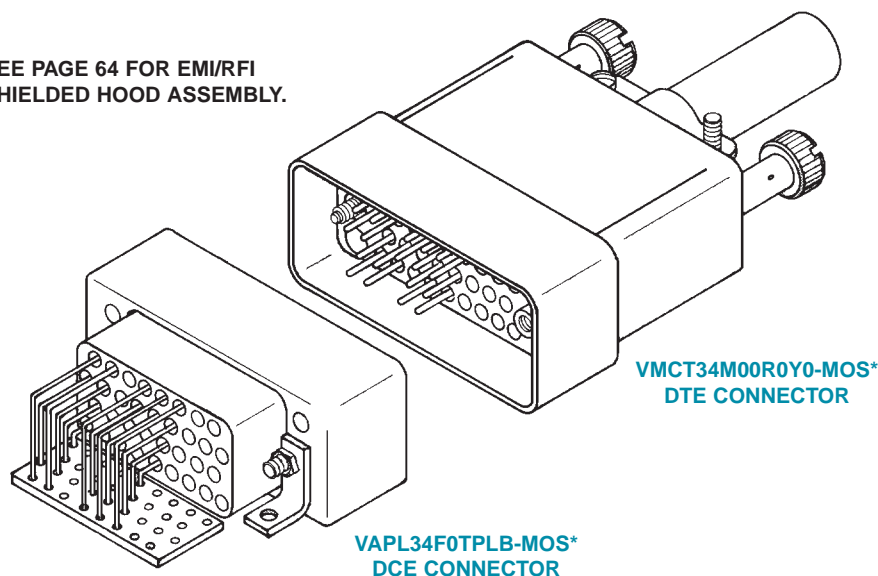
Contact Current Rating:	7.5 amps. limited at contact termination diameter.
Initial Contact Resistance:	0.003 ohms.
Flash over Voltage:	2500 V.AC [rms].
Test Voltage:	1200 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.047 inch [1.19 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	250 V.AC [rms].



For RoHS options
see page 37.

VMCT/VAPL SERIES TYPICAL CONNECTOR MATING ASSEMBLY

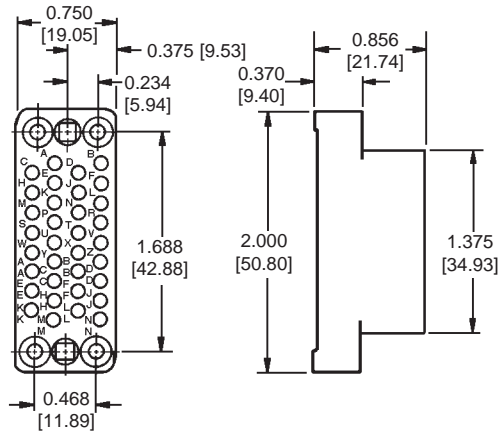
SEE PAGE 64 FOR EMI/RFI
SHIELDED HOOD ASSEMBLY.



* MOS DESIGNATES THE NUMBERING SYSTEM FOR SPECIAL CUSTOMER REQUIREMENTS. SELECTIVE LOADING OF CONTACTS FOR V.35 CONNECTORS IS ACHIEVED THROUGH THIS SYSTEM. PLEASE CONTACT TECHNICAL SALES FOR DETAILS.

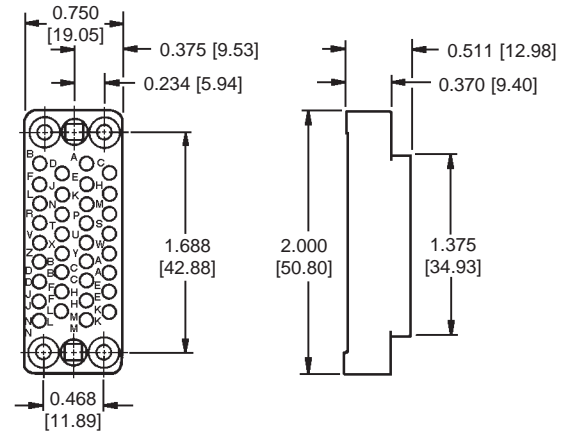
VMCT SERIES CONNECTOR INSULATOR DIMENSIONS

FEMALE CONNECTOR



FOR VMCT [V.35] SERIES CONTACTS,
SEE GMCT SERIES CONTACT SECTION

MALE CONNECTOR

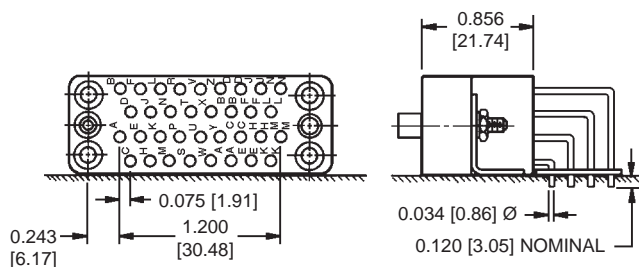


FOR VMCT SERIES CONTACT HOLE POSITIONS,
SEE GMCT SERIES CONTACT HOLE POSITIONS, PAGE 7

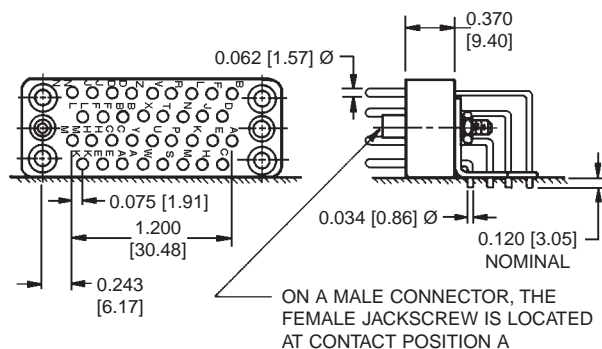
MATERIAL: GLASS FILLED DIALYL PHTHALATE
PER ASTM-D-5948 TYPE SDG-F

VAPL SERIES RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS

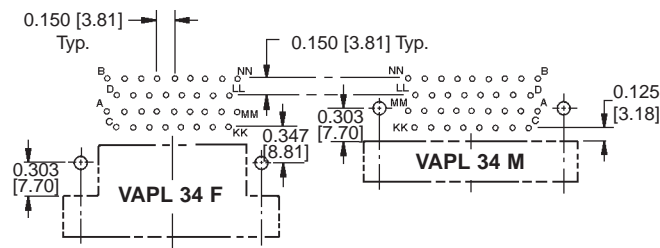
FEMALE CONNECTOR



MALE CONNECTOR



VAPL SERIES RIGHT ANGLE PRINTED BOARD HOLE PATTERN



FOR MOUNTING BRACKET DIMENSIONS SEE GAPL SERIES, GAPL 34 VARIANT, PAGE 30

SUGGEST 0.052 [1.32] Ø HOLES IN PRINTED BOARD FOR CONTACT TERMINATIONS

SUGGEST 0.125 [3.18] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

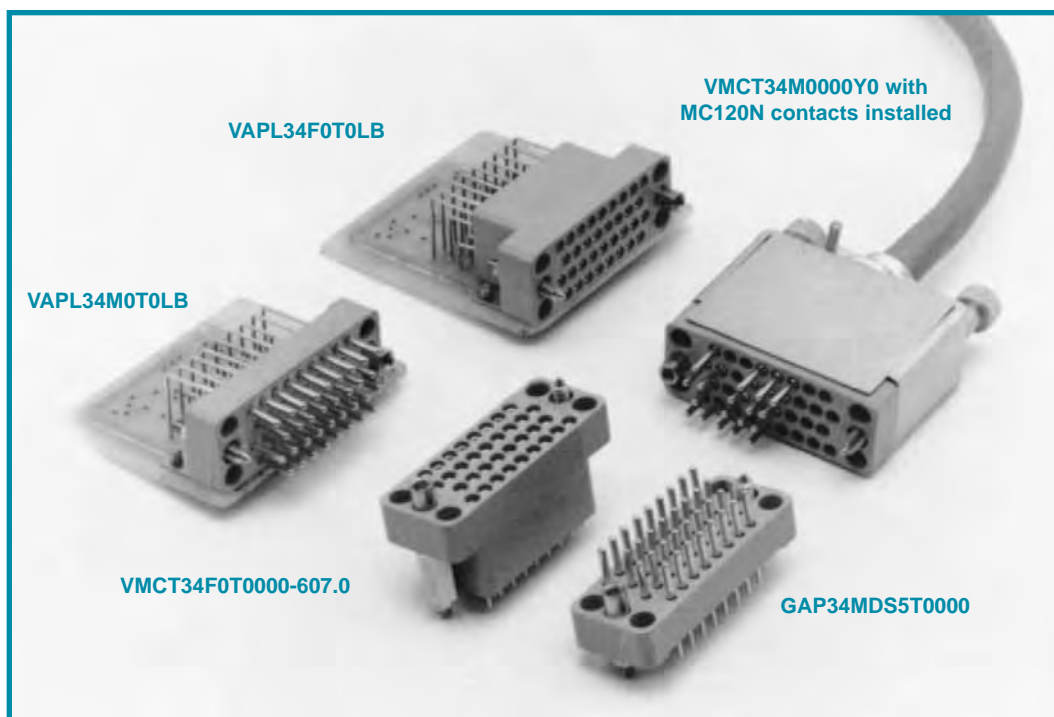
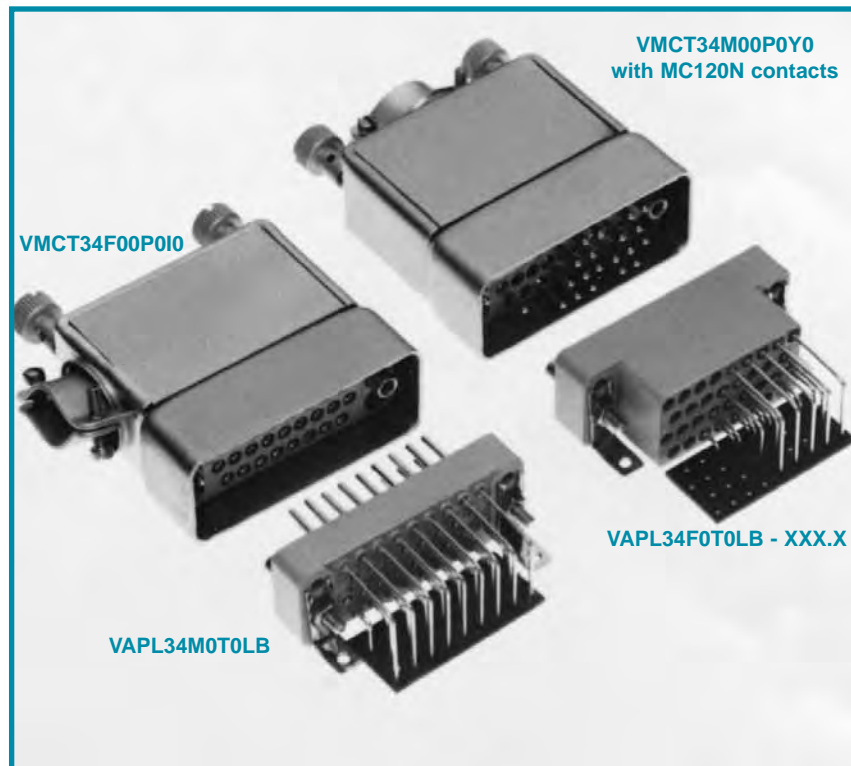
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
.connectpositronic.com

HEAVY-DUTY RECTANGULAR CCITT V.35 INTERFACE CONNECTORS

Standard
Density
Rectangular





ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

VMCT SERIES

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	VMCT	34	F	0	0	R	B	Z	0	/AA	

STEP 1 - BASIC SERIES
VMCT Series (V.35).

STEP 2 - CONNECTOR VARIANTS
34

STEP 3 - CONNECTOR GENDER
M - Male Insulator
F - Female Insulator

STEP 4 - CONTACT TERMINATION TYPE
All Female contacts "closed entry" design.
0 - Contacts to be ordered separately, see contact ordering charts.

***STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM**
G - Polarizing grounding guides.
N - Polarizing guides.
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
E - Short turnable jackscrews, offered with set screw option.
EL - Long turnable jackscrews, offered with set screw option.
0 - If no polarizing guides or jackscrews are required. Also, use "0" if ordering hoods equipped with jackscrews, see STEP 8.

***STEP 6 - SHELLS AND MOUNTING PLATES**
P - Male shell.
R - Female shell.
H - Mounting plate.
W - Male shell with mounting plate.
U - Female shell with mounting plate.
0 - If no shells or mounting plates are required.

STEP 11 - SPECIAL OPTIONS
CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS
/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: VMCT34F00RBZ0

***STEP 9 - ADDITIONAL FEATURES**
B - For black anodized aluminum parts.
C - Set screw option, offered on the E and EL jackscrew systems.
R - For yellow chromate coating on aluminum parts.
V - Lock tab.
VL - Lock lever.
FB - Floating bushings for mounting plate.
0 - If no additional options are required.

***STEP 8 - CABLE ADAPTERS (HOODS)**
J - Top opening hood (formed).
L - Side opening hood (formed).
Y - Top opening hood (formed), equipped with stainless steel jackscrew system.
I - Side opening hood (formed), equipped with stainless steel jackscrew system.
Z - Top opening hood (drawn, side access), equipped with stainless steel jackscrew system.
V - Side opening hood (drawn, side access), equipped with stainless steel jackscrew system.
0 - If no hoods are required.

***STEP 7 - POLARIZATION POSITIONS OF SHELLS**
Select letter to designate position of male pin and female slot for polarization system.
A, B, C, D, E, F, G
0 - If no polarization is required or if no shells are required.

***NOTE:** *NOTE: FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 9, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION, GMCT 34 VARIANT, PAGES 51-66.



Positronic Industries
connectpositronic.com

HEAVY-DUTY RECTANGULAR CCITT V.35 INTERFACE CONNECTORS

Standard
Density
Rectangular

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

VAPL SERIES

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	VAPL	34	F	0	T	0	LB	/AA	-14

STEP 1 - BASIC SERIES

VAPL Series (V.35).

STEP 2 - CONNECTOR VARIANTS

34

STEP 3 - CONNECTOR GENDER

M - Male Insulator
F - Female Insulator

STEP 4 - CONTACT TERMINATION TYPE

0 - Standard termination.

*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM

G - Polarizing grounding guides.
N - Polarizing guides.
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
0 - If no polarizing guides or jackscrews are required.

STEP 9 - SPECIAL OPTIONS

-14 - Contacts plated 0.000030
[0.76μ] gold over nickel.
-50 - Contacts plated 0.000050
[1.27μ] gold over copper.

**CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS**



STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive
2002/95/EC (RoHS)

NOTE: If compliance to environmental
legislation is not required, this step will not be
used. Example: VAPL34F0T0LB

*STEP 7 - MOUNTING BRACKET

LB - Mounting bracket.
LN - Mounting bracket with push-on fastener.
LN2 - Mounting bracket with one-piece bracket
and push-on fastener.
0 - If no mounting bracket is required.

*STEP 6 - LOCKING DEVICES

V - Lock tab.
VL - Lock lever.
0 - If no locking devices are required.

***NOTE:** *NOTE: FOR DETAILS OF ITEMS LISTED
IN STEPS 5 THROUGH 7, SEE HEAVY-DUTY
RECTANGULAR CONNECTOR ACCESSORIES
SECTION, GMCT 34 VARIANT ON PAGES 51-66.

**FOR MOUNTING BRACKET DIMENSIONS,
SEE GAPL SERIES, GAPL 34 VARIANT**

V.35 SERIES

Standard
Density
Rectangular

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS



Positronic Industries
connectpositronic.com

Size 16 Contacts
Environmental
alternative to 34 contact
GAP connectors
IEC Publication 807-6

U.L. Recognized
File #E49351



BAP Series connectors are 34 contact Printed Board Mount Connectors, having contacts with straight solder terminations. BAP connectors are available in male or female contact genders.

The VMCT, VAPL, BAP, and BAPL Series connectors are fully compatible to each series mechanically and electrically in all respects and are in complete compli-

ance to ISO TC97/SC6 and ISO/IEC 2110 PDAD1 requirements. Underwriter Laboratories recognized. Contacts are precision machined of copper alloy and plated gold over nickel. Female contacts feature the high reliability design of the Large Surface Area Contact Mating System.

BAP SERIES TECHNICAL CHARACTERISTICS

INTERNATIONAL STANDARDS:

IEC 807-6. U.L. recognized.

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester.
Fixed Contacts:	Machined copper alloy, gold flash over nickel. Other finishes available upon request.
Polarized Jackscrew System:	Passivated stainless steel.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Male - Size 16: 0.062 inch [1.57 mm] diameter. Female: "Rugged 'Robi-D' Open Entry" design. <i>Contacts may be selectively loaded in designated positions containing from 14 to 22 contacts per ISO TC97/SC6 or other customer suggested configurations.</i>
Contact Retention in Insulator:	10 lbs. [44.5N] minimum.
Contact Termination:	Solder, straight P.C. mount. 0.034 inch [0.86 mm] diameter printed board mount style contact.
Locking Systems:	Polarized fixed jackscrews, standard threads, 6-32 UNC and M3X0.5 metric.
Mechanical Operations:	250 operations per IEC 512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amps, nominal. limited at contact termination diameter.
Initial Contact Resistance:	0.005 ohms.
Flash over Voltage:	2500 V.AC [rms].
Test Voltage:	1200 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.047 inch [1.19 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	250 V.AC [rms].



**For RoHS options
see page 40.**



Positronic Industries
connectpositronic.com

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS

Standard
Density
Rectangular

STRAIGHT PRINTED BOARD MOUNT SOLDER CONNECTORS

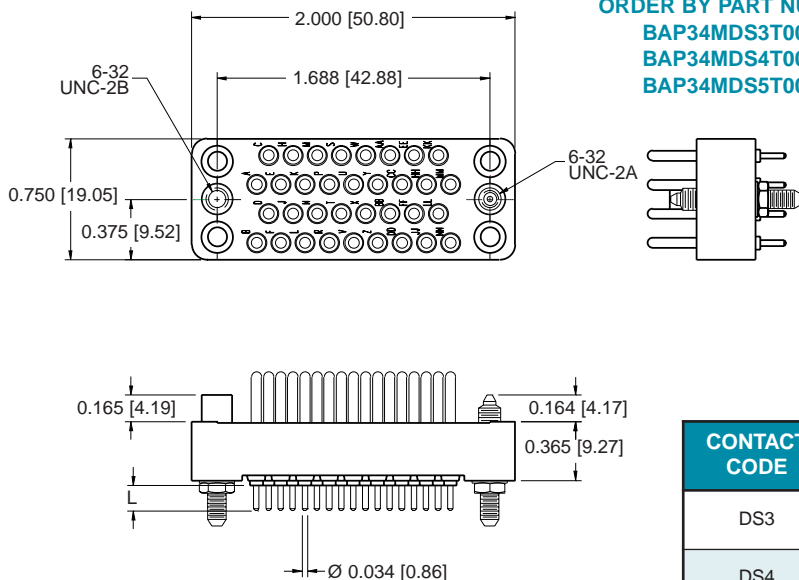
MALE CONNECTOR

ORDER BY PART NUMBER:

BAP34MDS3T0000

BAP34MDS4T0000

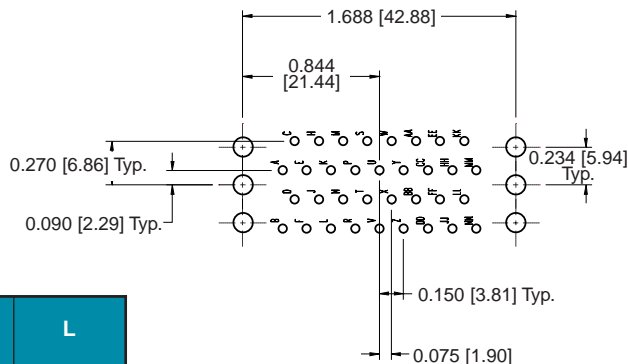
BAP34MDS5T0000



NOTE: Contact positions may be selectively loaded in designated positions containing from 14 to 22 contacts.

CONTACT CODE	L
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]

PRINTED BOARD HOLE PATTERN

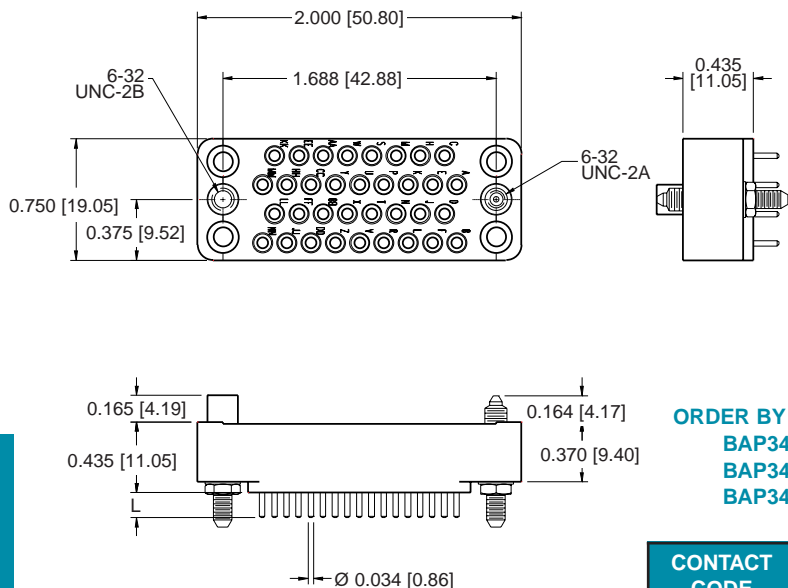


Suggest Ø 0.052 [1.32] holes in printed board for BAP-series connector contact terminations.

Suggest Ø 0.120 [3.05] holes in printed board for connector mounting holes.

STRAIGHT PRINTED BOARD MOUNT SOLDER CONNECTORS

FEMALE CONNECTOR



ORDER BY PART NUMBER:

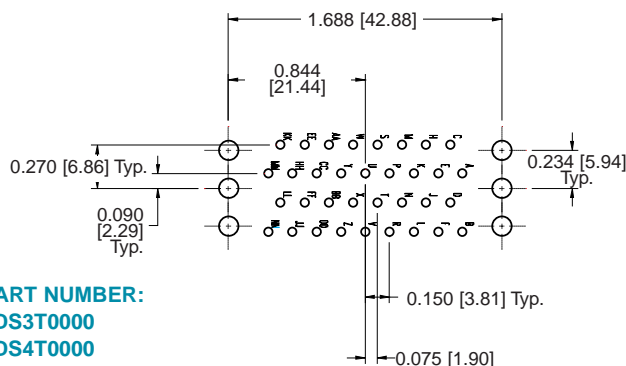
BAP34FDS3T0000

BAP34FDS4T0000

BAP34FDS5T0000

CONTACT CODE	L
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]

PRINTED BOARD HOLE PATTERN



Suggest Ø 0.052 [1.32] holes in printed board for BAP-series connector contact terminations.

Suggest Ø 0.120 [3.05] holes in printed board for connector mounting holes.

NOTE: Contact positions may be selectively loaded in designated positions containing from 14 to 22 contacts.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	BAP	34	M	DS4	T	0	0	0	0	/AA	-14
<div> <div> <p>STEP 1 - BASIC SERIES</p> <p>BAP Series</p> </div> <div> <p>STEP 2 - CONNECTOR VARIANTS</p> <p>34</p> </div> <div> <p>STEP 3 - CONNECTOR GENDER</p> <p>M - Male insulator F - Female insulator</p> </div> <div> <p>STEP 4 - CONTACT TERMINATION TYPE</p> <p>DS3 - Straight solder 0.093 [2.36] DS4 - Straight solder 0.125 [3.18] DS5 - Straight solder 0.156 [3.96]</p> </div> <div> <p>*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM</p> <p>G - Polarizing grounding guides. N - Polarizing guides. NSS - Stainless steel polarizing guides. T - Fixed jackscrews. 0 - If no polarizing guides or jackscrews are required.</p> </div> <div> <p>*STEP 6 - SHELLS</p> <p>P - Male shell. R - Female shell. 0 - If no shells or mounting plates are required.</p> </div> </div> <div> <p>STEP 11 - SPECIAL OPTIONS</p> <p>-14 - Contacts plated 0.000030 [0.76μ] gold over nickel. -50 - Contacts plated 0.000050 [1.27μ] gold over copper.</p> <p>CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS</p> </div> <div> <p>STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS</p> <p>/AA - Compliant per EU Directive 2002/95/EC (RoHS)</p> <p>NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: BAP34MDS4T0000</p> </div> <div> <p>*STEP 9 - ADDITIONAL FEATURES</p> <p>B - For black anodized aluminum parts. R - For yellow chromate coating on aluminum parts. V - Lock tab. 0 - If no additional options are required.</p> </div> <div> <p>*STEP 8 - CABLE ADAPTERS (HOODS)</p> <p>0 - Not offered for BAP series.</p> </div> <div> <p>*STEP 7 - POLARIZATION POSITIONS OF SHELLS</p> <p>Select letter to designate position of male pin or female slot for polarization system.</p> <p>A, B, C, D, E, F, G 0 - If no polarization is required or if no shells are required.</p> </div>											

***NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 9, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 51-66.



Positronic Industries
connectpositronic.com

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS

Standard
Density
Rectangular

Size 16 Contacts

Environmental
alternative to 34 contact
GAP connectors

IEC Publication 807-6



BAPL Series connectors are 34 contact Printed Board Mount Connectors, having contacts with 90° angled solder terminations. BAPL connectors are available in male or female contact genders.

The VMCT, VAPL, BAP, and BAPL Series connectors are fully compatible to each series mechanically and

electrically in all respects. Underwriter Laboratories recognized. Contacts are precision machined of copper alloy and plated gold over nickel. Female contacts feature the high reliability design of the Large Surface Area Contact Mating System.

BAPL SERIES TECHNICAL CHARACTERISTICS

INTERNATIONAL STANDARDS:

IEC 807-6

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester.
Fixed Contacts:	Machined copper alloy, gold flash over nickel. Other finishes available upon request.
Polarized Jackscrew System:	Passivated stainless steel.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Male - Size 16: 0.062 inch [1.57 mm] diameter. Female: "Rugged 'Robi-D' Open Entry" design. <i>Contacts may be selectively loaded in designated positions containing from 14 to 22 contacts per ISO TC97/SC6 or other customer suggested configurations.</i>
Contact Retention in Insulator:	10 lbs. [44.5N] minimum.
Contact Termination:	Solder, right angle P.C. mount 0.035 inch [0.89mm] diameter printed board mount style contact.
Locking Systems:	Polarized fixed jackscrews, standard threads, 6-32 UNC and M3X0.5 metric.
Mechanical Operations:	250 operations per IEC 512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amps, nominal. limited at contact termination diameter.
Initial Contact Resistance:	0.005 ohms.
Flash over Voltage:	2500 V.AC [rms].
Test Voltage:	1200 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.047 inch [1.19 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	250 V.AC [rms].

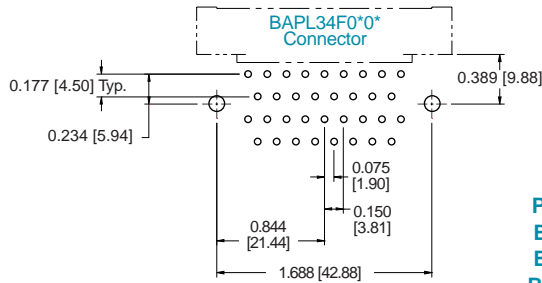


**For RoHS options
see page 44.**

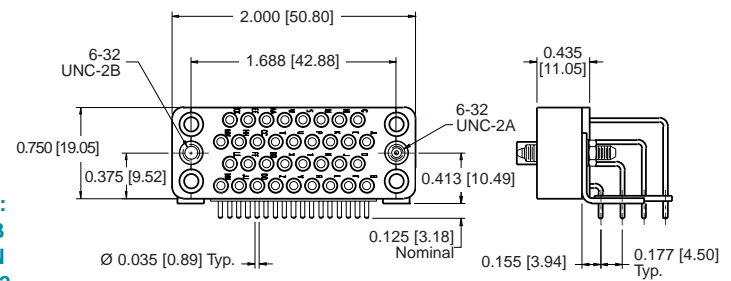
RIGHT ANGLE PRINTED BOARD MOUNT SOLDER CONNECTORS

FEMALE CONNECTOR

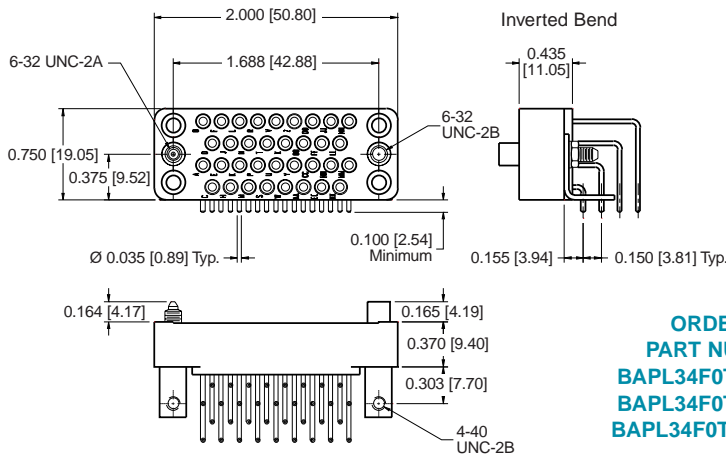
PRINTED BOARD HOLE PATTERN



ORDER BY
PART NUMBER:
BAPL34F0T0LB
BAPL34F0T0LN
BAPL34F0T0LN2

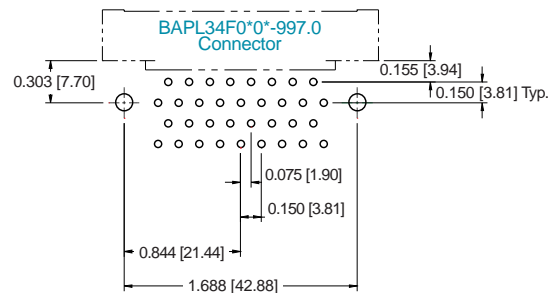


FEMALE CONNECTOR

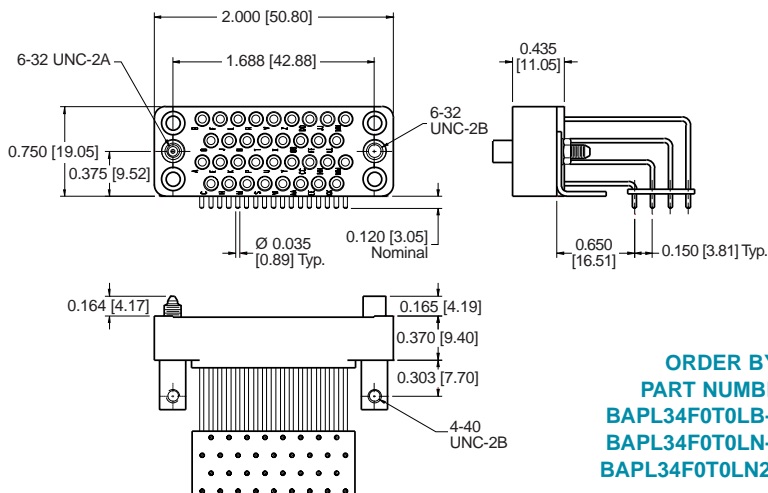


ORDER BY
PART NUMBER:
BAPL34F0T0LB-997.0
BAPL34F0T0LN-997.0
BAPL34F0T0LN2-997.0

PRINTED BOARD HOLE PATTERN

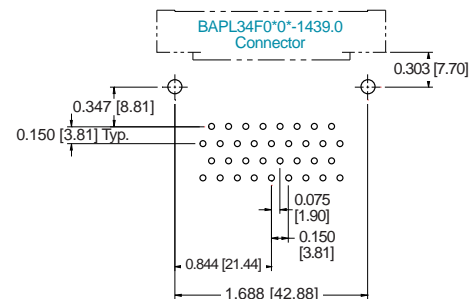


FEMALE CONNECTOR



ORDER BY
PART NUMBER:
BAPL34F0T0LB-1439.0
BAPL34F0T0LN-1439.0
BAPL34F0T0LN2-1439.0

PRINTED BOARD HOLE PATTERN



NOTE: Contact positions may be selectively loaded in designated positions containing from 14 to 22 contacts.

Suggest Ø 0.052 [1.32] holes in printed board for BAPL-series connector contact terminations.

Suggest Ø 0.123±0.003 [3.12 ±0.003] holes for mounting connector with push-on fasteners.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 42



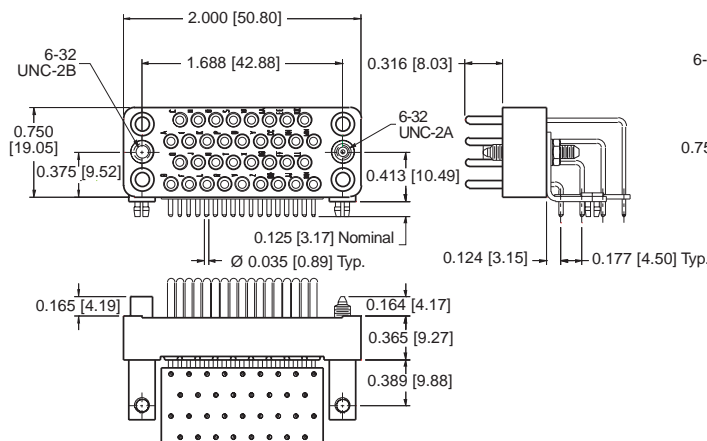
Positronic Industries
connectpositronic.com

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS

Standard
Density
Rectangular

RIGHT ANGLE PRINTED BOARD MOUNT SOLDER CONNECTORS

MALE CONNECTORS

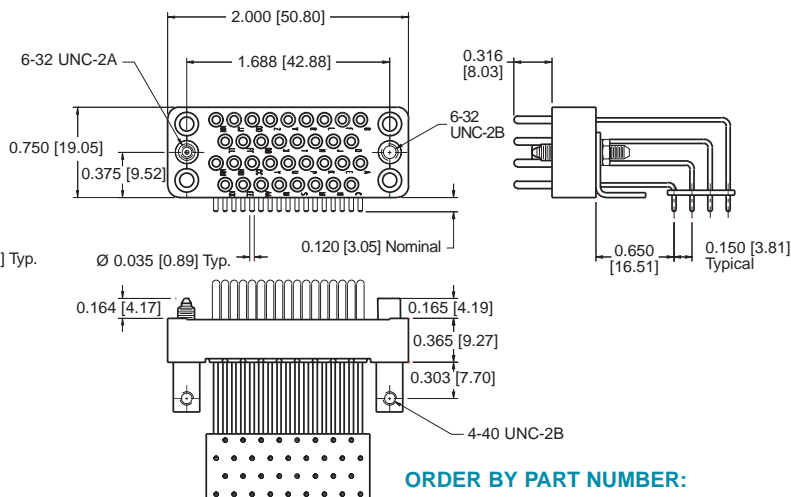


ORDER BY PART NUMBER:

BAPL34M0T0LB

BAPL34M0T0LN

BAPL34M0T0LN2



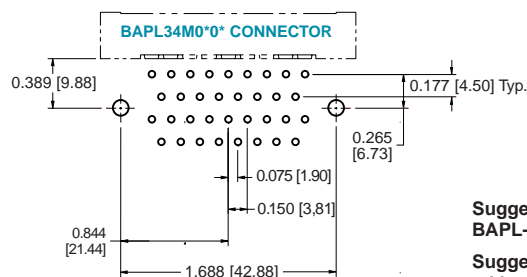
ORDER BY PART NUMBER:

BAPL34M0T0LB-1439.1

BAPL34M0T0LN-1439.1

BAPL34M0T0LN2-1439.1

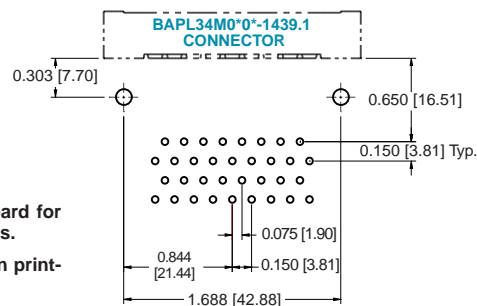
PRINTED BOARD HOLE PATTERNS



NOTE: Contact positions may be selectively loaded in designated positions containing from 14 to 22 contacts.

Suggest $\varnothing 0.052 [1.32]$ holes in printed board for BAPL-series connector contact terminations.

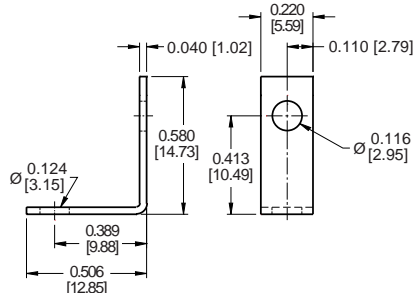
Suggest $\varnothing 0.123 \pm 0.003 [3.12 \pm 0.08]$ holes in printed board for connector mounting holes.



90° MOUNTING BRACKETS AND PUSH-ON FASTENERS (LB, LN, LN2)

This bracket for use with standard BAPL connectors, whose part number contains no MOS number.

ANGLE BRACKET (LB) *

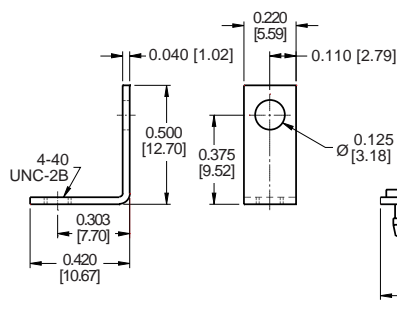


Material: Copper alloy, tin plate.

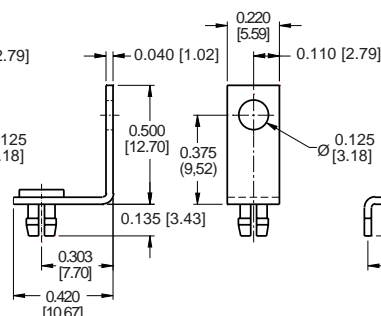
* A push-on fastener mounting option, similar to the LN2 option at right, is also available for the standard BAPL connector. Contact Technical Sales for ordering information.

These brackets for use with any BAPL connectors whose part number ends with the MOS numbers "-997.0", "-1439.0", or "-1439.1" only.

ANGLE BRACKET (LB)

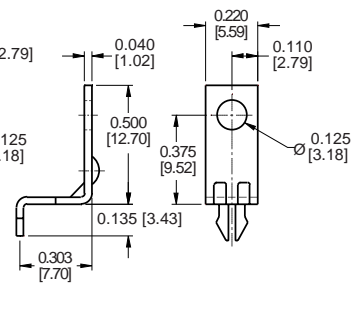


TWO-PIECE ANGLE BRACKET WITH PUSH-ON FASTENER (LN)



Material: Copper alloy, tin plate.

ONE-PIECE ANGLE BRACKET WITH PUSH-ON FASTENER (LN2)*




Suggest $\varnothing 0.123 \pm 0.003 [3.12 \pm 0.08]$ hole for mounting connector with push-on fastener.



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	BAPL	34	F	0	T	O	LB	/AA	-14
STEP 1 - BASIC SERIES BAPL Series.									STEP 9 - SPECIAL OPTIONS -14 - Contacts plated 0.000030 [0.76μ] gold over nickel. -50 - Contacts plated 0.000050 [1.27μ] gold over copper. -997.0 - Allows for 0.150 [3.81] spacing between rows, and to be inverted. Supplied without alignment bar. Female only. -1439.0 - Allows for inverted contacts. Supplied with special length contacts and alignment bar. Female only. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS
STEP 2 - CONNECTOR VARIANTS 34									
STEP 3 - CONNECTOR GENDER M - Male Insulator F - Female Insulator									
STEP 4 - CONTACT TERMINATION TYPE 0 - Standard termination.									
*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM G - Polarizing grounding guides. N - Polarizing guides. NSS - Stainless steel polarizing guides. T - Fixed jackscrews. 0 - If no polarizing guides or jackscrews are required.									
*STEP 6 - LOCKING DEVICES V - Lock tab. VL - Lock lever. 0 - If no locking devices are required.									STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS)
*NOTE: FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 7, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 51-66.									 NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: BAPL34FOTOLB
*STEP 7 - MOUNTING BRACKET LB - Mounting bracket. LN - Mounting bracket with push-on fastener. LN2 - Mounting bracket with push-on fastener. 0 - If no mounting bracket is required.									

FOR MOUNTING BRACKET DIMENSIONS,
SEE GAPL SERIES, GAPL 34 VARIANT



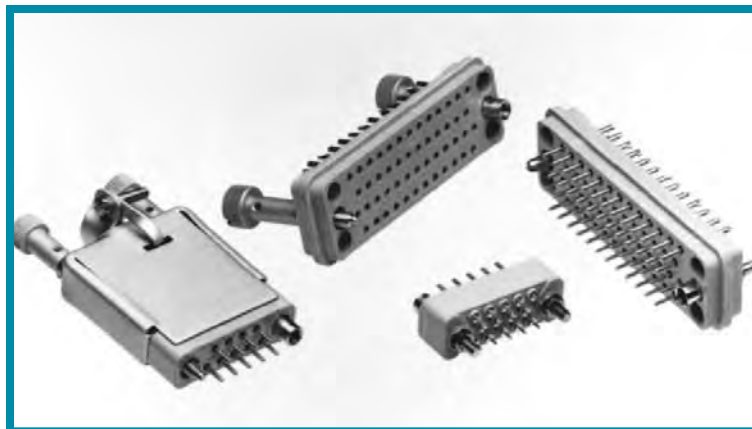
Positronic Industries
connectpositronic.com

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS

Standard
Density
Rectangular

Size 20 Contacts
Qualified to
MIL-DTL-28748
IEC Publication 807-6

U.L. Recognized
File #E49351



GM Series connectors are multi-pole, high reliability connectors qualified to MIL-DTL-28748 specifications. Contacts are 0.040 inch [1.02mm] diameters, rated to 7.5 amperes per contact. Termination styles are solder cup and straight solder printed board mount. Eleven connector variants, seven through 50 poles, are offered.

A wide array of mounting, locking, shrouding and polarizing accessories is available for this series. For details, see the

Heavy-Duty Rectangular Connector Accessories section.

The GM Series is a popular choice of engineers in all areas of electronics and is widely utilized in navigational systems, robotics, mainframe and peripheral computers, medical equipment, telecommunications, instrumentation and process control applications.

GM Series connectors may not be mateable with GMCT Series connectors and contacts, contact Technical Sales.

GM SERIES TECHNICAL CHARACTERISTICS

MILITARY SPECIFICATIONS:

Qualified to MIL-DTL-28748/5 and MIL-DTL-28748/6.

INTERNATIONAL STANDARDS:

IEC 807-6.
U.L. Recognized.

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
Fixed Contacts:	Solder - Copper alloy, gold flash over nickel. Printed Board Mounted - Copper alloy, gold flash over nickel. Military - Copper alloy, 0.000050 inch [1.27 microns] gold over nickel. Other finishes available upon request.
Hoods, Cable Adapters:	Aluminum with yellow or black anodize.
Shells:	Aluminum with yellow or black anodize.
JackscREW System:	Passivated stainless steel.
Polarizing Guides:	Copper alloy with nickel plate or passivated stainless steel.
Vibration Locks:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Male - Size 20: 0.040 inch [1.02 mm ²] diameter. Female - Open entry is standard. "Closed entry" available on solder cup style for high reliability applications.
Contact Retention in Insulator:	10 lbs. [44.5N] minimum.
Contact Termination:	0.046 inch [1.17 mm] internal diameter on solder cup style contact for 20 AWG [0.5 mm ²] wire maximum. 0.025 inch [0.64 mm] diameter printed board mount style contact.
Locking Systems:	Friction, vibration locks and jackscrews.
Polarization:	Polarized guides, polarized shells and jackscrew system.
Mechanical Operations:	With "closed entry" female contacts, 500 operations per IEC 512-5.
JackscREWS:	Standard threads, 6-32 UNC. Metric threads, M3X0.5 available.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating (maximum):	7.5 amps.
Initial Contact Resistance:	0.010 ohms.
Flash over Voltage:	2500 V.AC [rms].
Test Voltage:	1200 V.AC [rms].
Insulation Resistance (minimum):	5 G ohms.
Clearance and Creepage Distance (minimum):	0.047 inch [1.19 mm].
Working Temperature:	-55°C to 125°C.
Working Voltage:	300 V.AC [rms].



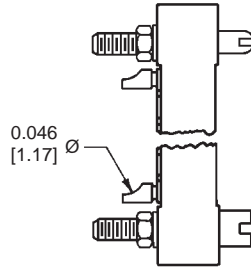
For RoHS options
see page 50.

SOLDER CUP CONTACTS

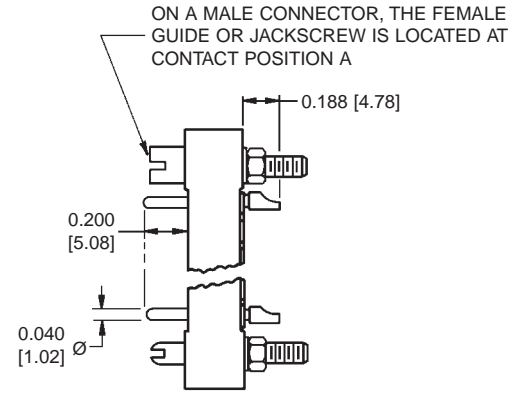
CONTACT MATERIAL: COPPER ALLOY

CONTACT FINISH: GOLD FLASH OVER
NICKEL
"CLOSED ENTRY" FEMALE CONTACT
AVAILABLE

SPECIFY CODE "CE" IN STEP 10 OF
ORDERING INFORMATION



Typical Part Number: GM14FSCN0000

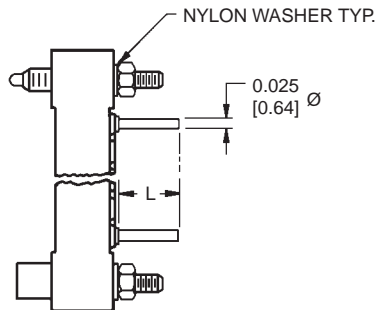


Typical Part Number: GM14MSCN0000

STRAIGHT SOLDER CONTACTS FOR PRINTED BOARD MOUNT

CONTACT MATERIAL: COPPER ALLOY

CONTACT FINISH: GOLD FLASH OVER
NICKEL



Typical Part Number: GM34FDS5T0000

CONTACT CODE	L
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]
DS6	0.187 [4.75]

SEE GM SERIES PRINTED BOARD HOLE PATTERN PAGE FOR
CONNECTOR VARIANT CONTACT HOLE POSITIONS

SPECIFY CONTACT CODE IN STEP 4 OF
ORDERING INFORMATION FOR DESIRED
LENGTH OF CONTACT TERMINATION

TYPICAL MATING ASSEMBLY



GM9FSC0000

GM9MSCE0000



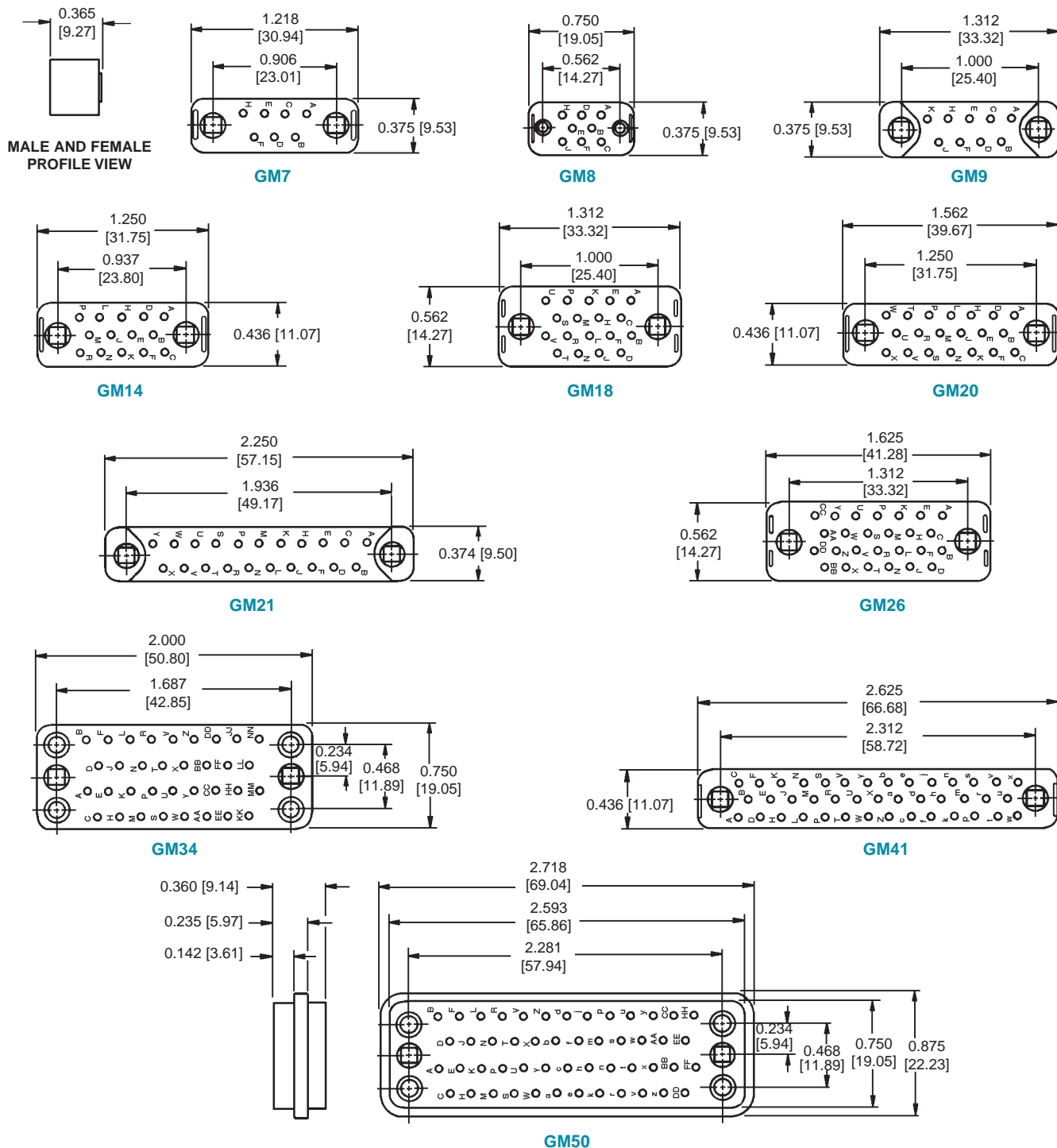
Positronic Industries
connectpositronic.com

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS

Standard
Density
Rectangular

INSULATOR DIMENSIONS

MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR

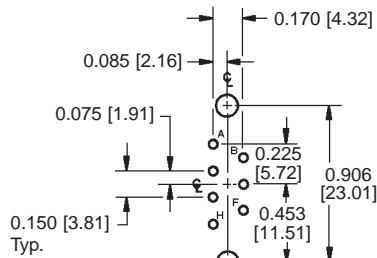


SEE GM SERIES PRINTED BOARD HOLE PATTERN PAGE FOR CONNECTOR
VARIANT CONTACT HOLE POSITIONS

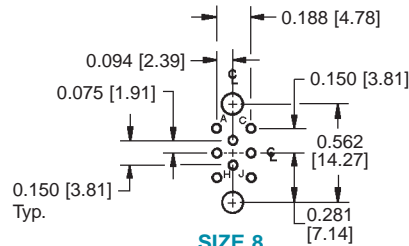
MATERIAL: GLASS FILLED DIALYL PHTHALATE PER ASTM-D-5948 TYPE SDG-F

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

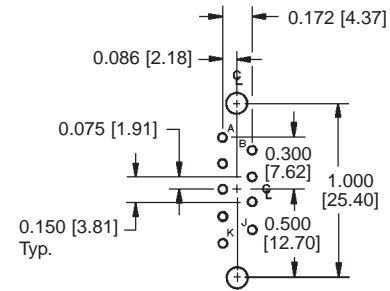
MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



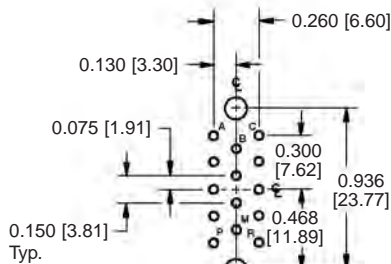
SIZE 7



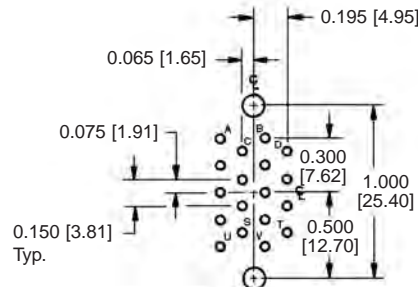
SIZE 8



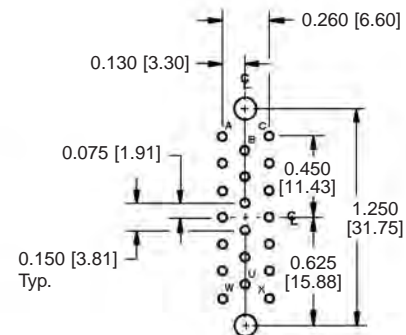
SIZE 9



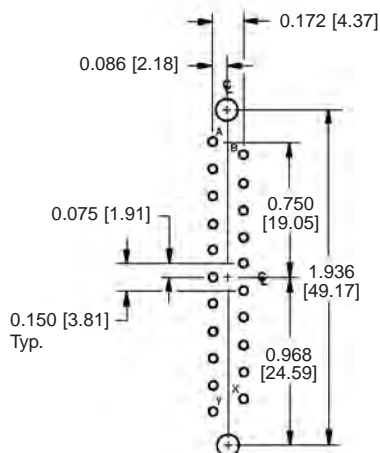
SIZE 14



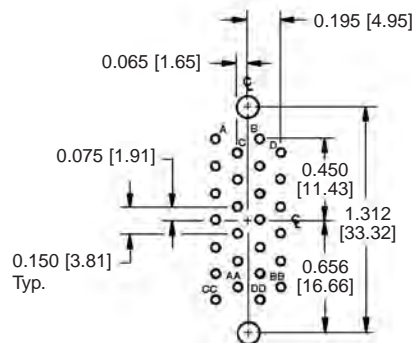
SIZE 18



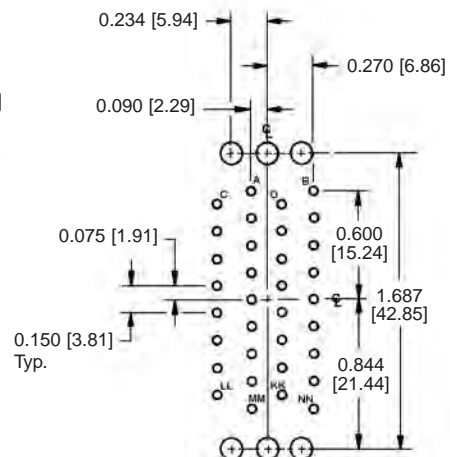
SIZE 20



SIZE 21



SIZE 26



SIZE 34

SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES
SUGGEST 0.040 [1.02] Ø HOLE IN PRINTED BOARD FOR CONTACT TERMINATIONS

HOLE IDENTIFICATION FOR REFERENCE ONLY



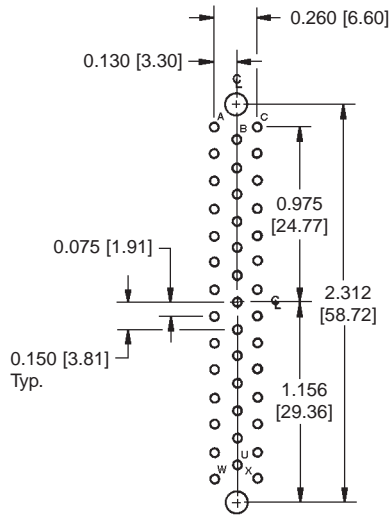
Positronic Industries
connectpositronic.com

RECTANGULAR CONNECTORS WITH FIXED SOLDER CONTACTS

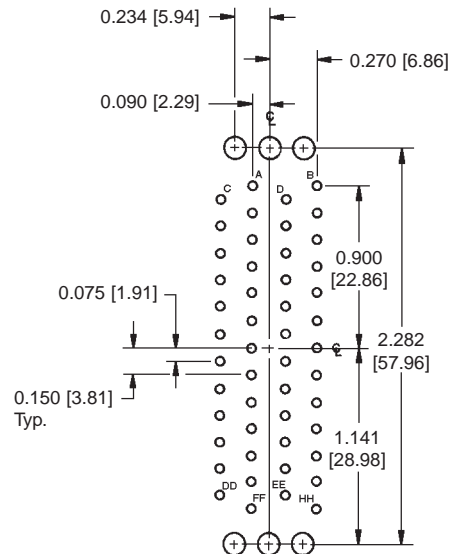
Standard
Density
Rectangular

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD HOLE PATTERN

MATING FACE OF FEMALE CONNECTOR OR REAR FACE OF MALE CONNECTOR



SIZE 41



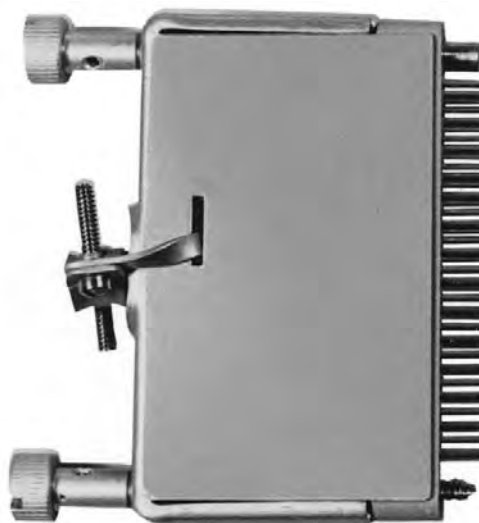
SIZE 50

SUGGEST 0.120 [3.05] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES

SUGGEST 0.040 [1.02] Ø HOLE IN PRINTED BOARD FOR CONTACT TERMINATIONS

HOLE IDENTIFICATION FOR REFERENCE ONLY

TYPICAL MATING ASSEMBLY



GM41MSCE100J0



GMPL41F0T00



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 9

STEP	1	2	3	4	5	6	7	8	9	10	11
EXAMPLE	GM	41	M	SC	E1	0	0	J	0	/AA	-14

STEP 1 - BASIC SERIES

GM Series.

STEP 2 - CONNECTOR VARIANTS

7, 8, 9, 14, 18, 20, 21, 26, 34, 41, 50

STEP 3 - CONNECTOR GENDER

M - Male insulator.
F - Female insulator.

STEP 4 - CONTACT TERMINATION TYPE

SC - Solder cup, for closed entry female contact specify 'CE' in Step 10.
DS3 - Straight solder 0.093 [2.36].
DS4 - Straight solder 0.125 [3.18].
DS5 - Straight solder 0.156 [3.96].
DS6 - Straight solder 0.187 [4.75].

***STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM**

G - Polarizing grounding guides.
N - Polarizing guides, only option offered for size 8 connectors
NSS - Stainless steel polarizing guides.
T - Fixed jackscrews.
E - Short turnable jackscrews, offered with set screw option.
EL - Long turnable jackscrews, offered with set screw option.
E1 - Turnable jackscrews used on 9, 14, 18, 20, 21, 26 and 41 variant hoods, offered with set screw option.
0 - If no polarizing guides or jackscrews are required. Also, use "0" if ordering hoods equipped with jackscrews for sizes 34 and 50, see Step 8.

***STEP 6 - SHELLS AND MOUNTING PLATES**

P - Male shell, not available on 41 variant.
R - Female shell, not available on 41 variant.
H - Mounting plate, not available on 41 variant.
W - Male shell with mounting plate.
U - Female shell with mounting plate.
0 - If no shells or mounting plates are required.

STEP 11 - SPECIAL OPTIONS

-14 - Contacts plated 0.000030 [0.76μ] gold over nickel.
-50 - Contacts plated 0.000050 [1.27μ] gold over copper.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 10 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: GM41MSCE100J0

***STEP 9 - ADDITIONAL FEATURES**

B - For black anodized aluminum parts.
C - Set screw option, offered on the E, EL and E1 jackscrew systems.
R - For yellow chromate coating on aluminum parts.
V - Lock tab, offered on 7, 9, 14, 18, 20, 21, 26, 34 and 41 variants.
VL - Lock lever, offered on 7, 9, 14, 18, 20, 21, 26, 34 and 41 variants.
0 - If no additional options are required.

***STEP 8 - CABLE ADAPTERS (HOODS)**

J - Top opening hood (formed).
L - Side opening hood (formed).
Y - Top opening hood (formed), equipped with stainless steel jackscrew system, offered on 34 and 50 variants.
I - Side opening hood (formed), equipped with stainless steel jackscrew system, offered on 34 and 50 variants.
Z - Top opening hood (drawn, side access), equipped with stainless steel jackscrew system, offered on 34 and 50 variants.
V - Side opening hood (drawn, side access), equipped with stainless steel jackscrew system, offered on 34 and 50 variants.
0 - If no hoods are required.

***STEP 7 - POLARIZATION POSITIONS OF SHELLS**

Select letter to designate position of male pin and female slot for polarization system.
A, B, C, D, E, F, G
0 - If no polarization is required or if no shells are required.

***NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 9, SEE HIGH DENSITY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 51-66.



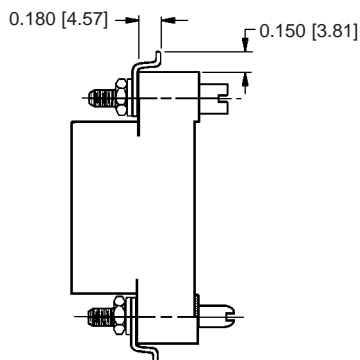
Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

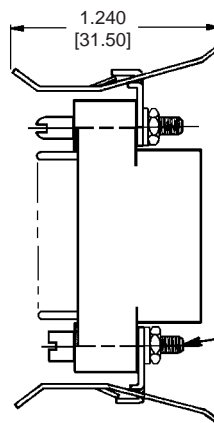
VIBRATION LOCKS (V,VL)

(V) - VIBRATION TABS



Typical Part Number:
GMCT34F0N000V

(VL) - VIBRATION LEVER ASSEMBLY



SPECIFY CODE "V" OR "VL" IN STEP
9 OF ORDERING INFORMATION

MATERIAL: COPPER ALLOY

FINISH: ZINC PLATE WITH
CHROMATE SEAL

ON MALE CONNECTOR THE FEMALE
GUIDE OR JACKSCREW IS LOCATED
AT CONTACT POSITION A OR NO. 1

Typical Part Number:
GMCT34M0N000VL

TYPICAL MATING ASSEMBLY



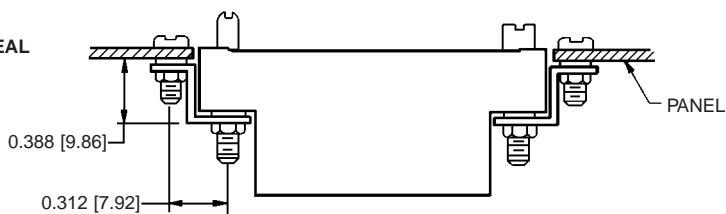
GAPL14M0NVLB

GMCT14F0N00JVL

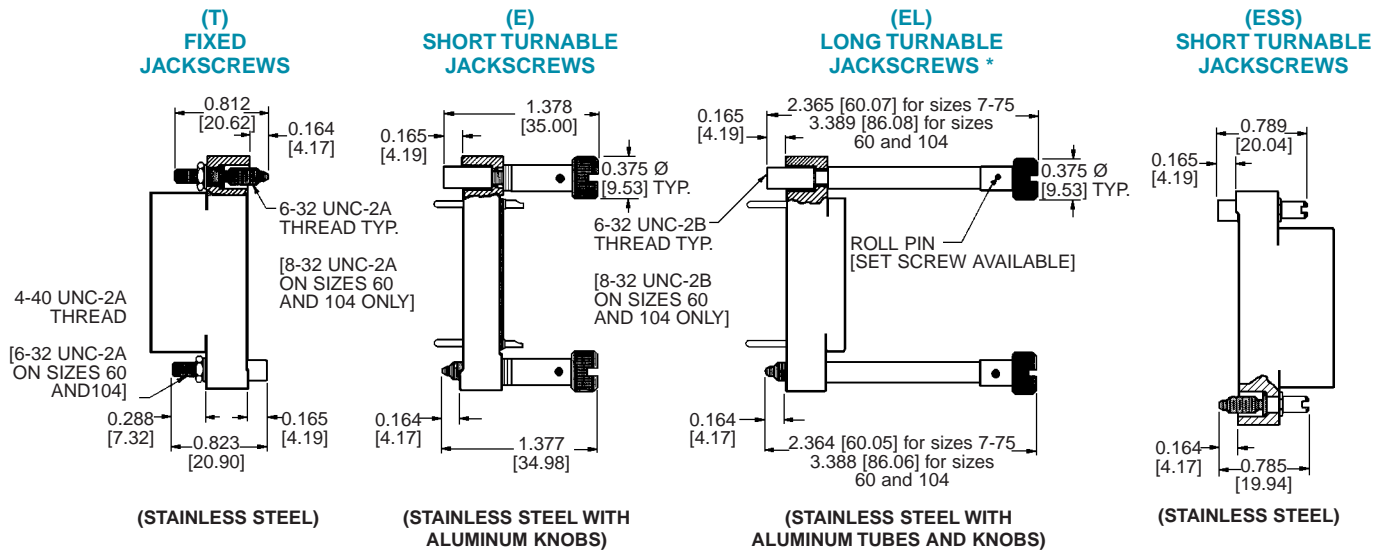
FLUSH PANEL CONNECTOR MOUNTING BRACKETS

MATERIAL: COPPER ALLOY
FINISH: ZINC WITH CHROMATE SEAL

CONNECTOR VARIANTS	PART NUMBER
7 THRU 75	80023-2
60 AND 104	80023-4



JACKSCREW SYSTEM DIMENSIONS (T, E, EL, ESS) QUALIFIED TO MIL-DTL-28748



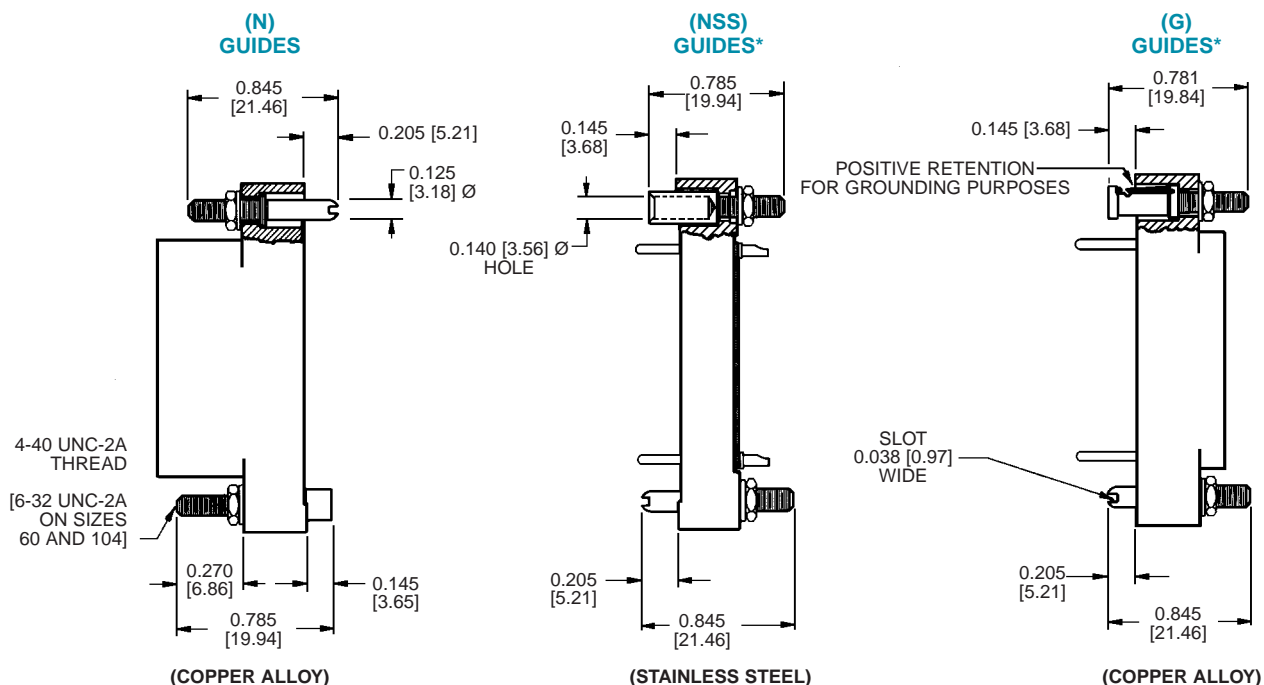
"E" AND "EL" OPTIONS USING ROLL PINS MAY HAVE SOLID WIRE THREADED THROUGH THE ROLL PINS AS AN ANTI-ROTATION MEASURE.

* WHEN SUPPLIED WITH A FEMALE OR MALE SHELL, THE JACKSCREW MATING LENGTHS 0.164 [4.17] SHALL BE 0.124 [3.15] AND THE 0.165 [4.19] SHALL BE 0.125 [3.18]

ON A MALE CONNECTOR, THE FEMALE GUIDE OR FEMALE JACKSCREW IS LOCATED AT THE END WITH CONTACT POSITION A OR NO. 1

METRIC THREADS AVAILABLE, SEE PAGE 55

POLARIZING GUIDE DIMENSIONS (N, NSS, G) QUALIFIED TO MIL-DTL-2874



ON A MALE CONNECTOR, THE FEMALE GUIDE OR FEMALE JACKSCREW IS LOCATED AT THE END WITH CONTACT POSITION A OR NO. 1

METRIC THREADS AVAILABLE, SEE PAGE 55

*NOT OFFERED ON GM8 CONNECTOR VARIANT

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 52

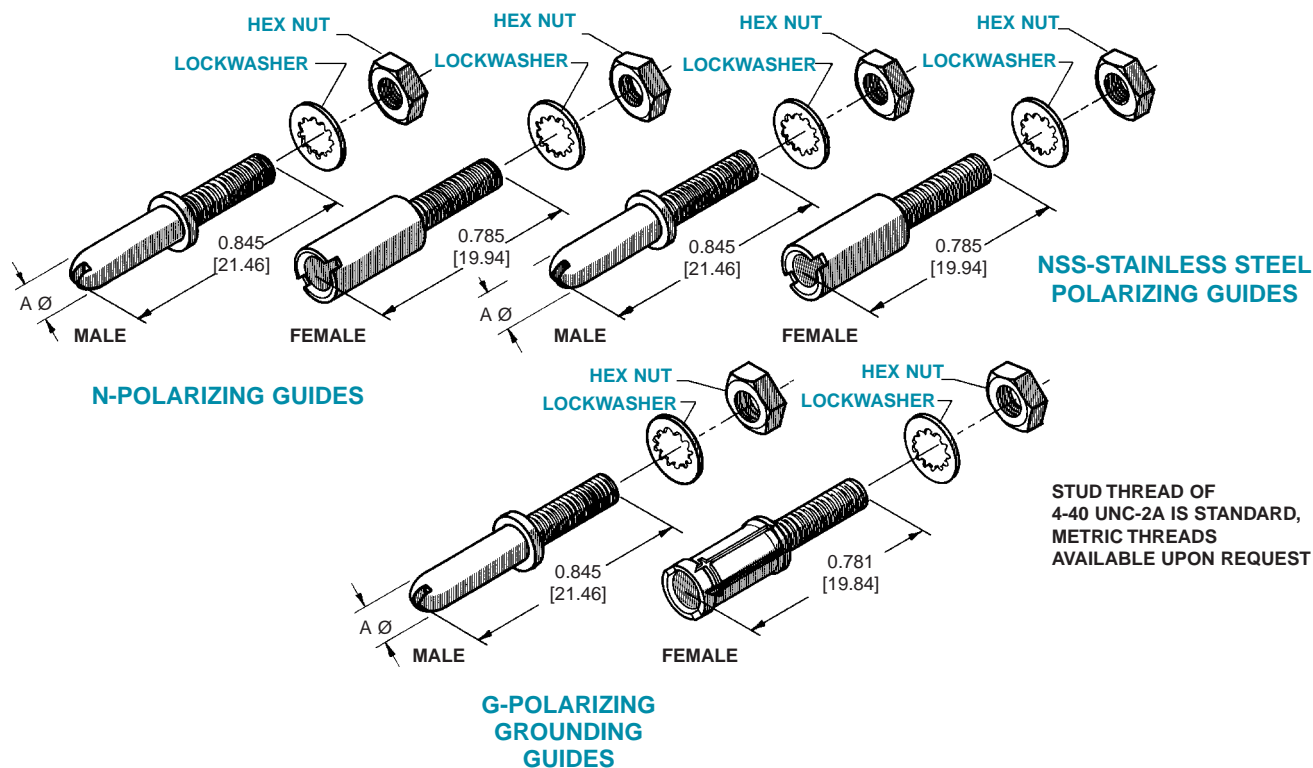


Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

POLARIZING GUIDES (N, NSS, G)



NUT DRIVER

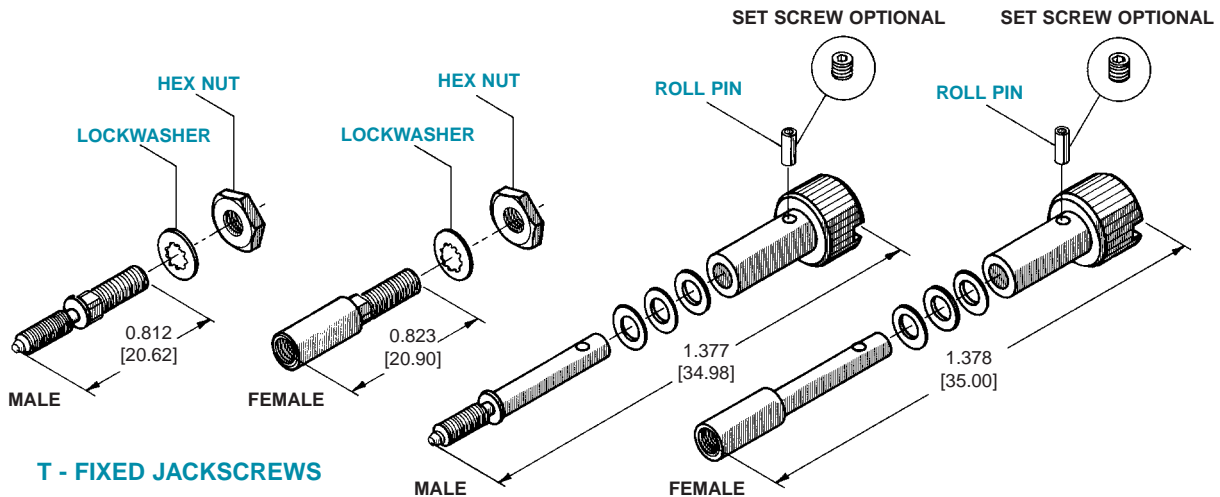


Part Number: 9535-1 FOR 4-40 THREADS
Part Number: 9535-2 FOR 6-32 THREADS

TYPE	MATERIAL AND FINISH	USED ON CONNECTOR VARIANTS	A Ø
N-GUIDE MALE	COPPER ALLOY WITH NICKEL PLATE	7 AND 9 THROUGH 75	0.124 [3.15]
		60 AND 104	0.124 [3.15]
N-GUIDE FEMALE	COPPER ALLOY WITH NICKEL PLATE	7 AND 9 THROUGH 75	—
		60 AND 104	—
NSS-GUIDE MALE	STAINLESS STEEL PASSIVATED	7 AND 9 THROUGH 75	0.124 [3.15]
		60 AND 104	0.124 [3.15]
NSS-GUIDE FEMALE	STAINLESS STEEL PASSIVATED	7 AND 9 THROUGH 75	—
		60 AND 104	—
G-GUIDE MALE	COPPER ALLOY WITH NICKEL PLATE	7 AND 9 THROUGH 75	0.124 [3.15]
		60 AND 104	0.124 [3.15]
G-GUIDE FEMALE	COPPER ALLOY WITH NICKEL PLATE	7 AND 9 THROUGH 75	—
		60 AND 104	—

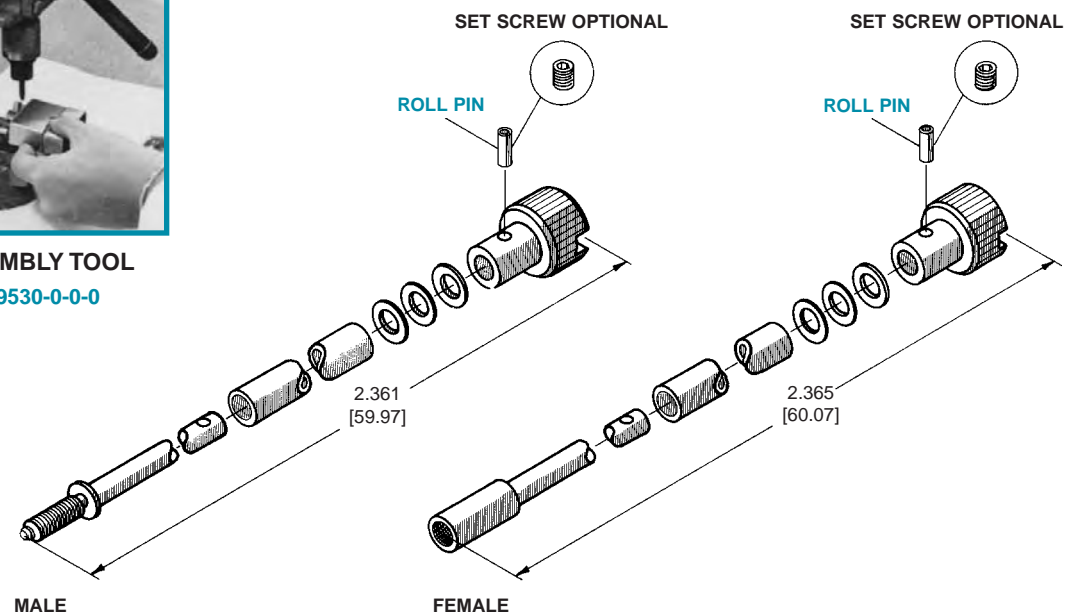
FIXED AND TURNABLE JACKSCREW SYSTEM (T, E, EL)

SEE PAGE 55 FOR THREAD INFORMATION



ROLL PIN ASSEMBLY TOOL
Part Number: 9530-0-0-0

“E” AND “EL” OPTIONS USING ROLL PINS MAY HAVE SOLID WIRE THREADED THROUGH THE ROLL PINS AS AN ANTI-ROTATION MEASURE.





ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

FIXED AND TURNABLE JACKSCREW SYSTEMS (T, E, EL)

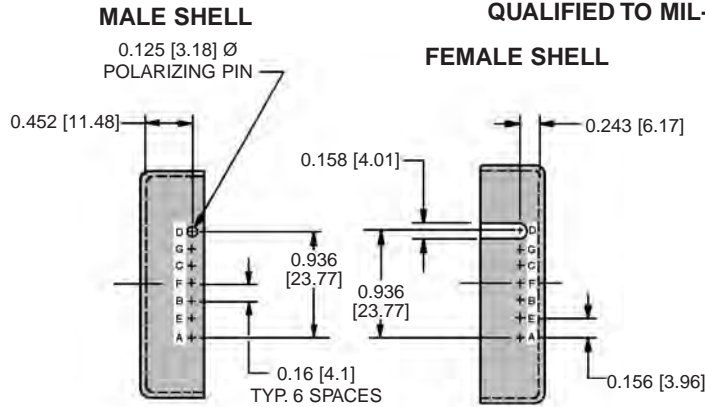
COUPLING THREAD SIZES ONLY

TYPE	MATERIAL AND FINISH	AVAILABILITY M3x0.5			USED ON CONNECTOR VARIANTS
		6-32 THREAD	8-32 THREAD	M3x0.5 METRIC THD.	
T JACKSCREW MALE	STAINLESS STEEL PASSIVATED	X	-----	X	7 AND 9 THROUGH 75
		-----	X	X	60 AND 104
T JACKSCREW FEMALE	STAINLESS STEEL PASSIVATED	X	-----	X	7 AND 9 THROUGH 75
		-----	X	X	60 AND 104
E JACKSCREW MALE	STAINLESS STEEL PASSIVATED	X *	-----	X	7 AND 9 THROUGH 75
		-----	X	X	60 AND 104
E JACKSCREW FEMALE	STAINLESS STEEL PASSIVATED	X *	-----	X	7 AND 9 THROUGH 75
		-----	X	X	60 AND 104
EL JACKSCREW MALE	STAINLESS STEEL PASSIVATED	X *	-----	X	7 AND 9 THROUGH 75
		-----	X	X	60 AND 104
EL JACKSCREW FEMALE	STAINLESS STEEL PASSIVATED	X *	-----	X	7 AND 9 THROUGH 75
		-----	X	X	60 AND 104

* SET SCREW OPTION AVAILABLE ON STAINLESS STEEL
TURNABLE JACKSCREWS WITH 6-32 THREADS ONLY

POLARIZATION OF MALE AND FEMALE SHELLS

QUALIFIED TO MIL-DTL-28748



Typical Part Number:
G34000PD000

Typical Part Number:
G34000RD000

POLARIZATION

Polarization is accomplished with shells by a pin and slot arrangement. Female shells are slotted to accept non-magnetic stainless steel polarizing pins mounted on the male shells.

There are 7 polarizing positions available which are designated by the letters A, B, C, D, E, F or G. Nonpolarized shells are designated by "O" and are supplied without slot and pin. See ordering chart.

DIMENSIONS FOR FEMALE SHELLS (R)

QUALIFIED TO MIL-DTL-28748

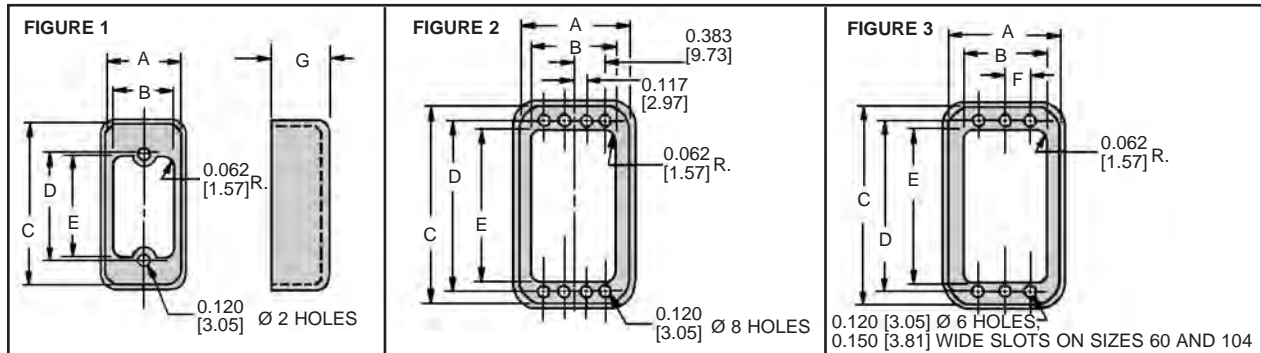


FIGURE	PART NUMBER	A	B	C	D	E	F	G
1	G9000R000	0.517 [13.13]	0.380 [9.65]	1.453 [36.91]	1.000 [25.40]	0.875 [22.23]	-----	0.719 [18.26]
1	G14000R000	0.580 [14.73]	0.445 [11.30]	1.393 [35.38]	0.938 [23.83]	0.812 [20.62]	-----	0.719 [18.26]
1	G18000R000	0.705 [17.91]	0.575 [14.61]	1.453 [36.91]	1.000 [25.40]	0.875 [22.23]	-----	0.719 [18.26]
1	G20000R000	0.580 [14.73]	0.453 [11.51]	1.707 [43.36]	1.250 [31.75]	1.125 [28.58]	-----	0.719 [18.26]
1	G26000R000	0.705 [17.91]	0.580 [14.73]	1.775 [45.09]	1.312 [33.32]	1.187 [30.14]	-----	0.719 [18.26]
3	G34000R000	0.898 [22.81]	0.763 [19.38]	2.143 [54.43]	1.688 [42.88]	1.423 [36.14]	0.234 [5.94]	0.719 [18.26]
3	G42000R000	0.895 [22.73]	0.768 [19.51]	2.458 [62.43]	2.000 [50.80]	1.750 [44.45]	0.234 [5.94]	0.719 [18.26]
3	G50000R000	1.020 [25.91]	0.763 [19.38]	2.861 [72.67]	2.281 [57.94]	2.031 [51.59]	0.234 [5.94]	0.719 [18.26]
3	G60000R000	1.688 [42.88]	1.481 [37.62]	2.905 [73.78]	2.375 [60.33]	2.075 [52.71]	0.438 [11.11]	0.719 [18.26]
3	G66000R000	1.269 [32.23]	1.130 [28.70]	2.429 [61.70]	1.969 [50.01]	1.704 [43.28]	0.250 [6.35]	0.719 [18.26]
2	G75000R000	1.375 [34.93]	1.125 [28.58]	2.865 [72.77]	2.281 [57.94]	2.031 [51.59]	-----	0.719 [18.26]
3	G104000R000	1.688 [42.88]	1.481 [37.62]	2.905 [73.78]	2.375 [60.33]	2.075 [52.71]	0.438 [11.11]	0.719 [18.26]

MATERIAL:
0.040 [1.02]
THICK
ALUMINUM

FINISH:
YELLOW
OR
BLACK
ANODIZE



Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular



DIMENSIONS FOR MALE SHELLS (P)

QUALIFIED TO MIL-DTL-28748

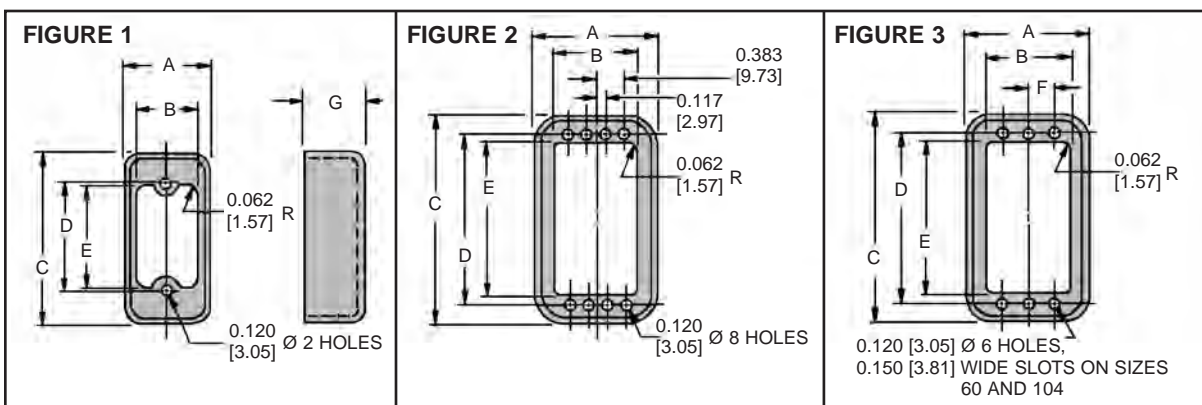


FIGURE	PART NUMBER	A	B	C	D	E	F	G
1	G9000P000	0.495 [12.57]	0.380 [9.65]	1.435 [36.45]	1.000 [25.40]	0.875 [22.23]	-----	0.719 [18.26]
1	G14000P000	0.562 [14.27]	0.445 [11.30]	1.375 [34.93]	0.938 [23.83]	0.812 [20.62]	-----	0.719 [18.26]
1	G18000P000	0.683 [17.35]	0.575 [14.61]	1.435 [36.45]	1.000 [25.40]	0.875 [22.23]	-----	0.719 [18.26]
1	G20000P000	0.562 [14.27]	0.453 [11.51]	1.687 [42.85]	1.250 [31.75]	1.125 [28.58]	-----	0.719 [18.26]
1	G26000P000	0.682 [17.32]	0.580 [14.73]	1.750 [44.50]	1.312 [33.32]	1.187 [30.14]	-----	0.719 [18.26]
3	G34000P000	0.870 [22.10]	0.763 [19.38]	2.120 [53.85]	1.688 [42.88]	1.423 [36.14]	0.234 [5.94]	0.719 [18.26]
3	G42000P000	0.875 [22.23]	0.768 [19.51]	2.432 [61.77]	2.000 [50.80]	1.750 [44.45]	0.234 [5.94]	0.719 [18.26]
3	G50000P000	1.000 [25.40]	0.763 [19.38]	2.841 [72.16]	2.281 [57.94]	2.031 [51.59]	0.234 [5.94]	0.719 [18.26]
3	G60000P000	1.665 [42.29]	1.481 [37.62]	2.885 [73.28]	2.375 [60.33]	2.075 [52.71]	0.438 [11.11]	0.719 [18.26]
3	G66000P000	1.249 [31.72]	1.130 [28.70]	2.405 [61.09]	1.969 [50.01]	1.704 [43.28]	0.250 [6.35]	0.719 [18.26]
2	G75000P000	1.355 [34.42]	1.125 [28.58]	2.845 [72.26]	2.281 [57.94]	2.031 [51.59]	-----	0.719 [18.26]
3	G104000P000	1.665 [42.29]	1.481 [37.62]	2.885 [73.28]	2.375 [60.33]	2.075 [52.71]	0.438 [11.11]	0.719 [18.26]

MATERIAL: 0.040 [1.02] THICK ALUMINUM

FINISH: YELLOW OR BLACK ANODIZE

DIMENSIONS FOR MOUNTING PLATES (H) QUALIFIED TO MIL-DTL-28748

Mounting plates provide a simple, economical means of mounting the connector to any supporting surface. They can be used with or without shells and are available with floating bushings for “blind mountings” to facilitate alignment and coupling of the connector.

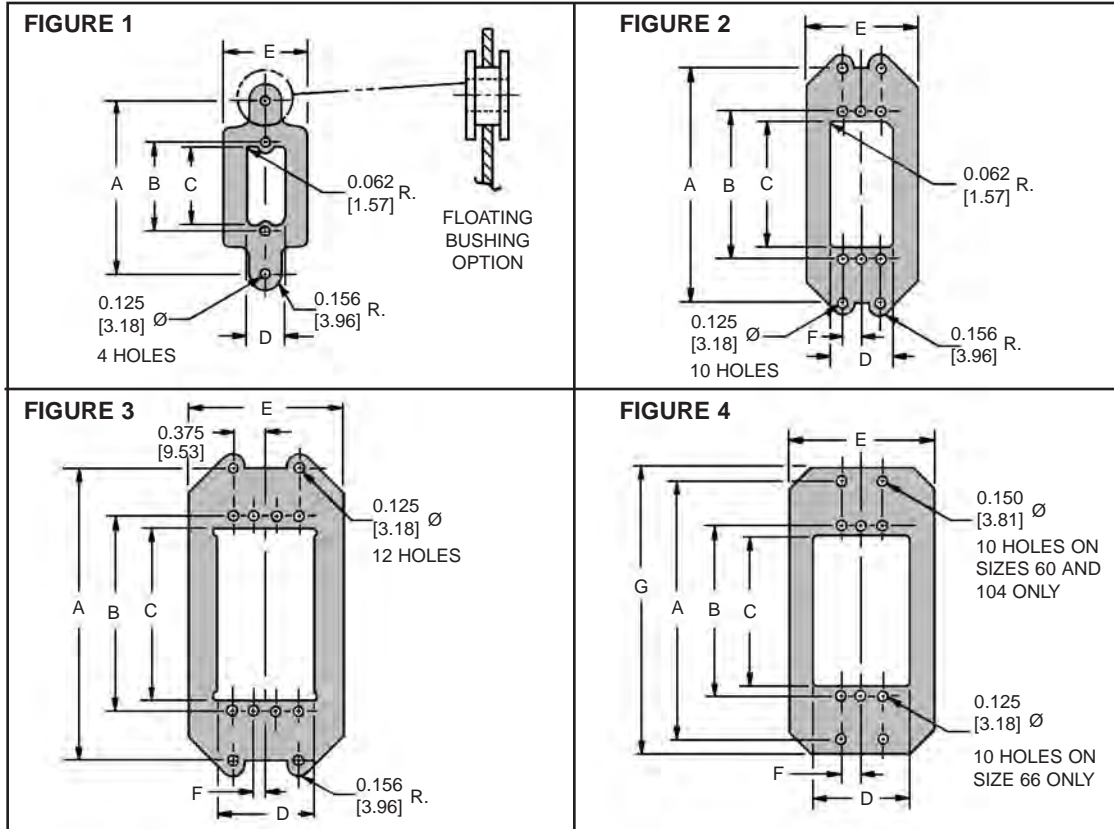


FIGURE	PART NUMBER	A	B	C	D	E	F	G
1	G9000H000	2.016 [51.21]	1.000 [25.40]	0.876 [22.25]	0.406 [10.31]	0.958 [24.33]	----	----
1	G14000H000	1.953 [49.61]	0.937 [23.80]	0.812 [20.62]	0.469 [11.91]	1.015 [25.78]	----	----
1	G18000H000	2.016 [51.21]	1.000 [25.40]	0.875 [22.23]	0.594 [15.09]	1.141 [28.98]	----	----
1	G20000H000	2.266 [57.56]	1.250 [31.75]	1.125 [28.58]	0.468 [11.89]	1.016 [25.81]	----	----
1	G26000H000	2.328 [59.13]	1.312 [33.32]	1.188 [30.18]	0.594 [15.09]	1.140 [28.96]	----	----
2	G34000H000	2.703 [68.66]	1.687 [42.85]	1.438 [36.53]	0.750 [19.05]	1.328 [33.73]	0.234 [5.94]	----
2	G42000H000	3.016 [76.61]	2.000 [50.80]	1.750 [44.45]	0.750 [19.05]	1.328 [33.73]	0.234 [5.94]	----
2	G50000H000	3.422 [86.92]	2.281 [57.94]	2.031 [51.59]	0.750 [19.05]	1.453 [36.91]	0.234 [5.94]	----
4	G60000H000	3.500 [88.90]	2.375 [60.33]	2.125 [53.98]	1.488 [37.74]	2.000 [50.80]	0.438 [11.13]	3.875 [98.43]
4	G66000H000	2.984 [75.79]	1.969 [50.01]	1.718 [43.64]	1.125 [28.58]	1.688 [42.88]	0.250 [6.35]	3.296 [83.72]
3	G75000H000	3.422 [86.92]	2.281 [57.94]	2.031 [51.59]	1.109 [28.17]	1.797 [45.65]	0.117 [2.98]	----
4	G104000H000	3.500 [88.90]	2.375 [60.33]	2.125 [53.98]	1.488 [37.74]	2.000 [50.80]	0.438 [11.13]	3.875 [98.43]

MATERIAL: ALUMINUM

FINISH: YELLOW OR
BLACK ANODIZE

FOR FLOATING BUSHING
OPTION USE CODE “FB” IN
STEP 9 OF ORDERING
INFORMATION



Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

CABLE ADAPTERS DIMENSIONS FOR TOP OPENING HOODS (J,Q)

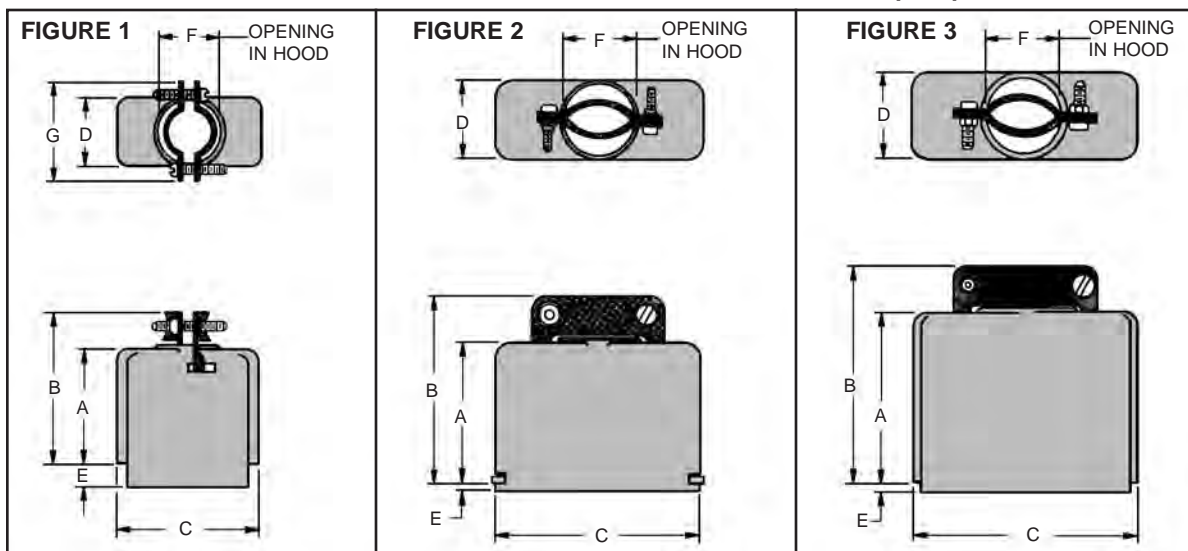


FIGURE	PART NUMBER	A	B	C	D	E	F	G
3	G700000J0	1.140 [28.96]	1.549 [39.34]	1.225 [31.12]	0.437 [11.10]	0.200 [5.08]	0.312 Ø [7.92]	----
3	G800000J0	1.000 [25.40]	1.304 [33.12]	0.812 [20.62]	0.437 [11.10]	0.281 [7.14]	0.250 Ø [6.35]	----
1	G900000J0	1.245 [31.62]	1.636 [41.55]	1.357 [34.47]	0.437 [11.10]	0.293 [7.44]	0.375 x 0.516 [9.53] x [13.11]	0.812 [20.62]
3	G900000J20	0.855 [21.72]	1.235 [31.38]	1.340 [34.04]	0.437 [11.10]	0.255 [6.48]	0.312 Ø [7.92]	----
1	G1400000J0	1.200 [30.48]	1.591 [40.41]	1.250 [31.75]	0.500 [12.70]	0.281 [7.14]	0.438 x 0.495 [11.13] x [12.57]	0.812 [20.62]
3	G1400000J30	1.188 [30.18]	1.569 [39.86]	1.250 [31.75]	0.500 [12.70]	0.281 [7.14]	0.375 Ø [9.53]	----
1	G1800000J0	1.188 [30.18]	1.621 [41.17]	1.312 [33.32]	0.624 [15.85]	0.327 [8.31]	0.531 Ø [13.49]	0.938 [23.83]
1	G2000000J0	1.312 [33.32]	1.703 [43.26]	1.580 [40.13]	0.502 [12.80]	0.281 [7.14]	0.442 x 0.659 [11.23] x [16.74]	0.812 [20.62]
3	G2100000J0	1.335 [33.91]	1.780 [45.21]	2.290 [58.17]	0.437 [11.10]	0.245 [6.22]	0.375 Ø [9.53]	----
3	G2600000J0	1.281 [32.54]	1.727 [43.87]	1.625 [41.28]	0.624 [15.85]	0.281 [7.14]	0.375 x 0.594 [9.53] x [15.09]	----
3	G3400000J0	1.250 [31.75]	1.652 [41.96]	2.000 [50.80]	0.834 [21.18]	0.271 [6.88]	0.700 Ø [17.79]	----
1	G4100000J0	1.250 [31.75]	1.641 [41.68]	2.690 [68.31]	0.507 [12.88]	0.315 [8.00]	0.445 x 0.630 [11.30] x [16.00]	0.812 [20.62]
3	G4200000J0	1.300 [33.02]	1.700 [43.18]	2.312 [58.72]	0.830 [21.08]	0.093 [2.36]	0.695 Ø [17.65]	----
3	G5000000J0	1.834 [46.58]	2.292 [58.22]	2.600 [66.04]	0.812 [20.62]	0.099 [2.51]	0.750 x 0.990 [19.05] x [25.15]	----
3	G5000000J20	1.297 [32.94]	1.708 [43.38]	2.594 [65.89]	0.812 [20.62]	0.093 [2.36]	0.625 Ø [15.88]	----
3	G5000000J30	1.832 [46.53]	2.292 [58.22]	2.600 [66.04]	0.812 [20.62]	0.139 [3.53]	0.750 Ø [19.05]	----
3	G5000000J50	1.297 [32.94]	1.745 [44.32]	2.594 [65.89]	0.812 [20.62]	0.093 [2.36]	0.750 x 0.990 [19.05] x [25.15]	----
2	G6000000Q0	2.220 [56.39]	2.740 [69.60]	2.846 [72.29]	1.627 [41.33]	0.092 [2.34]	1.188 Ø [30.18]	----
2	G6600000Q0	1.140 [28.96]	1.644 [41.76]	2.377 [60.38]	1.221 [31.01]	0.110 [2.79]	0.874 x 1.141 [22.20] x [28.98]	----
3	G7500000J0	2.015 [51.18]	2.530 [64.26]	2.594 [65.89]	1.189 [30.20]	0.085 [2.16]	1.060 Ø [26.92]	----
2	G10400000Q0	2.220 [56.39]	2.740 [69.60]	2.846 [72.29]	1.627 [41.33]	0.092 [2.34]	1.188 Ø [30.18]	----

PLASTIC CABLE CLAMPS FOR RIGID CABLE SUPPORT ARE AVAILABLE ON HOODS FOR CONTACT VARIANTS 34, 42 AND 50. SEE PAGE 64.

MATERIAL: HOODS, CABLE CLAMPS AND KNOBS - ALUMINUM, YELLOW OR BLACK ANODIZE

DESKIRTED HOODS AVAILABLE

HOODS HAVE THREADED MOUNTING HOLES FOR USE WITH POLARIZING GUIDES TO ATTACH TO CONNECTOR

CABLE ADAPTERS DIMENSIONS FOR SIDE OPENING HOODS (L,S)

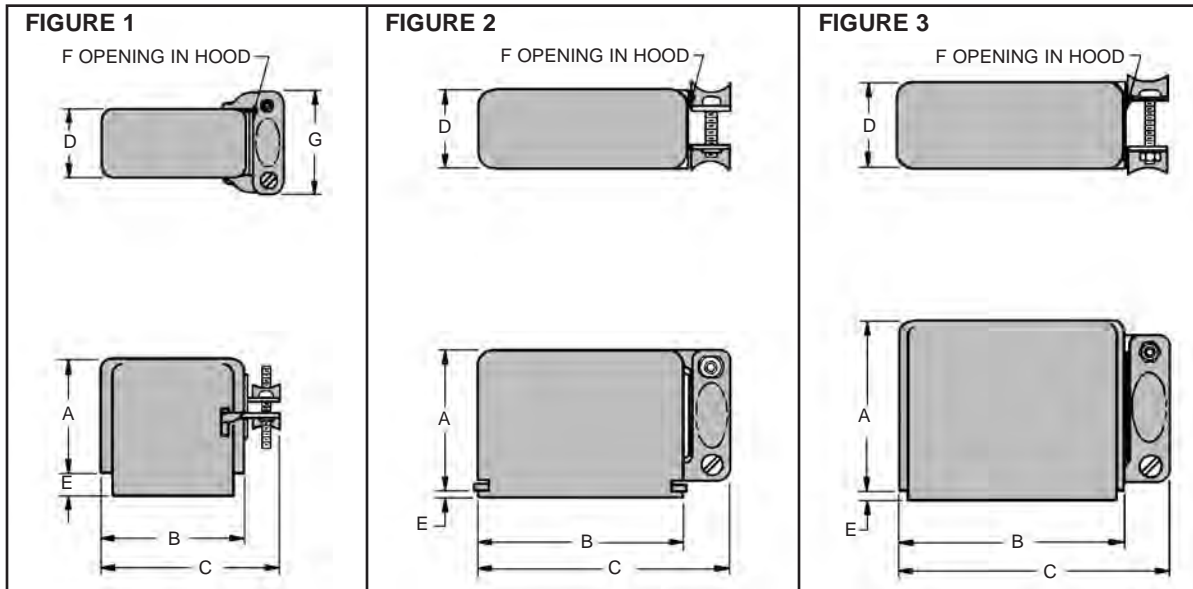


FIGURE	PART NUMBER	A	B	C	D	E	F	G
1	G900000L0	1.240 [31.50]	1.362 [34.59]	1.726 [43.84]	0.437 [11.10]	0.246 [6.25]	0.375 [9.53] x 0.500 [12.70]	0.812 [20.62]
1	G1400000L0	1.187 [30.15]	1.250 [31.75]	1.641 [41.68]	0.500 [12.70]	0.281 [7.14]	0.438 [11.13] x 0.500 [12.70]	0.812 [20.62]
3	G1400000L30	1.188 [30.18]	1.250 [31.75]	1.631 [41.43]	0.500 [12.70]	0.281 [7.14]	0.375 Ø [9.53]	-----
1	G1800000L0	1.188 [30.18]	1.312 [33.32]	1.745 [44.33]	0.624 [15.85]	0.281 [7.14]	0.546 Ø [13.87]	0.938 [23.83]
1	G2000000L0	1.312 [33.32]	1.562 [39.67]	1.953 [49.61]	0.504 [12.80]	0.231 [5.87]	0.442 [11.23] x 0.668 [16.97]	0.812 [20.62]
3	G2100000L0	1.335 [33.91]	2.290 [58.17]	2.736 [69.49]	0.437 [11.10]	0.245 [6.22]	0.375 Ø [9.53]	-----
3	G2600000L0	1.281 [32.54]	1.625 [41.28]	2.071 [52.60]	0.624 [15.85]	0.281 [7.14]	0.375 [9.53] x 0.594 [15.09]	-----
3	G3400000L0	1.250 [31.75]	2.000 [50.80]	2.403 [61.04]	0.834 [21.19]	0.271 [6.88]	0.700 Ø [17.78]	-----
1	G4100000L0	1.250 [31.75]	2.690 [68.33]	3.136 [79.65]	0.507 [12.88]	0.315 [8.00]	0.426 [10.82] x 0.615 [15.62]	-----
3	G4200000L0	1.300 [33.02]	2.312 [58.72]	2.712 [68.88]	0.830 [21.08]	0.093 [2.36]	0.695 Ø [17.65]	-----
3	G5000000L0	1.834 [46.58]	2.678 [68.02]	3.124 [79.35]	0.812 [20.62]	0.093 [2.36]	0.750 [19.05] x 0.990 [25.15]	-----
2	G6600000S0	1.140 [28.96]	2.377 [60.38]	2.947 [74.85]	1.221 [31.01]	0.110 [2.79]	0.845 Ø [21.46]	-----
3	G7500000L0	2.015 [51.18]	2.594 [65.89]	3.109 [78.97]	1.189 [30.20]	0.085 [2.16]	1.060 Ø [26.92]	-----

MATERIAL: HOODS, CABLE CLAMPS AND KNOBS - ALUMINUM, YELLOW OR BLACK ANODIZE
HOODS HAVE THREADED MOUNTING HOLES FOR USE WITH POLARIZING GUIDES TO ATTACH TO CONNECTOR
DESKIRTED HOODS AVAILABLE



Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

CABLE ADAPTERS

DIMENSIONS FOR TOP OPENING HOODS WITH JACKSCREW SYSTEM (J, Y, Z)

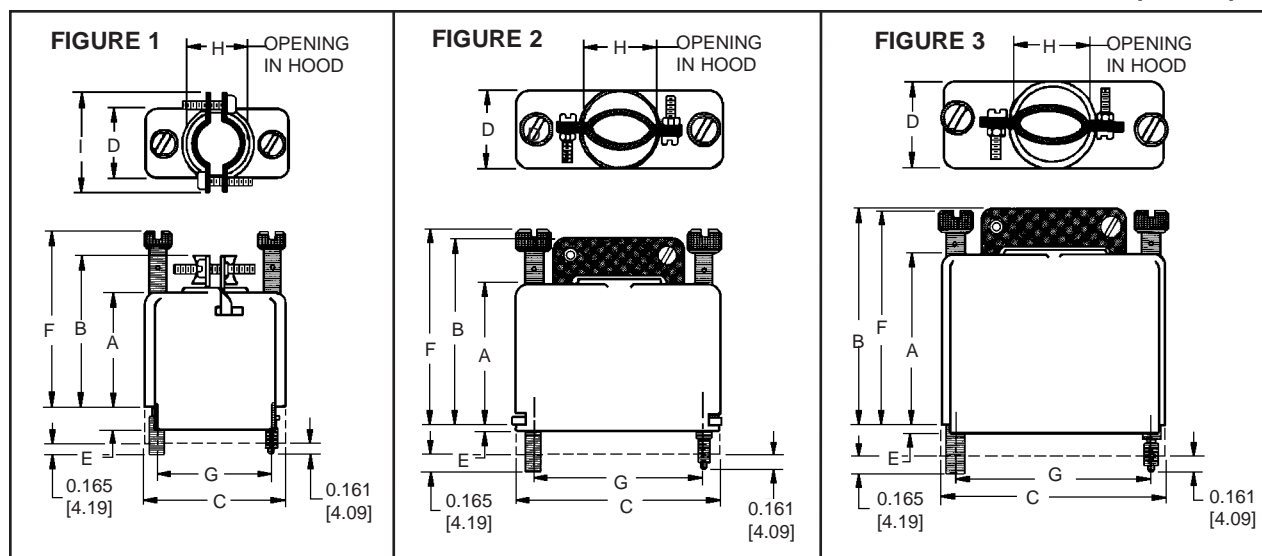


FIGURE	PART NUMBER	A	B	C	D	E	F	G	H	I
1	G900E100J0	1.245 [31.62]	1.636 [41.55]	1.357 [34.47]	0.437 [11.10]	0.293 [7.44]	1.943 [49.35]	1.000 [25.40]	0.375 [9.53] x 0.516 [13.11]	0.812 [20.62]
1	G1400E100J0	1.200 [30.48]	1.591 [40.41]	1.250 [31.75]	0.500 [12.70]	0.281 [7.14]	1.864 [46.89]	0.936 [23.77]	0.438 [11.13] x 0.495 [12.57]	0.812 [20.62]
1	G1800E100J0	1.188 [30.18]	1.621 [41.17]	1.312 [33.32]	0.624 [15.85]	0.327 [8.31]	1.864 [46.89]	1.000 [25.40]	0.531 Ø [13.49]	0.938 [23.83]
1	G2000E100J0	1.312 [33.32]	1.703 [43.26]	1.580 [40.13]	0.502 [12.80]	0.281 [7.14]	1.882 [47.80]	1.250 [31.75]	0.442 [11.23] x 0.659 [16.74]	0.812 [20.62]
3	G2100E100J0	1.335 [33.91]	1.780 [45.21]	2.290 [58.17]	0.437 [11.10]	0.245 [6.22]	1.989 [50.52]	1.936 [49.17]	0.375 Ø [9.53]	-----
3	G2600E100J0	1.281 [32.54]	1.727 [43.87]	1.625 [41.28]	0.624 [15.85]	0.281 [7.14]	1.906 [48.41]	1.312 [33.32]	0.375 [9.53] x 0.594 [15.09]	-----
3	G3400000Y0	1.250 [31.75]	1.652 [41.96]	2.000 [50.80]	0.834 [21.18]	0.271 [6.88]	1.780 [45.21]	1.687 [42.85]	0.700 Ø [17.79]	-----
1	G4100E100J0	1.250 [31.75]	1.641 [41.68]	2.690 [68.31]	0.507 [12.88]	0.315 [8.00]	1.873 [47.57]	2.312 [58.72]	0.445 [11.30] x 0.630 [16.00]	0.812 [20.62]
3	G4200000Y0	1.300 [33.02]	1.700 [43.18]	2.312 [58.72]	0.830 [21.08]	0.093 [2.36]	1.826 [46.38]	2.000 [50.80]	0.695 Ø [17.63]	-----
3	G5000000Y0	1.834 [46.58]	2.292 [58.22]	2.600 [66.04]	0.812 [20.62]	0.099 [2.51]	2.354 [59.79]	2.281 [57.94]	0.750 [19.05] x 0.990 [25.15]	-----
3	G5000000Y20	1.297 [32.94]	1.708 [43.38]	2.594 [65.89]	0.812 [20.62]	0.093 [2.36]	1.827 [46.41]	2.281 [57.94]	0.625 Ø [15.88]	-----
3	G5000000Y30	1.832 [46.53]	2.292 [58.22]	2.600 [66.04]	0.812 [20.62]	0.139 [3.53]	2.354 [59.79]	2.281 [57.94]	0.750 Ø [19.05]	-----
3	G5000000Y50	1.297 [32.94]	1.745 [44.32]	2.594 [65.89]	0.812 [20.62]	0.093 [2.36]	1.826 [46.38]	2.281 [57.94]	0.750 [19.05] x 0.990 [25.15]	-----
2	G6000000Z0	2.220 [56.39]	2.740 [69.60]	2.846 [72.29]	1.627 [41.33]	0.092 [2.34]	2.867 [72.82]	2.375 [60.33]	1.188 Ø [30.18]	-----
2	G6600000Z0	1.140 [28.96]	1.644 [41.76]	2.377 [60.38]	1.221 [31.01]	0.110 [2.79]	1.827 [46.41]	1.969 [50.01]	0.874 [22.20] x 1.141 [28.97]	-----
3	G7500000Y0	2.015 [51.18]	2.530 [64.26]	2.594 [65.89]	1.189 [30.20]	0.085 [2.16]	2.520 [64.01]	2.281 [57.94]	1.060 Ø [26.92]	-----
2	G10400000Z0	2.220 [56.39]	2.740 [69.60]	2.846 [72.29]	1.627 [41.33]	0.092 [2.34]	2.867 [72.82]	2.375 [60.33]	1.188 Ø [30.18]	-----

MATERIAL: HOODS, CABLE CLAMPS AND KNOBS - ALUMINUM, YELLOW OR BLACK ANODIZE
JACKSCREWS - STAINLESS STEEL, PASSIVATED, SEE PAGE 55 FOR THREAD INFORMATION
M 3 x 0.5 METRIC THREADS AVAILABLE ON ZINC PLATED STEEL JACKSCREWS
DESKIRTED HOODS AVAILABLE

CABLE ADAPTERS DIMENSIONS FOR SIDE OPENING HOODS WITH JACKSCREW SYSTEM (L,I,V)

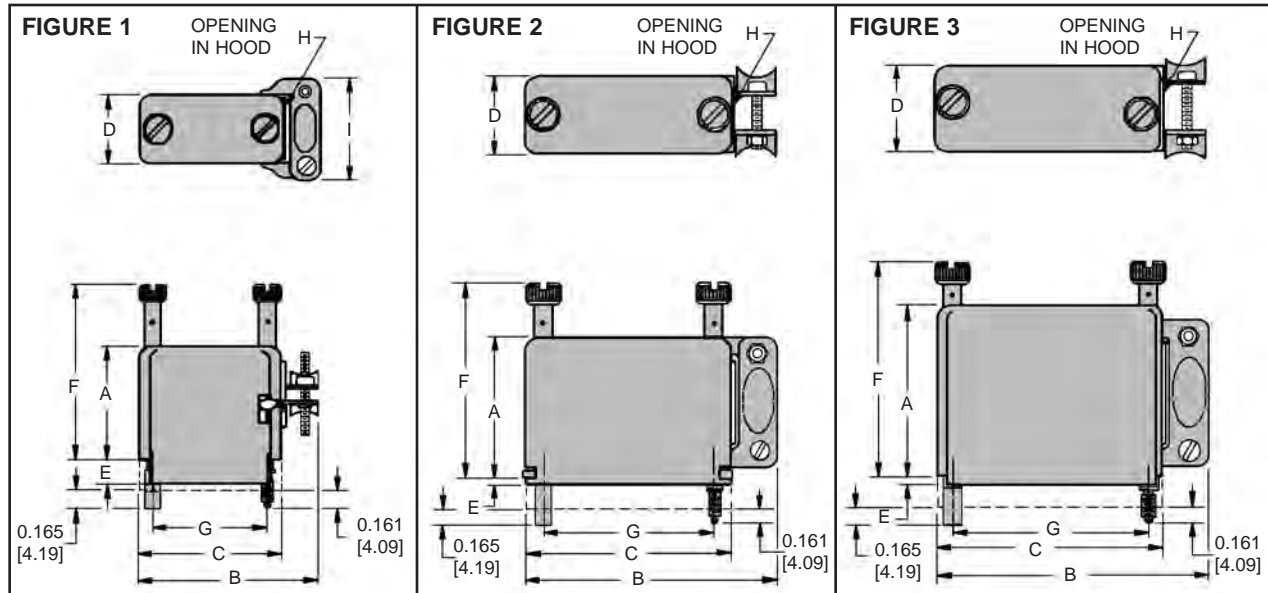


FIGURE	PART NUMBER	A	B	C	D	E	F	G	H	I
1	G900E100L0	1.240 [31.50]	1.726 [43.84]	1.362 [34.59]	0.437 [11.10]	0.246 [6.25]	1.943 [49.35]	1.000 [25.40]	0.375 [9.53] x 0.500 [12.70]	0.812 [20.62]
1	G1400E100L0	1.187 [30.15]	1.641 [41.68]	1.250 [31.75]	0.500 [12.70]	0.281 [7.14]	1.864 [47.35]	0.936 [23.77]	0.438 [11.13] x 0.500 [12.70]	0.812 [20.62]
3	G1400E100L30	1.188 [30.18]	1.631 [41.43]	1.250 [31.75]	0.500 [12.70]	0.281 [7.14]	1.864 [47.35]	0.936 [23.77]	0.375 Ø [9.53]	-----
1	G1800E100L0	1.188 [30.18]	1.745 [44.32]	1.312 [33.32]	0.624 [15.85]	0.281 [7.14]	1.818 [46.18]	1.000 [25.40]	0.546 Ø [13.87]	0.938 [23.83]
1	G2000E100L0	1.312 [33.32]	1.953 [49.61]	1.562 [39.67]	0.504 [12.80]	0.231 [5.87]	1.882 [47.80]	1.250 [31.75]	0.442 [11.23] x 0.668 [16.97]	0.812 [20.62]
3	G2100E100L0	1.335 [33.91]	2.736 [69.49]	2.290 [58.17]	0.437 [11.10]	0.245 [6.22]	1.989 [50.52]	1.936 [49.17]	0.375 Ø [9.53]	-----
3	G2600E100L0	1.281 [32.54]	2.071 [52.60]	1.625 [41.28]	0.624 [15.85]	0.281 [7.14]	1.906 [48.41]	1.312 [33.32]	0.375 [9.53] x 0.594 [15.09]	-----
3	G3400000I0	1.250 [31.75]	2.403 [61.04]	2.000 [50.80]	0.834 [21.19]	0.271 [6.88]	1.780 [45.21]	1.687 [42.85]	0.700 Ø [17.78]	-----
3	G4100E100L0	1.250 [31.75]	3.136 [79.65]	2.690 [68.33]	0.507 [12.88]	0.315 [8.00]	1.873 [47.57]	2.312 [58.72]	0.426 [10.82] x 0.615 [15.62]	-----
3	G4200000I0	1.300 [33.02]	2.712 [68.88]	2.312 [58.72]	0.830 [21.08]	0.093 [2.36]	1.826 [46.38]	2.000 [50.80]	0.695 Ø [17.65]	-----
3	G5000000I0	1.834 [46.58]	3.124 [79.35]	2.678 [68.02]	0.812 [20.62]	0.093 [2.36]	2.354 [59.79]	2.281 [57.94]	0.750 [19.05] x 0.990 [25.15]	-----
2	G6600000V0	1.140 [28.96]	2.947 [74.85]	2.377 [60.38]	1.221 [31.01]	0.110 [2.79]	1.827 [46.41]	1.969 [50.01]	0.845 Ø [21.46]	-----
3	G7500000I0	2.015 [51.18]	3.109 [78.97]	2.594 [65.89]	1.189 [30.20]	0.085 [2.16]	2.520 [64.01]	2.281 [57.94]	1.060 Ø [26.92]	-----

MATERIAL: HOODS, CABLE CLAMPS AND KNOBS - ALUMINUM, YELLOW OR BLACK ANODIZE
JACKSCREWS - STAINLESS STEEL, PASSIVATED, SEE PAGE 55 FOR THREAD INFORMATION
M 3 x 0.5 METRIC THREADS AVAILABLE ON ZINC PLATED STEEL JACKSCREWS
DESKIRTED HOODS AVAILABLE UPON REQUEST

* WHEN SUPPLIED WITH A FEMALE OR MALE SHELL, THE JACKSCREW MATING LENGTHS 0.161 [4.09] SHALL BE 0.121 [3.07]
AND THE 0.165 [4.19] SHALL BE 0.125 [3.18].



Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

CABLE ADAPTERS

DIMENSIONS FOR SIDE ACCESS HOODS WITH JACKSCREW SYSTEM (Z,V)

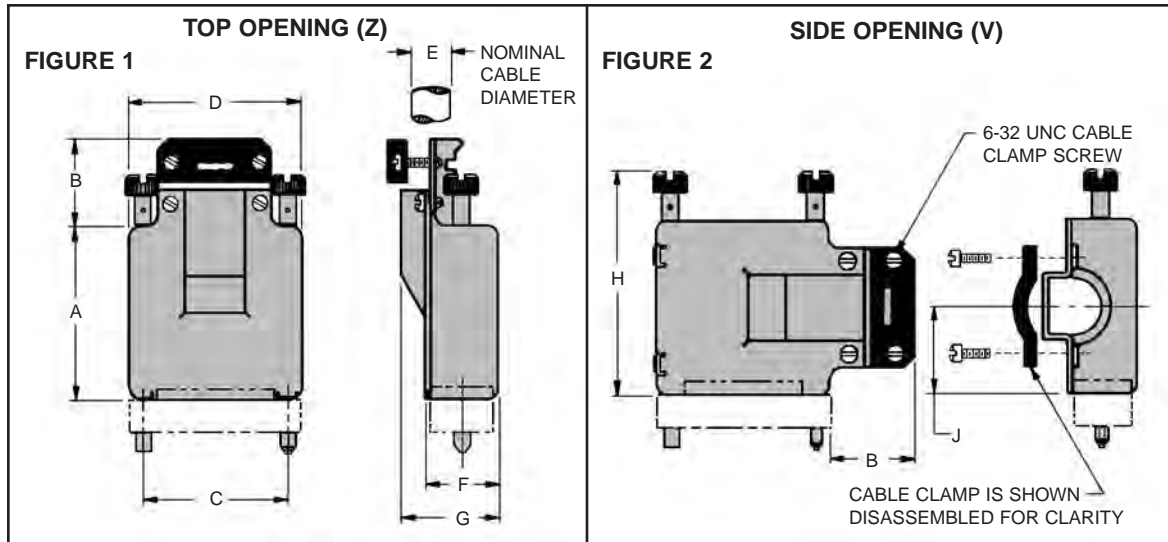


FIGURE	PART NUMBER	A	B	C	D	E	F	G	H	J
1	G3400000Z0	2.100 [53.34]	0.812 [20.62]	1.688 [42.88]	2.100 [53.34]	0.438 [11.13]	0.860 [21.84]	1.110 [28.19]	2.605 [66.17]	----
2	G3400000V0	2.100 [53.34]	0.812 [20.62]	1.688 [42.88]	2.100 [53.34]	0.438 [11.13]	0.860 [21.84]	1.110 [28.19]	2.605 [66.17]	1.050 [26.67]
1	G5000000Z0	2.693 [68.40]	0.812 [20.62]	2.282 [57.96]	2.693 [68.40]	0.625 [15.88]	0.860 [21.84]	1.235 [31.37]	3.198 [81.23]	----
2	G5000000V0	2.693 [68.40]	0.812 [20.62]	2.282 [57.96]	2.693 [68.40]	0.625 [15.88]	0.860 [21.84]	1.235 [31.37]	3.198 [81.23]	1.347 [34.21]
1	G7500000Z0	2.693 [68.40]	0.937 [23.80]	2.282 [57.96]	2.693 [68.40]	1.000 [25.40]	1.219 [30.96]	1.720 [43.69]	3.198 [81.23]	----
2	G7500000V0	2.693 [68.40]	0.937 [23.80]	2.282 [57.96]	2.693 [68.40]	1.000 [25.40]	1.219 [30.96]	1.720 [43.69]	3.245 [82.42]	1.347 [34.21]

MATERIAL: HOODS AND KNOBS - ALUMINUM, YELLOW OR BLACK ANODIZE
CABLE CLAMPS - ALUMINUM, YELLOW OR BLACK ANODIZE
JACKSCREW - STAINLESS STEEL, PASSIVATED, 6-32 THREADS STANDARD
M3 x 0.5 METRIC THREADS AVAILABLE

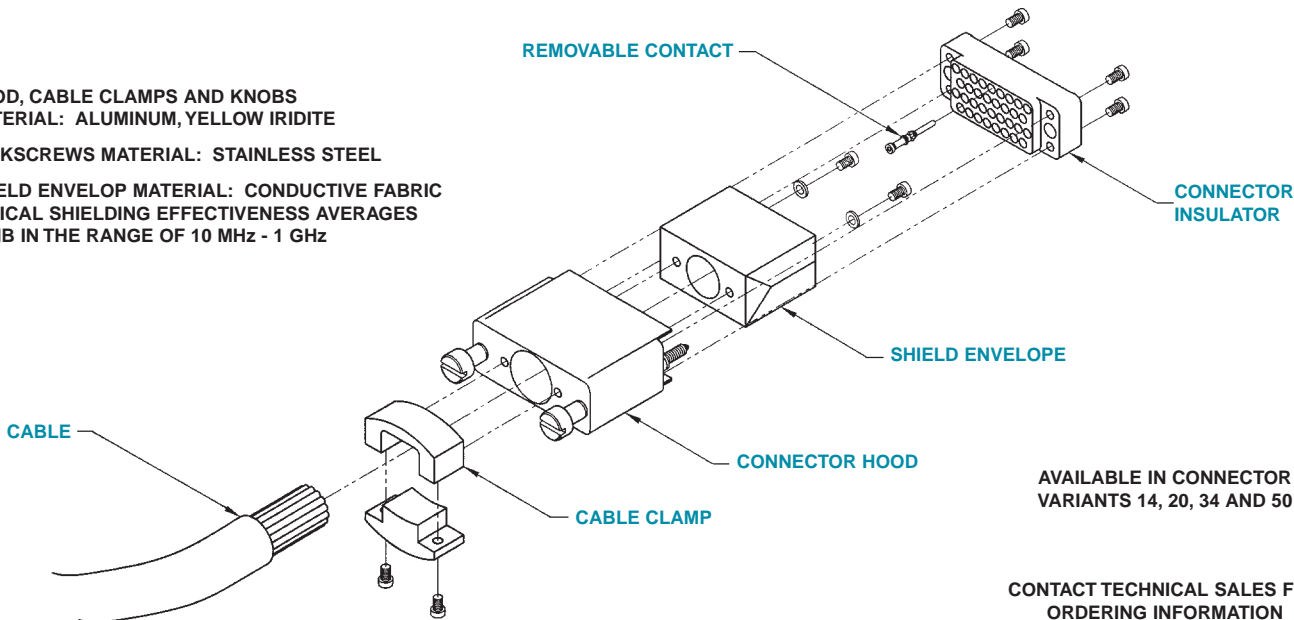


EMI/RFI SHIELDED HOOD

HOOD, CABLE CLAMPS AND KNOBS
MATERIAL: ALUMINUM, YELLOW IRIDITE

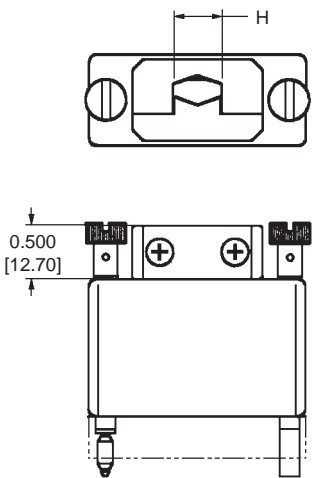
JACKSCREWS MATERIAL: STAINLESS STEEL

SHIELD ENVELOP MATERIAL: CONDUCTIVE FABRIC
TYPICAL SHIELDING EFFECTIVENESS AVERAGES
60 dB IN THE RANGE OF 10 MHz - 1 GHz



TOP OPENING HOODS WITH JACKSCREW SYSTEM AND
PLASTIC CABLE CLAMPS

FOR RIGID CABLE SUPPORT



HOOD PART NUMBER	H
G3400000Y60	0.300 MAX. [7.62] Ø
G3400000Y70	0.375 MAX. [9.53] Ø
G3400000Y80	0.450 MAX. [11.43] Ø
G4200000Y60	0.300 MAX. [7.62] Ø
G4200000Y70	0.375 MAX. [9.53] Ø
G4200000Y80	0.450 MAX. [11.43] Ø
G5000000Y60	0.300 MAX. [7.62] Ø
G5000000Y70	0.375 MAX. [9.53] Ø
G5000000Y80	0.450 MAX. [11.43] Ø

CABLE CLAMPS MATERIAL - COMPOSITE STANDARD,
GLASS FILLED POLYESTER OPTION

ALUMINUM MATERIAL WITH YELLOW OR BLACK
ANODIZE FINISH ALSO AVAILABLE FOR CABLE CLAMPS



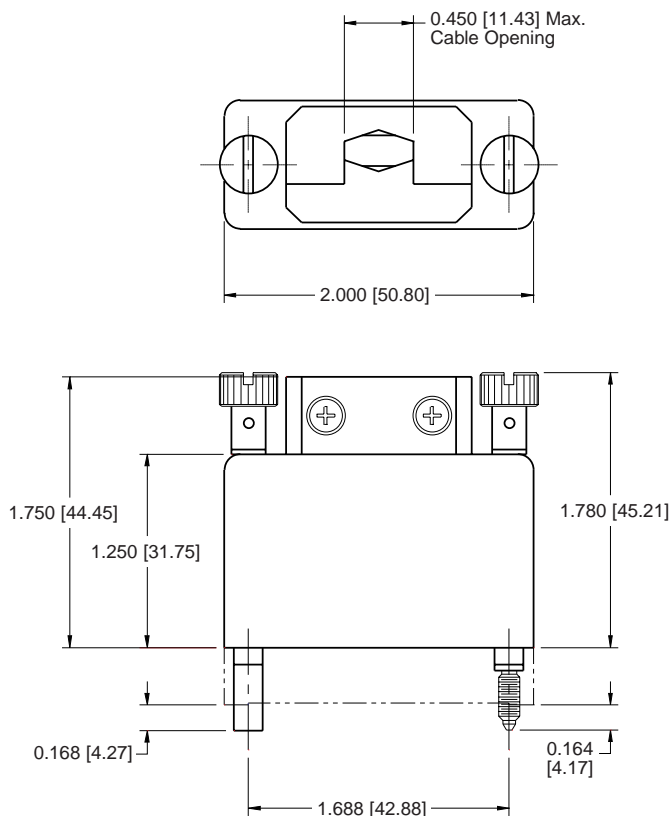
Positronic Industries
connectpositronic.com

ACCESSORIES FOR RECTANGULAR CONNECTORS

Standard
Density
Rectangular

EMI/RFI SHIELDED CABLE ADAPTER (HOOD) AND SHELLS (Z2, R2, P2) FOR USE WITH SIZE 34 CONNECTOR VARIANTS DEEP DRAWN STEEL CONSTRUCTION

SHIELDED TOP OPENING HOOD (Z2)



Materials and Finishes:

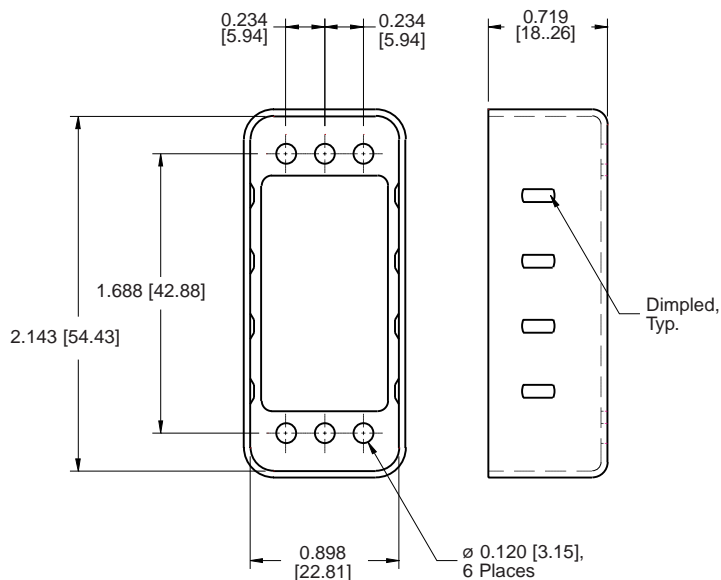
Hood: Steel, nickel plate, or tin plate.

Cable Clamp: Plastic, nickel plate.

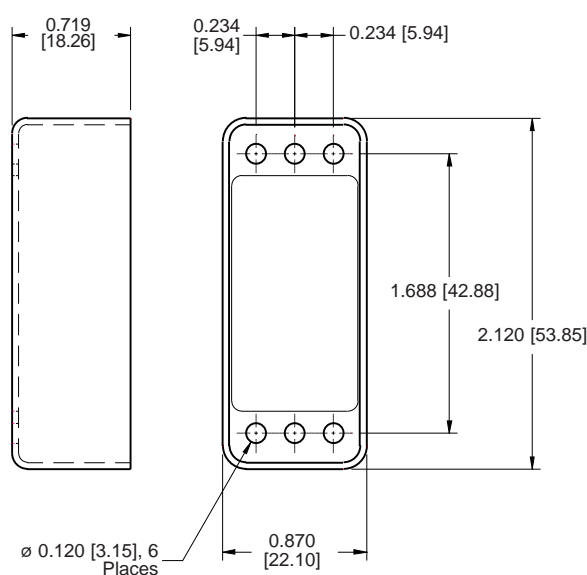
Jackscrews: Stainless steel, passivated.

Knobs: Aluminum, anodized.

SHIELDED FEMALE SHELL (R2)



SHIELDED MALE SHELL (P2)

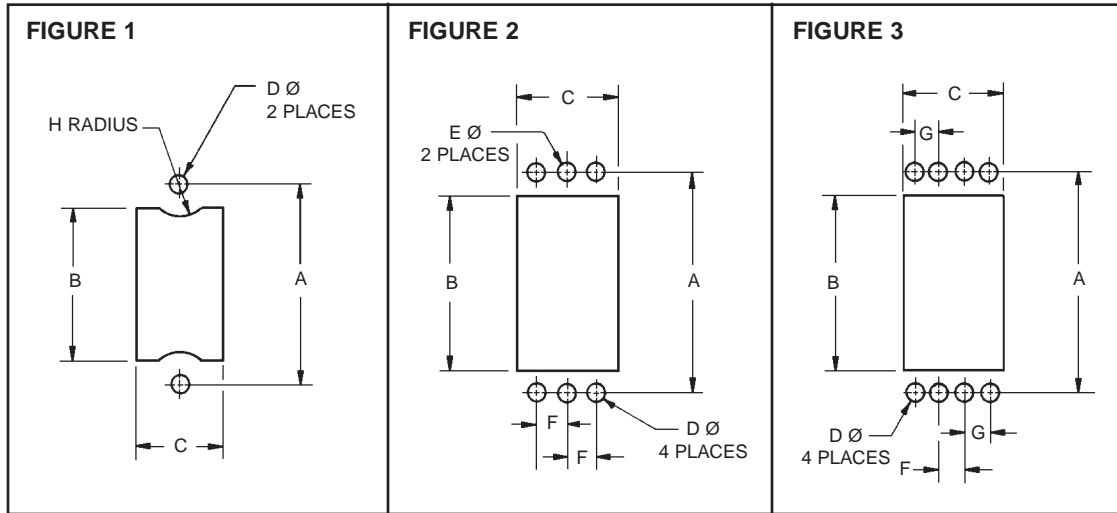


Materials and Finishes:

Steel, nickel plate, or tin plate.

Aluminum, yellow chromate conversion.

PANEL CUT-OUT DIMENSIONS FOR GM SERIES AND GMCT SERIES CONNECTORS



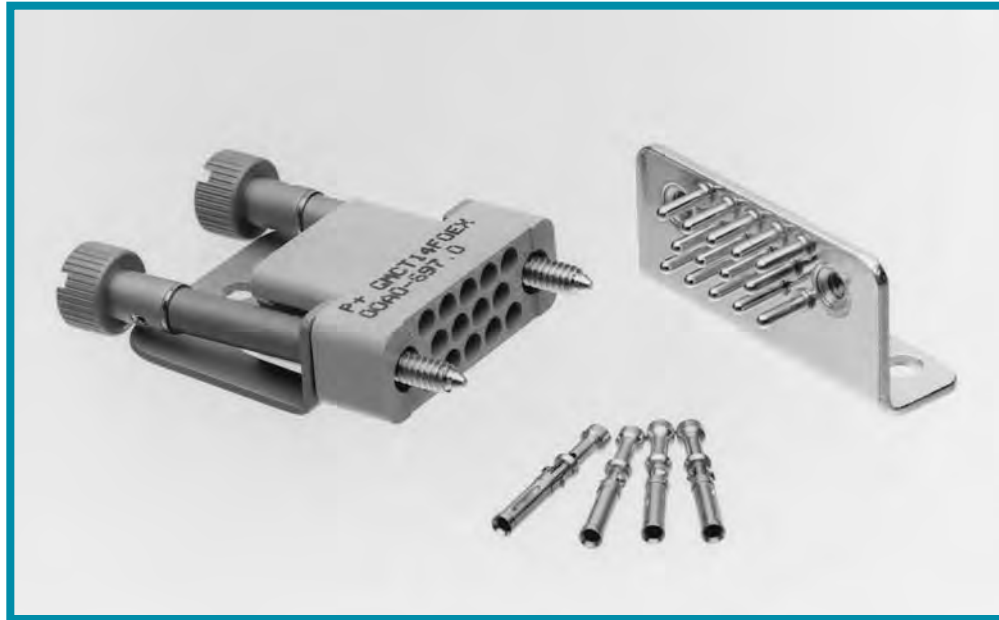
SIZE	FIGURE	A	B MIN.	C MIN.	D MIN.	E MIN.	F	G	H MAX.
7	1	0.906 [23.01]	0.660 [16.76]	0.386 [9.80]	0.120 [3.05]	-----	-----	-----	-----
8	1	0.562 [14.27]	0.440 [11.18]	0.385 [9.78]	0.095 [2.41]	-----	-----	-----	-----
9	1	1.000 [25.40]	0.820 [20.83]	0.386 [9.80]	0.120 [3.05]	-----	-----	-----	-----
14	1	0.936 [23.77]	0.817 [20.75]	0.446 [11.33]	0.120 [3.05]	-----	-----	-----	0.118 [3.00]
18	1	1.000 [25.40]	0.880 [22.35]	0.572 [14.53]	0.120 [3.05]	-----	-----	-----	0.115 [2.92]
20	1	1.250 [31.75]	1.129 [28.68]	0.446 [11.33]	0.120 [3.05]	-----	-----	-----	0.115 [2.92]
21	1	1.936 [49.17]	1.830 [46.48]	0.384 [9.75]	0.120 [3.05]	-----	-----	-----	0.115 [2.92]
26	1	1.312 [33.32]	1.192 [30.28]	0.572 [14.53]	0.120 [3.05]	-----	-----	-----	-----
34	2	1.687 [42.85]	1.389 [35.28]	0.776 [19.71]	0.120 [3.05]	0.125 [3.18]	0.234 [5.94]	-----	-----
41	1	2.312 [58.72]	2.135 [54.23]	0.446 [11.33]	0.120 [3.05]	-----	-----	-----	-----
42	2	2.000 [50.80]	1.682 [42.72]	0.776 [19.71]	0.120 [3.05]	0.125 [3.18]	0.234 [5.94]	-----	-----
50	2	2.282 [57.96]	1.983 [50.37]	0.776 [19.71]	0.120 [3.05]	0.125 [3.18]	0.234 [5.94]	-----	-----
60	2	2.375 [60.33]	2.058 [52.27]	1.479 [37.57]	0.120 [3.05]	0.145 [3.68]	0.438 [11.13]	-----	-----
66	2	1.968 [49.99]	1.683 [42.75]	1.135 [28.83]	0.120 [3.05]	0.125 [3.18]	0.251 [6.38]	-----	-----
75	3	2.282 [57.96]	1.987 [50.47]	1.120 [28.45]	0.120 [3.05]	-----	0.234 [5.94]	0.266 [6.76]	-----
104	2	2.375 [60.33]	2.058 [52.27]	1.479 [37.57]	0.120 [3.05]	0.145 [3.68]	0.438 [11.13]	-----	-----



Positronic Industries
connectpositronic.com

GROUNDING PLATES DESIGNED FOR AIRCRAFT APPLICATIONS

Standard
Density
Rectangular



Positronic Industries' grounding plates were designed especially for aircraft applications where shielded cable must be grounded to the aircraft frame. The ground wires of the shielded cable are piggy-backed out of the cable with ferrules and are crimped to Size 16 female contacts. The female contacts are loaded into standard 14 or 34 contact connector housings. These connectors can then be mated to the grounding plate which is fastened to the aircraft frame.

Grounding plates have Size 16 precision-machined male contacts which are swaged and soldered onto the metal plate.

The metal plates (angled and plane) have fixed female jackscrews that accept the rotating jackscrews, which are an integral part of the mating female connector. Long rotating jackscrews extend beyond the edge of the cable adapter of the 14-contact female connector which permits easy coupling to the grounding plate.

Other contact variants are available for grounding plate applications. Contact Technical Sales for information on the availability of other grounding plates offered by Positronic Industries.

GROUNDING PLATES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled DAP per MIL-M-14, Type SDG-F. Grey or black in color.
Grounding Plates:	Copper alloy with tin plate.
Contacts:	Copper alloy with 0.000010 inch [0.25 microns] gold over nickel plate.
Jackscrew System:	Stainless steel, passivated.
Strain Reliefs:	Steel with zinc plate and chromate seal or aluminum with yellow anodize.

MECHANICAL CHARACTERISTICS:

Removable	
Female Contacts:	Insert contact to rear face of insulator, release from front face of insulator. "Closed Entry" design for highest reliability.

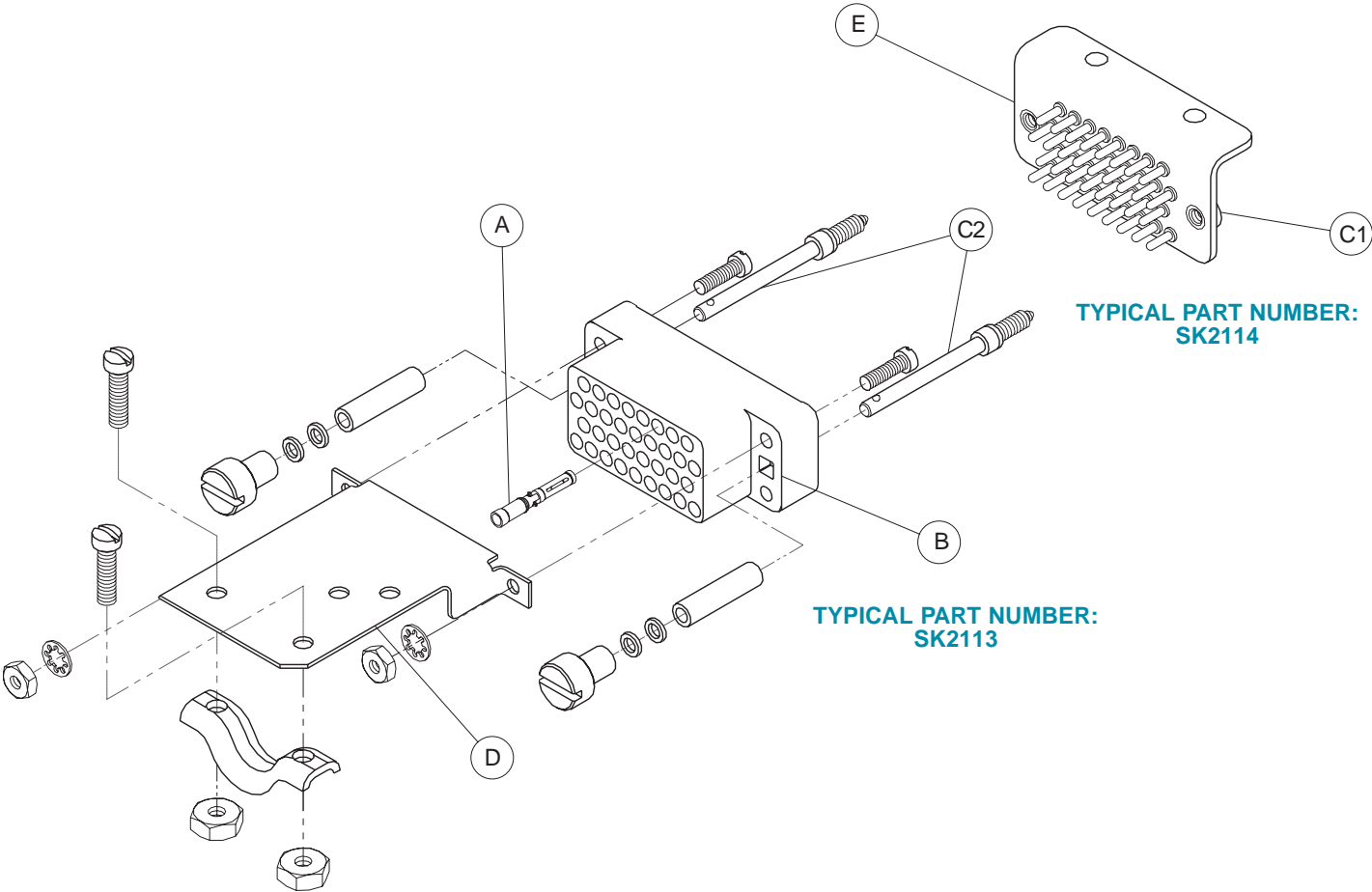
Contact Retention in Insulator:	20 lbs. (89N) after 10 cycles of contact insertion/extraction.
Female Contact Termination:	Crimp wires, Sizes 20 AWG [0.5 mm ²] through 24 AWG [0.25 mm ²].
Jackscrews:	6-32 UNC threads.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	13 amperes nominal.
Insulation Resistance:	5 G ohms.
Working Voltage:	500 VAC (rms).
Working Temperature:	-65°C to 150°C.



GROUNDING PLATE COMPONENT DESCRIPTION



CONNECTOR COMPONENT DESCRIPTIONS	
ITEM	COMPONENT DESCRIPTIONS
A	Female Contacts, Size 16, Crimp Terminations.
B	Female Connector Insulator.
C1	Fixed Jackscrew.
C2	Rotating Jackscrew.
D	Strain Relief provides cable support.
E	Grounding Plate.



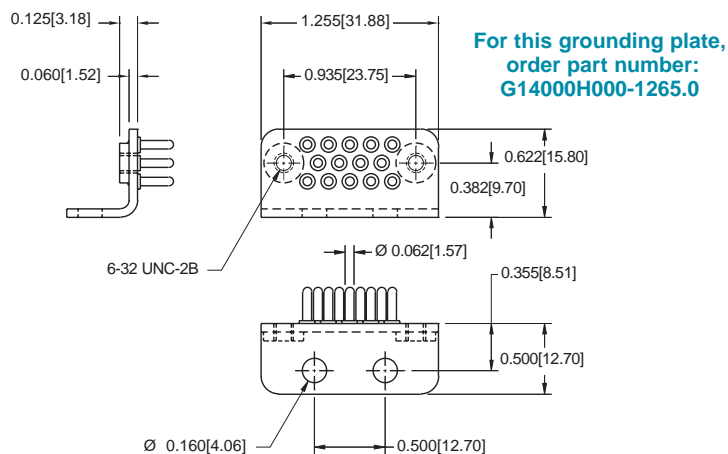
Positronic Industries
connectpositronic.com

GROUNDING PLATES DESIGNED FOR AIRCRAFT APPLICATIONS

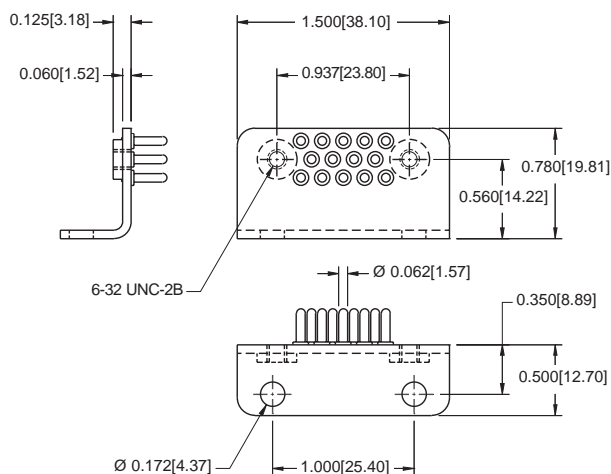
Standard
Density
Rectangular

Grounding Plate Ordering Information

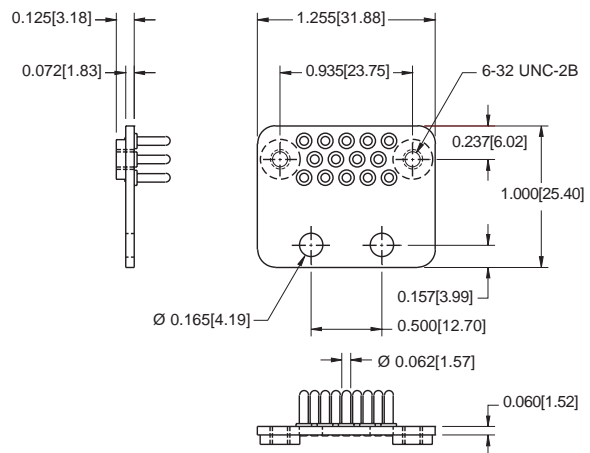
Grounding plates are offered in five (5) different configurations, as shown below. These grounding plates can be used with the connector strain relief assemblies shown to the right below. The connector strain relief assemblies are provided with an appropriate number of FC120N2 female contacts. The FC120N2 contacts feature a "Closed Entry" design and accommodate wire sizes 20 - 24 AWG (0.5 - 0.25 mm²). Reference the schematics below for dimensional information. Use the indicated part numbers below to order your grounding plate assemblies from Positronic Industries.



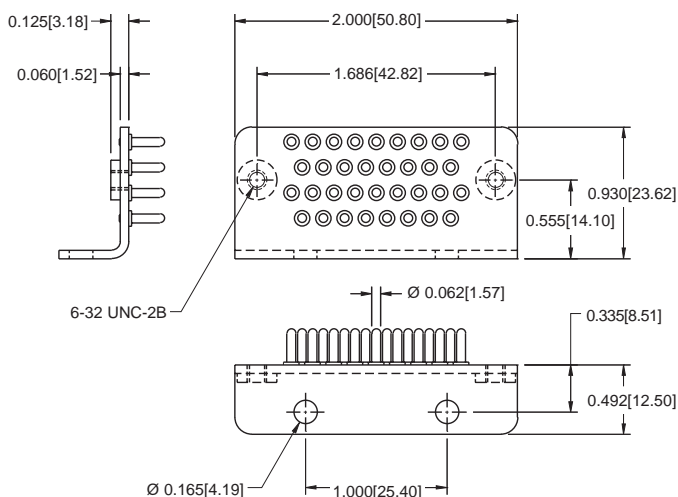
For this grounding plate, order part number: **SK2484**



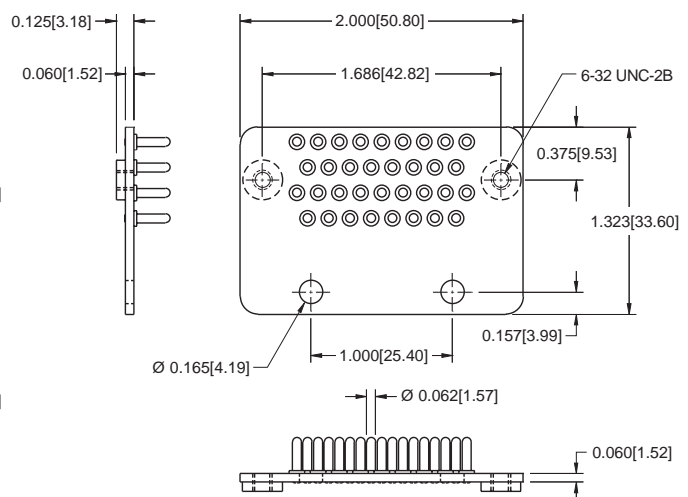
For this grounding plate, order part number: **SK2665**



GROUND PLATES



For this grounding plate, order part number: **SK2114**



For this grounding plate, order part number: **SK2664**

Standard
Density
Rectangular

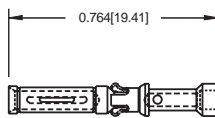
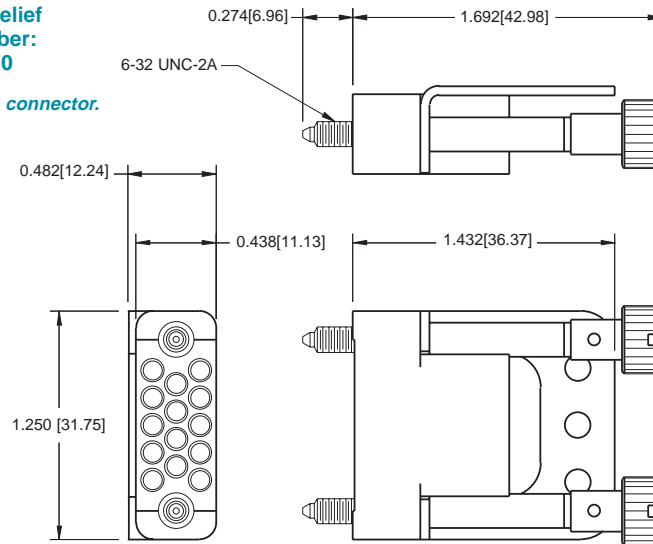
GROUNDING PLATES DESIGNED FOR AIRCRAFT APPLICATIONS



Positronic Industries
connectpositronic.com

For this connector strain relief
assembly, order part number:
GMCT14F0EX00A0-697.0

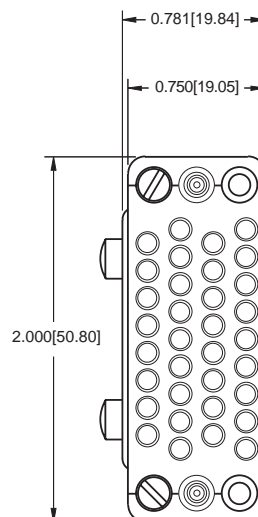
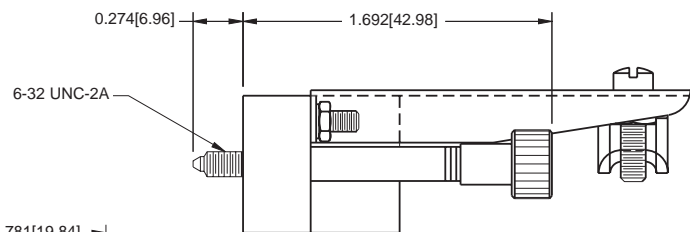
A plastic cable tie is supplied with this connector.



FC120N2 FEMALE CONTACT "CLOSED ENTRY" DESIGN

(ENLARGED)

The appropriate number of contacts are supplied with the connectors. These crimp termination contacts accommodate wire sizes 20 - 24 AWG (0.5 - 0.25 mm²). Contact Technical Sales for crimp tool ordering information.



For this connector strain relief
assembly, order part number:
SK2113

GROUND PLATES



Positronic Industries
connectpositronic.com

ORDERING INFORMATION FOR MIL-DTL-28748/3, MIL-DTL-28748/4, MIL-DTL-28748/5 AND MIL-DTL-28748/6

Standard
Density
Rectangular

CHART #1 MALE CONNECTORS

PART NUMBER EXPLANATIONS

M28748/3-	B	1	A	S	1A
-----------	---	---	---	---	----

Step 1 – Basic Part Number
M28748/3-

Step 6 – Contacts
(SEE CHART 5)

Step 2 – Insert Size

B - 9 Contact Variant
C - 14 Contact Variant
D - 20 Contact Variant
E - 26 Contact Variant
F - 34 Contact Variant
G - 42 Contact Variant
H - 50 Contact Variant
J - 66 Contact Variant
K - 75 Contact Variant
L - 104 Contact Variant

Step 5 – Jackscrews/Guide Pins

L - Long Jackscrews/Shields Only
S - Short Jackscrews/No Shield
F - Fixed Jackscrews/No Shield
G - Guide Pin/No Shield
0 - None Included

Step 4 – Shell

A - A (Polarized Plug)
B - B (Polarized Plug)
C - C (Polarized Plug)
D - D (Polarized Plug)
E - E (Polarized Plug)
F - F (Polarized Plug)
G - G (Polarized Plug)
H - Unpolarized Plug
J - A (Polarized Receptacle)
K - B (Polarized Receptacle)
L - C (Polarized Receptacle)
M - D (Polarized Receptacle)
N - E (Polarized Receptacle)
P - F (Polarized Receptacle)
Q - G (Polarized Receptacle)
R - Unpolarized Receptacle
0 - None

Step 3 – Shield/Retaining Plate

Shield

1 - Top Opening Hood (Size 9-50 & 75)
2 - Side Opening Hood (Size 9-50 & 75)
3 - Top Opening Hood (Size 66/104)
4 - Side Opening Hood (Size 66/104)
0 - None

Retaining Plate

5 - Retaining Plate (Size 9-26)
6 - Retaining Plate (Size 34-75, except Size 66)
7 - Retaining Plate (Size 66/104)

CHART #2 FEMALE CONNECTORS

PART NUMBER EXPLANATIONS

M28748/4-	C	1	A	L	1A
-----------	---	---	---	---	----

Step 1 – Basic Part Number
M28748/4-

Step 6 – Contacts
(SEE CHART 6)

Step 2 – Insert Size

B - 9 Contact Variant
C - 14 Contact Variant
D - 20 Contact Variant
E - 26 Contact Variant
F - 34 Contact Variant
G - 42 Contact Variant
H - 50 Contact Variant
J - 66 Contact Variant
K - 75 Contact Variant
L - 104 Contact Variant

Step 5 – Jackscrews/Guide Pins

L - Long Jackscrews/Shields Only
S - Short Jackscrew/No Shield
F - Fixed Jackscrew/No Shield
G - Guide Pin/No Shield
0 - None

Step 4 – Shell

A - A (Polarized Receptacle)
B - B (Polarized Receptacle)
C - C (Polarized Receptacle)
D - D (Polarized Receptacle)
E - E (Polarized Receptacle)
F - F (Polarized Receptacle)
G - G (Polarized Receptacle)
H - Unpolarized Receptacle
J - A (Polarized Plug)
K - B (Polarized Plug)
L - C (Polarized Plug)
M - D (Polarized Plug)
N - E (Polarized Plug)
P - F (Polarized Plug)
Q - G (Polarized Plug)
R - Unpolarized Plug
0 - None

Step 3 – Shield/Retaining Plate

1 - Retaining Plate (Size 9-26)
2 - Retaining Plate (Size 34-75, except Size 66)
3 - Retaining Plate (Size 66/104)
4 - Top Opening Hood (Size 9-50 & 75)
5 - Side Opening Hood (Size 9-50 & 75)
6 - Top Opening Hood (Size 66/104)
7 - Side Opening Hood (Size 66/104)
0 - None

See GMCT Series Connectors pages 1-21 and Accessories pages 44-58

CHART #3 MALE CONNECTORS

PART NUMBER EXPLANATIONS

M28748/5-	B	1	A	L	1A
-----------	---	---	---	---	----

Step 1 – Basic Part Number
M28748/5-

Step 6 – Contacts
1A - Size 20 Contacts

Step 2 – Insert Size

A - 7 Contact Variant
B - 9 Contact Variant
C - 14 Contact Variant
D - 20 Contact Variant
E - 26 Contact Variant
F - 34 Contact Variant
H - 50 Contact Variant

Step 5 – Jackscrews/Guide Pins

L - Long Jackscrews (Shields Only)
S - Short Jackscrews (No Shield)
F - Fixed Jackscrews (No Shield)
G - Guide Pins (No Shield)
0 - None

Step 4 – Shell

A - A (Polarized Plug)
B - B (Polarized Plug)
C - C (Polarized Plug)
D - D (Polarized Plug)
E - E (Polarized Plug)
F - F (Polarized Plug)
G - G (Polarized Plug)
H - Unpolarized Plug
J - A (Polarized Receptacle)
K - B (Polarized Receptacle)
L - C (Polarized Receptacle)
M - D (Polarized Receptacle)
N - E (Polarized Receptacle)
P - F (Polarized Receptacle)
Q - G (Polarized Receptacle)
R - Unpolarized Receptacle
0 - None

Step 3 – Shield/Retaining Plate

Shield

1 - Top Opening, use w/o shell (Size 9-26)
2 - Side Opening, use w/o shell (Size 9-26)
3 - Top Opening, use w/o shell (Size 34-50)
4 - Side Opening, use w/o shell (Size 34-50)
5 - Top Opening, use with Shell (Size 34-50)
6 - Side Opening, use with Shell (Size 34-75, except Size 66)

Retaining Plate

7 - Retaining Plate (Size 9-26)
8 - Retaining Plate (Size 34-50)

CHART #4 FEMALE CONNECTORS

PART NUMBER EXPLANATIONS

M28748/6-	B	1	A	L	1A
-----------	---	---	---	---	----

Step 1 – Basic Part Number
M28748/6-

Step 6 – Contacts
1A - Size 20 Contacts

Step 2 – Insert Size

A - 7 Contact Variant
B - 9 Contact Variant
C - 14 Contact Variant
D - 20 Contact Variant
E - 26 Contact Variant
F - 34 Contact Variant
H - 50 Contact Variant

Step 5 – Jackscrews/Guide Pins

L - Long Jackscrews (Shields Only)
S - Short Jackscrews (No Shield)
F - Fixed Jackscrews (No Shield)
G - Guide Pins (No Shield)
0 - None

Step 4 – Shell

A - A (Polarized Plug)
B - B (Polarized Plug)
C - C (Polarized Plug)
D - D (Polarized Plug)
E - E (Polarized Plug)
F - F (Polarized Plug)
G - G (Polarized Plug)
H - Unpolarized Plug
J - A (Polarized Receptacle)
K - B (Polarized Receptacle)
L - C (Polarized Receptacle)
M - D (Polarized Receptacle)
N - E (Polarized Receptacle)
P - F (Polarized Receptacle)
Q - G (Polarized Receptacle)
R - Unpolarized Receptacle
0 - None

Step 3 – Shield/Retaining Plate

Shield

1 - Top Opening, use w/o shell (Size 9-26)
2 - Side Opening, use w/o shell (Size 9-26)
3 - Top Opening, use w/o shell (Size 34-50)
4 - Side Opening, use w/o shell (Size 34-50)
5 - Top Opening, use with Shell (Size 34-50)
6 - Side Opening, use with Shell (Size 34-50)

Retaining Plate

7 - Retaining Plate (Size 9-26)
8 - Retaining Plate (Size 34-50)



CHART #5

CONTACT SIZE PERCENT (FOR M28748/3 CONNECTORS)			
CONTACT	SIZE 16-16 M39029/34-273	SIZE 16-20 M39029/34-272	SIZE 20-20 M39029/34-271
1A	100	0	0
1B	90	0	0
1C	80	0	0
1D	70	0	0
1E	60	0	0
1F	50	0	0
1G	40	0	0
1H	30	0	0
1J	20	0	0
1K	10	0	0
1L	0	0	0
2A	0	100	0
2B	0	90	0
2C	0	80	0
2D	0	70	0
2E	0	60	0
2F	0	50	0
2G	0	40	0
2H	0	30	0
2J	0	20	0
2K	0	10	0
3A	0	0	100
3B	0	0	90
3C	0	0	80
3D	0	0	70
3E	0	0	60
3F	0	0	50
3G	0	0	40
3H	0	0	30
3J	0	0	20
3K	0	0	10

CHART #6

CONTACT SIZE PERCENT (FOR M28748/4 CONNECTORS)			
CONTACT	SIZE 16-16 M39029/35-276	SIZE 16-20 M39029/35-275	SIZE 20-20 M39029/35-274
1A	100	0	0
1B	90	0	0
1C	80	0	0
1D	70	0	0
1E	60	0	0
1F	50	0	0
1G	40	0	0
1H	30	0	0
1J	20	0	0
1K	10	0	0
1L	0	0	0
2A	0	100	0
2B	0	90	0
2C	0	80	0
2D	0	70	0
2E	0	60	0
2F	0	50	0
2G	0	40	0
2H	0	30	0
2J	0	20	0
2K	0	10	0
3A	0	0	100
3B	0	0	90
3C	0	0	80
3D	0	0	70
3E	0	0	60
3F	0	0	50
3G	0	0	40
3H	0	0	30
3J	0	0	20
3K	0	0	10

See GMCT Series contacts page 12.



Positronic Industries
connectpositronic.com

MIL-DTL-28748 & SAE AS 39029 QUALIFIED PRODUCTS LISTING

Standard
Density
Rectangular

Positronic Industries offers the listing below of connectors and connector accessories, which are products qualified under Military Specifications MIL-DTL-28748 and SAE AS 39029. For additional Q.P.L. connectors, please contact Technical Sales.

Positronic GMCT series connectors are Q.P.L. approved to MIL-DTL-28748.

Positronic GMCT series crimp removable contacts are Q.P.L. approved to SAE AS 39029.

Positronic GM series connectors are Q.P.L. approved to MIL-DTL-28748.

MILITARY PART NUMBER	MILITARY PART NUMBER	MILITARY PART NUMBER	MILITARY PART NUMBER	MILITARY PART NUMBER
M28748/3-BXXL*	M28748/3-HXXG*	M28748/4-EXXS*	M28748/4-LXX0*	M28748/6-B00S1A
M28748/3-BXXS*	M28748/3-HXX0*	M28748/4-EXXF*	M28748/5-A00S1A	M28748/6-B00F1A
M28748/3-BXXF*	M28748/3-JXXL*	M28748/4-EXXG*	M28748/5-A00F1A	M28748/6-B00G1A
M28748/3-BXXG*	M28748/3-JXXS*	M28748/4-EXX0*	M28748/5-A00G1A	M28748/6-B0001A
M28748/3-BXX0*	M28748/3-JXXF*	M28748/4-FXXL*	M28748/5-A0001A	M28748/6-C00S1A
M28748/3-CXXL*	M28748/3-JXXG*	M28748/4-FXXS*	M28748/5-B00S1A	M28748/6-C00F1A
M28748/3-CXXS*	M28748/3-JXX0*	M28748/4-FXXF*	M28748/5-B00F1A	M28748/6-C00G1A
M28748/3-CXXF*	M28748/3-KXXL*	M28748/4-FXXG*	M28748/5-B00G1A	M28748/6-C0001A
M28748/3-CXXG*	M28748/3-KXXS*	M28748/4-FXX0*	M28748/5-B0001A	M28748/6-D00S1A
M28748/3-CXX0*	M28748/3-KXXF*	M28748/4-GXXL*	M28748/5-C00S1A	M28748/6-D00F1A
M28748/3-DXXL*	M28748/3-KXXG*	M28748/4-GXXS*	M28748/5-C00F1A	M28748/6-D00G1A
M28748/3-DXXS*	M28748/3-KXX0*	M28748/4-GXXF*	M28748/5-C00G1A	M28748/6-D0001A
M28748/3-DXXF*	M28748/3-LXXL*	M28748/4-GXXG*	M28748/5-C0001A	M28748/6-E00S1A
M28748/3-DXXG*	M28748/3-LXXS*	M28748/4-GXX0*	M28748/5-D00S1A	M28748/6-E00F1A
M28748/3-DXX0*	M28748/3-LXXF*	M28748/4-HXXL*	M28748/5-D00F1A	M28748/6-E00G1A
M28748/3-EXXL*	M28748/3-LXXG*	M28748/4-HXXS*	M28748/5-D00G1A	M28748/6-E0001A
M28748/3-EXXS*	M28748/3-LXX0*	M28748/4-HXXF*	M28748/5-D0001A	M28748/6-F00S1A
M28748/3-EXXF*	M28748/4-BXXL*	M28748/4-HXXG*	M28748/5-E00S1A	M28748/6-F00F1A
M28748/3-EXXG*	M28748/4-BXXS*	M28748/4-HXX0*	M28748/5-E00F1A	M28748/6-F00G1A
M28748/3-EXX0*	M28748/4-BXXF*	M28748/4-JXXL*	M28748/5-E00G1A	M28748/6-F0001A
M28748/3-FXXL*	M28748/4-BXXG*	M28748/4-JXXS*	M28748/5-E0001A	M28748/6-H00S1A
M28748/3-FXXS*	M28748/4-BXX0*	M28748/4-JXXF*	M28748/5-F00S1A	M28748/6-H00F1A
M28748/3-FXXF*	M28748/4-CXXL*	M28748/4-JXXG*	M28748/5-F00F1A	M28748/6-H00G1A
M28748/3-FXXG*	M28748/4-CXXS*	M28748/4-JXX0*	M28748/5-F00G1A	M28748/6H0001A
M28748/3-FXX0*	M28748/4-CXXF*	M28748/4-KXXL*	M28748/5-F0001A	M39029/34-271
M28748/3-GXXL*	M28748/4-CXXG*	M28748/4-KXXS*	M28748/5-H00S1A	M39029/34-272
M28748/3-GXXS*	M28748/4-CXX0*	M28748/4-KXXF*	M28748/5-H00F1A	M39029/34-273
M28748/3-GXXF*	M28748/4-DXXL*	M28748/4-KXXG*	M28748/5-H00G1A	M39029/35-274
M28748/3-GXXG*	M28748/4-DXXS*	M28748/4-KXX0*	M28748/5-H0001A	M39029/35-275
M28748/3-GXX0*	M28748/4-DXXF*	M28748/4-LXXL*	M28748/6-A00S1A	M39029/35-276
M28748/3-HXXL*	M28748/4-DXXG*	M28748/4-LXXS*	M28748/6-A00F1A	
M28748/3-HXXS*	M28748/4-DXX0*	M28748/4-LXXF*	M28748/6-A00G1A	
M28748/3-HXXF*	M28748/4-EXXL*	M28748/4-LXXG*	M28748/6-A0001A	

XX Refer to charts #1 or #2 as applicable

* Refer to charts #5 or #6 as applicable

POSITRONIC PRODUCTS

Power

Contact Sizes: 0, 8, 12, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle solder, straight press-fit and right angle (90°) press-fit
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41



FEATURES: Hot swap capability • AC/DC operation in a single connector • Signal contacts for hardware management • Blind mating • Sequential mating • Large surface area contact mating system • Wide variety of accessories • Customer specified contact arrangements

D-subminiature

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder and straight press-fit
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-24308, Goddard Space Flight S-311-P, SAE AS 39029, IP65, IP67



FEATURES: Three performance levels available: professional quality, military quality and space-flight quality provide multiple performance-to-cost choices • Options include thermocouple contacts, air coupling, environmentally sealed and dual port package including mixed density • Broad selection of accessories

Rectangular

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes
Terminations: Crimp, wire solder, straight solder and right angle (90°) solder
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-28748, SAE AS 39029, CCITT V.35



FEATURES: Two performance levels available: industrial quality and military quality provide two performance to cost choices • Large surface area contact mating system • A wide variety of accessories • Broad selection of contact variants and package sizes

Circular

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder and right angle (90°) solder
Configurations: Multiple variants
Qualifications: Environmental protection to IP67



FEATURES: Non-corrodible / lightweight composite construction • EMI/RFI shielded versions • Thermocouple contacts • Environmentally sealed versions • Rear insertion/front release of removable contacts • Two level sequential mating • Overmolding available on full assemblies

Cable

All Positronic connector products can be supplied as part of cable assemblies whose technical characteristics would reflect those of the connectors being used within the assembly.



FEATURES: Shorten the supply chain and reduce additional costs and delays by "cabling" • Overmolding available • Shielded and environmentally sealed versions available • Power cables and access boxes which meet the SAE J2496 specification

Hermetic

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-subminiature and circular configurations above
Qualifications: Space-D32



FEATURES: Intended for use as an electrical feedthrough in high vacuum applications • Leakage rate: 5×10^{-9} mbar.l/s @ vacuum 1.5×10^{-5} atm • Signal, power, coax and high voltage versions available • Connectors can be mounted on flange assembly per customer specification

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office as given on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices (800) 641-4054

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices (800) 641-4054

MEXICO

Factory Sales and Engineering Offices (800) 872-7674

CANADA

Factory Sales and Engineering Offices (800) 327-8272

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices (65) 6842 1419 singapore@connectpositronic.com

ASIA, Direct Sales Offices

China -Shenzhen Sales Office (86) 755 2643 7578 shenzhen@connectpositronic.com

China -Shanghai Sales Office (86) 158 2907 9779 shanghai@connectpositronic.com

China -Xian/Beijing Sales Office (86) 29 8839 5306 xian@connectpositronic.com

Korea Sales Office (82) 31 909 8047 or 8 korea@connectpositronic.com

Taiwan Sales Office (88) 62 2937 8775 taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices (81) 3 5812 7720 japan@connectpositronic.com

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices (91) 20 2439 4810 india@connectpositronic.com

Bangalore Sales Office bangalore@connectpositronic.com

New Delhi Sales Office delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines, Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 5 62 63 44 91 contact@connectpositronic.com

EUROPE, Direct Sales Offices

Northern France Sales Office 33 1 45 88 13 88 jchalaux@connectpositronic.com

Southern France Sales Office 33 5 62 63 44 91 plafon@connectpositronic.com

Italy Sales Office 39 02 54 1161 06 rmagni@connectpositronic.com

Germany Sales Office 49 2351 63 47 39 cbouche@connectpositronic.com

UK Sales Office 44 1993 831 939 lbridwell@connectpositronic.com

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 5 62 63 44 91 • Fax 33 5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com

www.connectpositronic.com

LOOK
FOR OUR
NEW PRODUCTS!



POSITRONIC™
GLOBAL *Connector* SOLUTIONS

High Power Connectors



FEATURES:

- MINI-MINI INFINITY
- MINI INFINITY
- INFINITY



Catalog C-012 Rev. D

www.connectpositronic.com

ABOUT US

Founded in 1966, Positronic Industries is a vertically integrated manufacturer of high quality interconnect products. Positronic has earned the worldwide reputation as a service oriented, quick-reaction, top quality connector supplier. We are committed to maintaining this reputation by continuous implementation of our **Complete Capability** concept.

COMPLETE CAPABILITY

Design & Development

- Designs new connectors and modifies existing connectors to meet industry requirements
- Continuously conducts marketing studies to identify industry needs for new products
- Ongoing interest in unique connector designs

Tooling

- Tooling support for all manufacturing areas within company
- Provides 80% of new tooling, punch press dies, molds, jigs and fixtures used at Positronic factory locations worldwide

Machining

- Automatic screw machines produce finely crafted contacts and hardware for connector bodies
- Trained technicians operate machines from Tornos, Bechler and Brown & Sharpe

Molding

- Molds all plastic connector components such as insulators, hoods, angle brackets and more
- Overmold capability available

Plating

- Applies gold and other metal finishes to connector components to any required thickness
- Plating conforms to all military specifications

Quality Assurance Lab

- Quality assurance system certified to ISO 9001. Soon certification to AS9100!
- Maintains aggressive TQM program
- Able to test to IEC, EIA, UL, MIL-DTL-24308, MIL-DTL-28748, SAE AS 39029 and MIL-C-85049 requirements

Finished Stock Inventory

- Each main factory location maintains a large inventory of connector components and accessories
- Same day shipments available on many standard connector products
- Stocking agreements available for qualified customers

Worldwide Sales & Service

- Responsive attitude toward customer needs
- Fully trained sales staff located worldwide
- Facilities located in USA, France, India, Puerto Rico, and Singapore.



Machining



Molding



Finished Stock Inventory

Products described within this catalog may be protected by one or more of the following US. patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.03 mm [0.001 inches] for male contact mating diameters.
- 2) ± 0.08 mm [0.003 inches] for contact termination diameters.
- 3) ± 0.13 mm [0.005 inches] for all other diameters.
- 4) ± 0.38 mm [0.015 inches] for all other dimensions.

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic Industries' FEDERAL SUPPLY CODE (Cage Code) FOR MANUFACTURERS is 28198

POSITRONIC IS AN ITAR REGISTERED COMPANY

Positronic Industries is proud to participate in the important work of the following organizations....



PICMG® and PICMG® logo are registered trademarks of the PCI Industrial Computers Manufacturers Group.

www.picmg.com



www.psma.com

POSITRONIC CABLIZED CONNECTORS

SAVE TIME AND MONEY! Let Positronic support your connector requirements by cablizing your **Power** connector selection. Positronic offers technical support and manufacturing capability for cablized connectors. Contact your factory direct sales representative for details!

Quality Assurance



Engineering Management



Design and Testing Service

Positronic Industries' Engineering Department:

1. Works closely with customers.
2. Prepares component and cablized connector systems, hardware design, and performance specifications.
3. Designs each system in accordance with applicable customer, domestic, and international standards.
4. Defines and directs required performance and verification testing.

Springfield Cable Assembly



Puerto Rico Cable Assembly



Connectors Designed To Customer Specifications

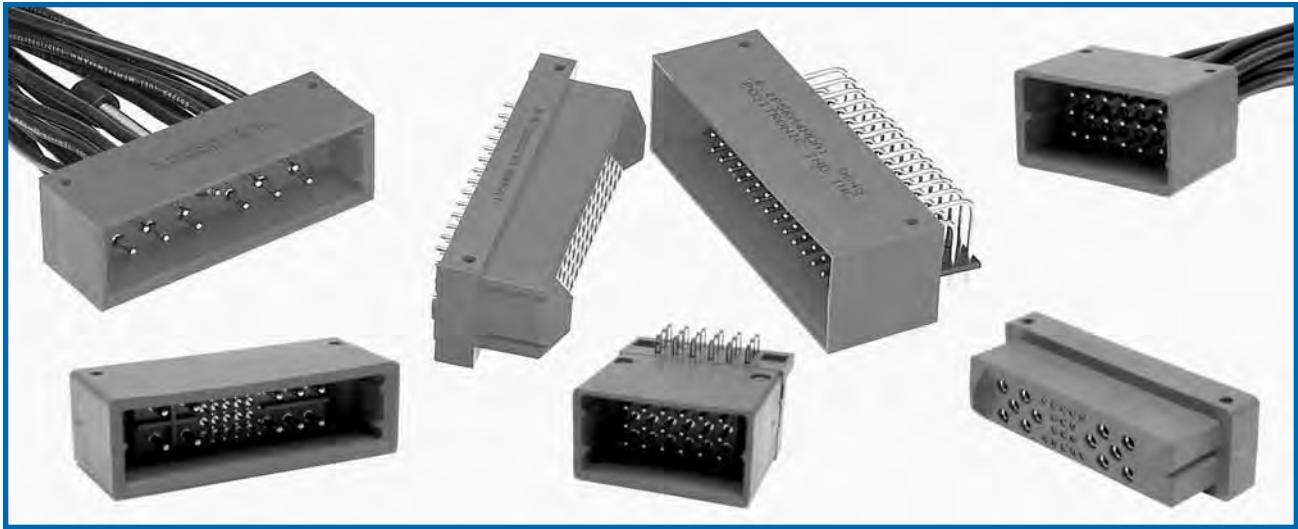
Positronic connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware.

Positronic can develop and tool new connector designs with reasonable price and delivery.

Contact Technical Sales with your particular requirements.

I N F I N I T Y



HIGH POWER CONNECTION SYSTEMS FEATURE:

The Infinity High Power Connector series is offered to the electronics industry as a high power interface with a wide variety of features. The exceptional features of this series provide solutions for system design challenges created by increasing power consumption. Notable features include:

- Solid machined true power contacts which provide superior power density
- Single contact ratings up to 40 amperes continuous for Infinity series and up to 100 amperes continuous for Mini Infinity series.
- Hot-plug capability
- Outstanding blind mating
- Sequential contact mating options
- A.C. or D.C. Input
- Recessed female contacts for safety considerations
- Multiple power contacts provide efficient current distribution for multi-voltage centralized power applications
- Multiple power contacts can be paralleled together for single voltage distributed power applications
- A wide variety of options, termination styles and contact variations
- U.L and C.S.A recognition



**RoHS Compliant
options available!**

These outstanding features make the Infinity an excellent choice as a power interface for many power applications including telecom, datacom, and computing platforms.



Positronic Industries
connectpositronic.com

TABLE OF CONTENTS

Infinity
High Power
Connector

G E N E R A L I N F O R M A T I O N

Connection Systems	1-2
Demystifying Current Ratings	3
Large Surface Area Contact Mating System	4
Compliant Press-Fit Terminations	5
Blind Mating System and Sequential Mating System	6
Application Specific Arrangements	7
Application Specific Arrangements and General Product Information	8

M M I P S E R I E S

Technical Characteristics	9
Contact Variants and Connector Mating Dimensions	10
Connector Outline Dimensions and Cable Connector	11
Straight Solder Board Mount Connector and Contact Hole Patterns	12
Straight Compliant Press-Fit Board Mount Connectors and Contact Hole Patterns	13
Right Angle (90°) Solder Board Mount Connectors and Contact Hole Patterns	14
Right Angle (90°) Compliant Press-Fit Board Mount Connectors and Contact Hole Patterns	15
Ordering Information Page	16



M I P S E R I E S

Technical Characteristics	17
Contact Variants	18
Temperature Rise Curves and Connector Mating Dimensions	19
Connector Outline Dimensions and Cable Connector	20
Straight Solder Board Mount Connector	21
Straight Solder Board Mount Connector Contact Hole Patterns	22
Straight Compliant Press-Fit Board Mount Connectors	23
Straight Compliant Press-Fit Board Mount Connectors Contact Hole Patterns	24
Right Angle (90°) Solder Board Mount Connectors	25
Right Angle (90°) Solder Board Mount Connectors Contact Hole Patterns	26
Right Angle (90°) Compliant Press-Fit Board Mount Connectors and Contact Hole Patterns	27
Ordering Information Page	28



I P S E R I E S

Technical Characteristics	29
Contact Variants	30
Temperature Rise Curves and Connector Mating Dimensions	31
Connector Outline Dimensions and Cable Connector	32
Straight Solder Board Mount Connector	33
Straight Solder Board Mount Connector Contact Hole Patterns	34
Straight Compliant Press-Fit Board Mount Connectors	35
Straight Compliant Press-Fit Board Mount Connectors Contact Hole Patterns	36
Right Angle (90°) Solder Board Mount Connectors	37
Right Angle (90°) Solder Board Mount Connectors Contact Hole Patterns	38
Right Angle (90°) Compliant Press-Fit Board Mount Connectors and Contact Hole Patterns	39
Ordering Information Page	40



R E M O V A B L E C O N T A C T S

Removable Contact Technical Information	41
Removable Contact Technical Information and Removable Crimp Contact Size 20	42
Removable Crimp Contact Size 16 and Removable Solder Cup Contact Size 16	43
Removable Crimp Contact Size 12 and Removable Solder Cup Contact Size 12	44
Removable Shielded Crimp Contact Size 12 and Removable Crimp Contact Size 8	45
Removable 100 amp High Current Crimp Contact Size 8 and Removable Solder Cup Contact Size 8	46
Removable High Voltage Contact Size 8	47
Removable Shielded Contacts Size 8	48



A P P L I C A T I O N T O O L S

Crimping Information For Removable Crimp Contacts	49-50
Soldering and Crimping Information For Shielded Contacts	51
Crimping Tools and Accessories	52
Contact Application Tools Cross Reference List	53-54
Press-Fit User Information and Mounting Screws	55
Compliant Press-Fit Termination Connector Installation Tools	56
Compliant Press-Fit Connectors Printed Hole Sizes	57



A C C E S S O R I E S

Panel Mounting Plate With Floating Bushings, Floating Bushings Panel Mount Cutout and Direct Mounting Panel Cutout	58
Connector Mounting Style Options, Panel Float Mount and Float Mount Panel Cutout	59
Cable Adapters and Fixed Female Jackscrew	60
Rotating Male Jackscrew	61





Positronic Industries
connectpositronic.com

CONNECTION SYSTEMS

Infinity
High Power
Connector

◆ SYSTEM 1 ◆

MOTHER BOARD
DAUGHTER BOARD

FEMALE:
Straight Solder or
Press-Fit Contacts

Typical Part Numbers:
MIP30F300A1 - Straight Mount
IP56F300A1 - Straight Mount

MALE:
Right Angle (90°) Solder
Contacts

Typical Part Numbers:
MIP30M400A1
IP56M400A1
Right Angle (90°) Press-Fit contacts
available for MIP30, MMIP18, and
IP56 variant connectors

* NOTE:

Crimp removable contacts must be ordered separately. See pages 41-48 of this catalog for ordering information.

◆ SYSTEM 2 ◆

PANEL MOUNT TO
RIGHT ANGLE (90°) BOARD MOUNT

*** FEMALE:**
Crimp Contacts Installed
(*contacts ordered separately)

Typical Part Numbers:
MIP30F00830 with FC116N2
IP33W9F0H00 with
FC116N2 and FC612N2

**Mounting Plate with
Float Bushing:** For direct
mounting of connector to
panel not using mounting
plate, order **Typical Part
Number:** IP33W9F0000

Float mount options
available, see pages
58 & 59.

MALE:
Right Angle (90°) Solder Contacts

Typical Part Numbers:
MIP30M400A1
IP33W9M400A1
Right Angle (90°) Press-Fit contacts available for
MIP30, MMIP18, IP48 and IP56 variant connectors

◆ SYSTEM 3 ◆

CABLE TO RIGHT ANGLE
(90°) BOARD MOUNT

**Short Rotating
Jackscrew**
Available on
IP series
connectors only.

*** MALE:**
Crimp Contacts Installed
(*contacts ordered separately)

Typical Part Numbers:
MIP30M0000 with MC116N
IP48M00E0 with MC116N

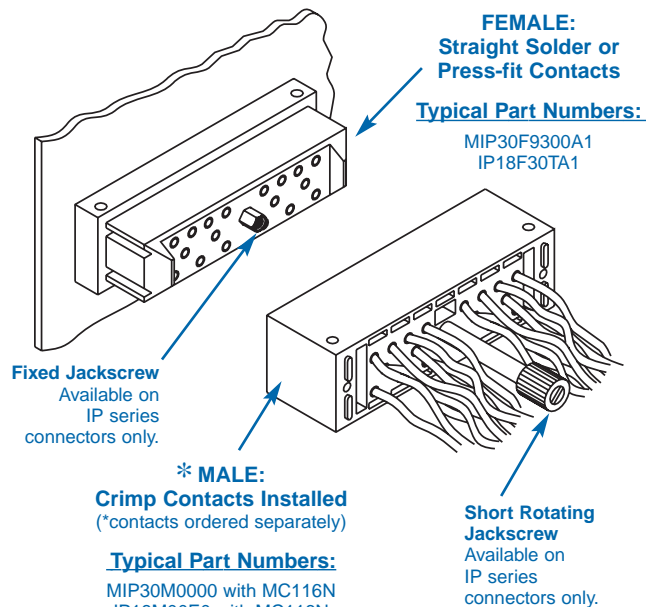
**Fixed
Jackscrew**
Available on
IP series
connectors only.

FEMALE:
Right Angle (90°) Solder Contacts

Typical Part Numbers:
MIP30F400A1
IP48F40TA1
Right Angle (90°) Press-Fit contacts available for
MIP30, MMIP18, IP48, and IP56 variant connectors

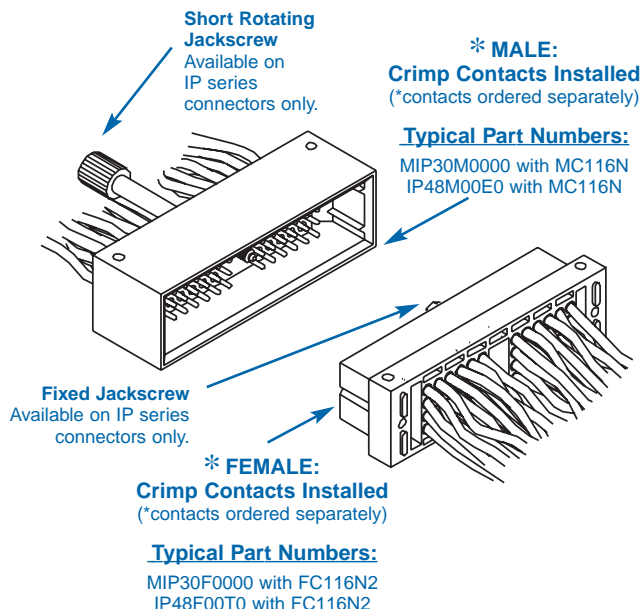
◆ SYSTEM 4 ◆

CABLE TO STRAIGHT BOARD MOUNT



◆ SYSTEM 5 ◆

CABLE TO CABLE CRIMP CONTACTS

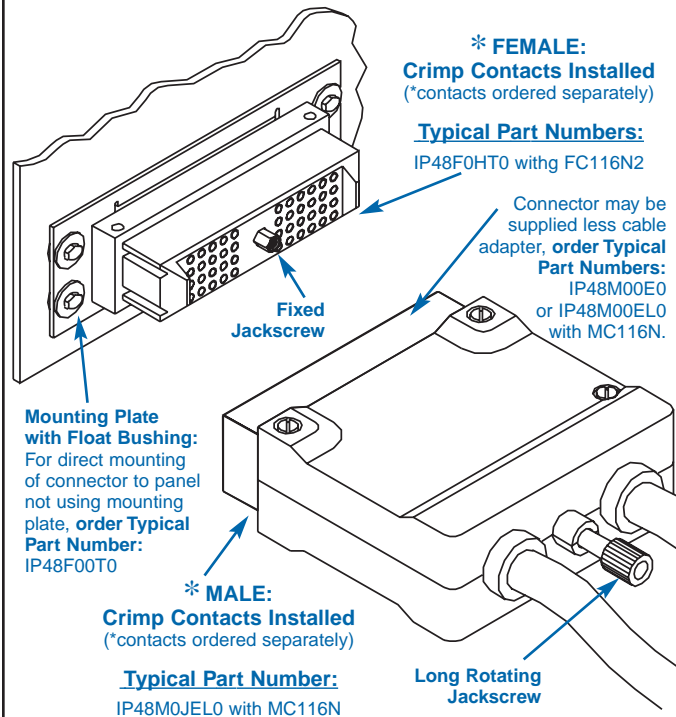


* NOTE:

Crimp removable contacts must be ordered separately. See pages 41-48 of this catalog for ordering information.

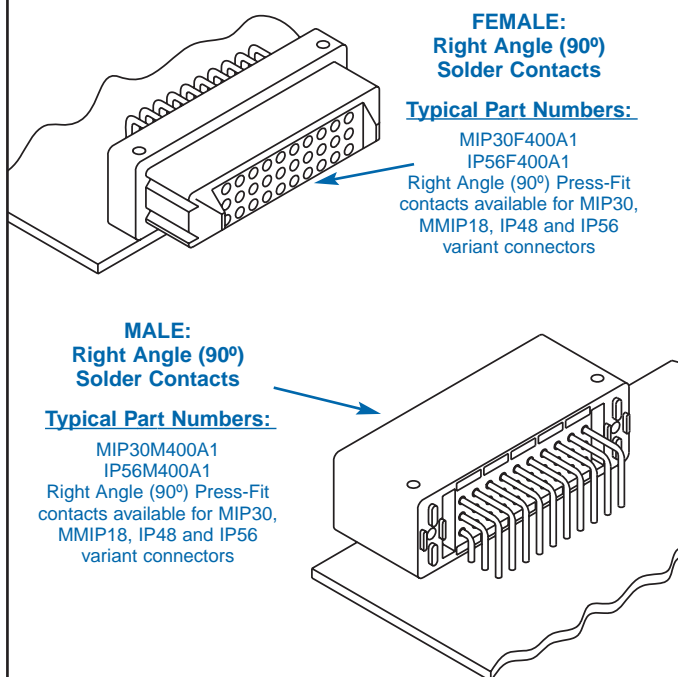
◆ SYSTEM 6 ◆

PANEL MOUNT TO CABLE CONNECTOR WITH CABLE ADAPTER AND LONG ROTATING JACKSCREW AVAILABLE ON IP SERIES CONNECTORS ONLY



◆ SYSTEM 7 ◆

RIGHT ANGLE (90°) BOARD MOUNT TO RIGHT ANGLE (90°) BOARD MOUNT





DEMYSTIFYING CURRENT RATINGS

Connector current ratings seem to be shrouded in mystery at times. The user wonders how a listed current rating is relevant to a particular application. Perhaps more mysterious is how similar connectors from various manufacturers list different current rating values. While it is true that material choices and design can enhance a connector's current rating, the test method by which the rating was developed must be understood when evaluations are made.

Users of connectors for power applications are entitled to current rating test details in order to make an informed choice. Ideally, a connector's current rating should be developed within the application for which it is being considered. Although ideal, this approach is not always practical given the many differing applications. In order for connector manufacturers to give potential product users an idea of what can be expected, connectors are given current ratings based on a specific test method.

A wide variety of test methods are employed in order to develop current ratings for connectors. Some of these methods come from standards that are recognized industry-wide, while others are unique to the manufacturer or user. These various test methods can produce different results for the same product. It is no wonder confusion sometimes results.

There are key factors that, when understood, can help in choosing the right power connector. All test methods used to rate current have similarities; however, there are variables in applying the test methods which explain differing results.

Current ratings are usually established by first developing a temperature rise curve. This curve plots temperature rise against increasing current levels. The curve is a reliable tool in understanding heat generation of the connector at various currents. When a defined failure is reached, the test ends. The highest current level achieved is usually listed as the current rating.

The temperature rise curve, and therefore the current rating, will change when certain key factors are varied. These are:

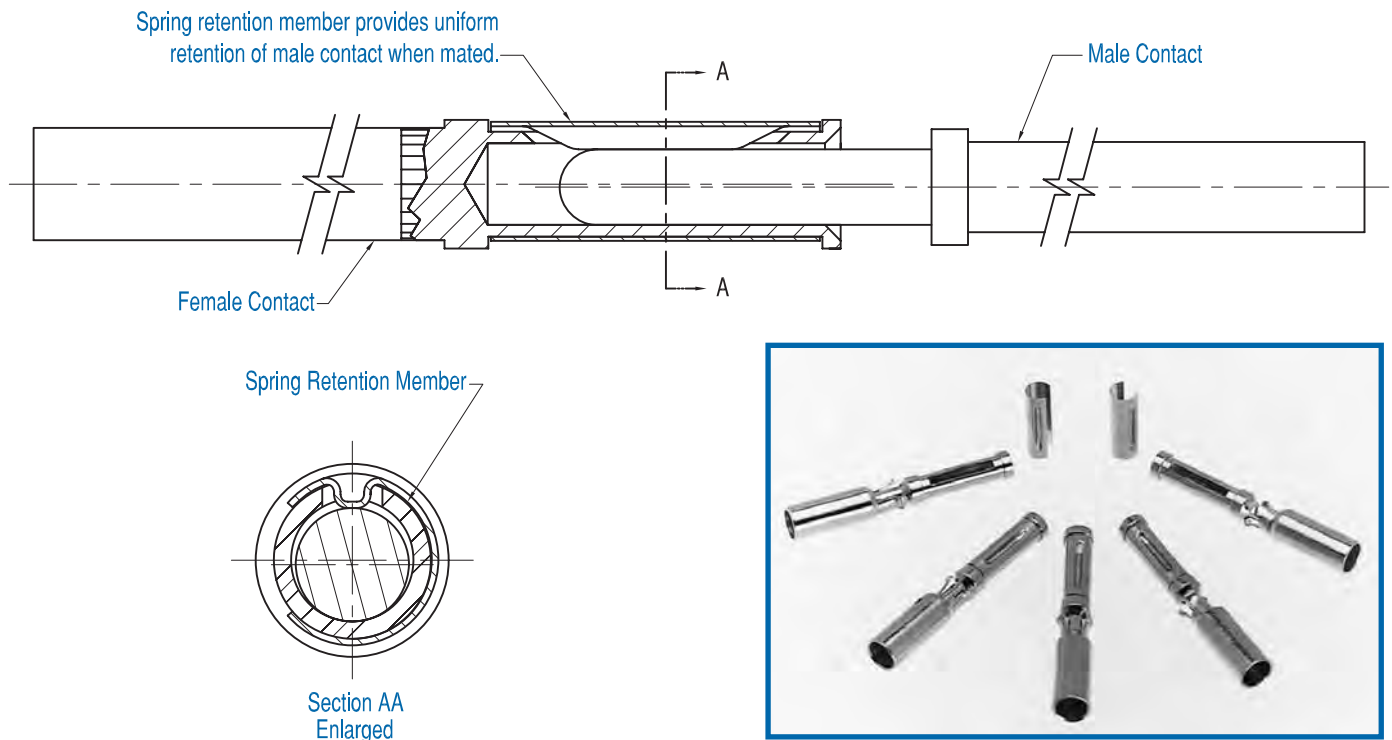
- Where is the temperature sensing probe placed? If placed on the contact in the mating area (the hottest spot), the results will be quite different than if placed on the outside of the connector body.
- Are the contacts being tested and rated in free air or are they contained within the connector housing? Contacts will obviously be cooler in free air.
- Are all of the contacts in the connector under load? If only part of the contacts are under load, the temperature rise could be less.
- What is the defined failure? Does the test end when the temperature rise reaches 30°C, 40°C, or some other number? Does it end when the temperature rise plus ambient temperature equal the operating limit of the connector housing? The current rating will be fixed by the defined failure point.
- How were the test samples prepared? Were the samples energized through a P.C. board? How many layers? How large were the traces? What was the weight of the copper? Were the samples energized through wire? What size was the wire? How long was the wire? Was the sample tested in static or forced air conditions? All of these factors can affect cooling characteristics.

Clearly, a current rating value alone is not enough, and must be viewed in the context of the test used to develop the rating. When the test method is understood, evaluating and comparing power connectors for specific applications becomes much less of a mystery.

THE INFINITY HIGH POWER CONNECTOR SERIES utilizes Positronic Industries'

LARGE SURFACE AREA CONTACT MATING SYSTEM

- Separates mechanical and electrical functions for superior performance
- "Closed Entry" design prevents damage to female contacts and will not allow misaligned or bent contacts to enter
- Precision machined from solid copper alloy
- Uniform insertion withdrawal forces through repeated mating cycles



WHY IS THE L.S.A. SYSTEM SUPERIOR?

The primary function of connector contacts is electrical conductivity. Also, a mechanical function is required to provide normal force between male and female contacts.

In order to provide for proper mechanical characteristics, material that has good memory or "springiness" must be chosen. This will ensure contact normal force in a coupled condition and allow for repeated coupling and uncoupling.

Unfortunately, many materials that have good memory characteristics have low electrical conductivity. For instance, beryllium copper is a good choice for mechanical function; however, some beryllium copper

alloys are poor conductors and have relatively low conductivity ratings.

The conductivity path of many contact designs goes directly through materials that have been chosen based on mechanical need. If these materials have a low conductivity rating, increased contact resistance will result.

Positronic's Large Surface Area Contact System separates the mechanical and electrical functions. A spring retention member provides normal forces, while the electrical conductivity path is through highly conductive contact material. See above detail.



Positronic Industries
connectpositronic.com

COMPLIANT PRESS-FIT TERMINATIONS

Infinity
High Power
Connector

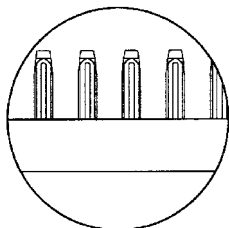
POSITRONIC INDUSTRIES' BI-SPRING POWER PRESS-FIT TERMINATIONS

The Next Evolution In Compliant Technology. Fully Compliant, Fully Reliable.

Reliable, solderless connections from connectors to backplanes started with solid press-fit technology. Although these are still used today, concerns about board damage led to the use of compliant press-fit technology. This technology allows the connection to be made through compliance of the contact termination along with P.C. board hole deformation. Although risk of damaged P.C. boards and backplanes is lessened, damage can still

occur due to relatively high insertion and extraction forces.

The next step in press-fit technology is a highly reliable connection between the contact termination and backplane that is accomplished with reduced insertion and extraction forces. This eliminates risk of P.C. board and backplane damage. **This technology exists today with Positronic Industries' Bi-Spring Power Press-Fit Termination.**



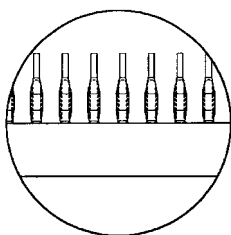
**Bi-Spring Power Press-Fit
Compliant Terminations**

- The relatively low insertion and extraction forces of Bi-Spring Power Press-Fit contacts do not produce stresses in P.C. boards and backplanes that can occur with higher insertion forces. These stresses can cause board warpage and hole damage. Average insertion and extraction forces of size 16 contacts are 22 N [5 lbs.] per contact. Average insertion and extraction forces of size 12 contacts are 133 N [30 lbs.] per contact. Average insertions forces of size 8 contact are 133 N [30 lbs.] per contact.
- Connector systems utilizing Bi-Spring terminations use mounting screws to secure the connector to the P.C. board or backplane. Stresses that occur during coupling, uncoupling or shock and vibration of systems are not transferred to the P.C. boards or backplanes through the press-fit connection. The electrical integrity of the connector to board interface is maintained; this is particularly important in power applications. Bellcore GR1217 details a preference for mounting hardware when using press-fit terminations.
- Size 16 Bi-Spring terminations are designed to meet the performance requirements and hole diameters as listed in the internationally recognized specification IEC60352-5.
- Lower insertion and extraction forces eliminate the need for expensive pressing equipment.

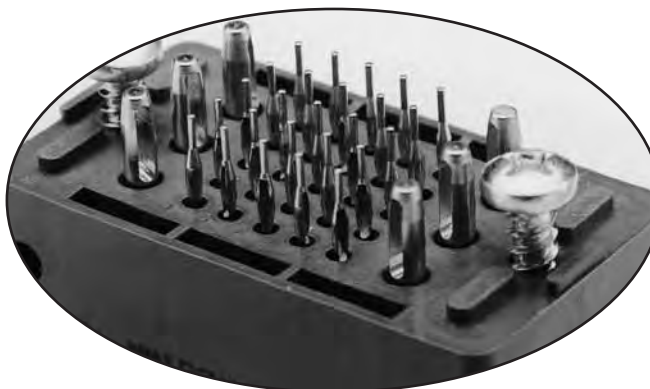
OMEGA SIGNAL LEVEL PRESS-FIT TERMINATIONS

Today's power supplies feature communication options with the host system. The power interface must have reliable signal level connections.

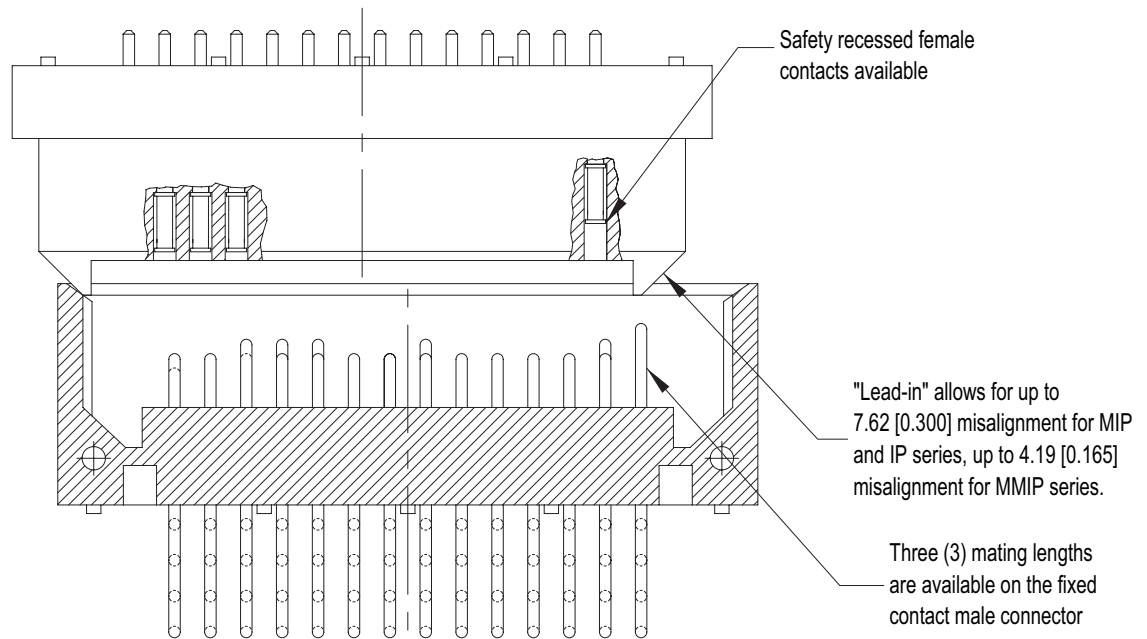
Positronic Industries' Omega Press-Fit terminations are the perfect solderless connection companion to Bi-Spring Power Press-Fit terminations.



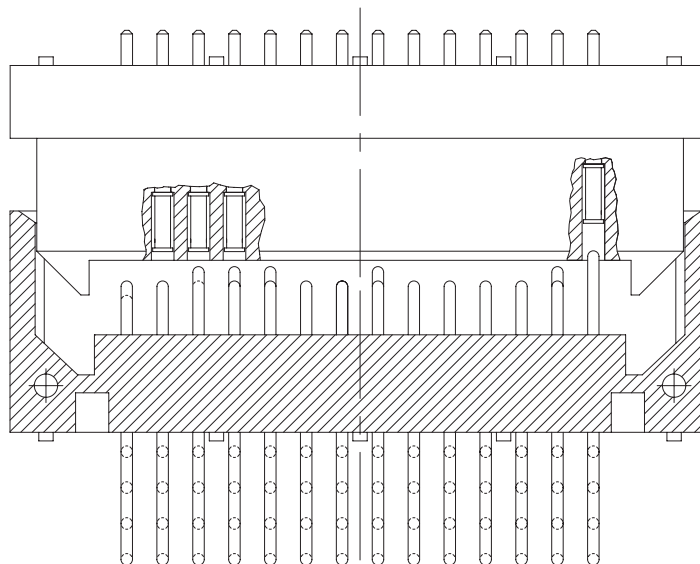
**Omega Signal Level Press-Fit
Compliant Terminations**



- ◆ **BLIND MATING SYSTEM** molded in guides allow for misalignment up to 4.19mm [0.165 inch] for MMIP series and 7.62 mm [0.300 inch] offset for MIP and IP series.
- ◆ **SEQUENTIAL MATING MALE AND FEMALE CONTACTS** may be specified to provide 3.00 mm [0.118 inch] nominal steps in mating length.



Consult Technical Sales for assistance when specifying **Sequential Mate Contacts**.





Positronic Industries
connectpositronic.com

APPLICATION SPECIFIC ARRANGEMENTS

Infinity
High Power
Connector

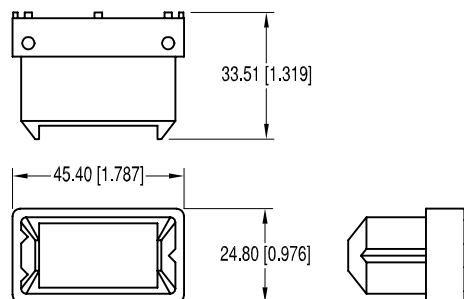
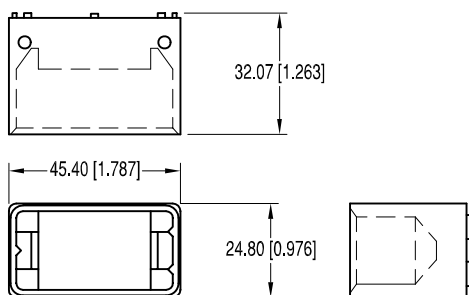
The Infinity High Power Connector design allows for the development of application specific contact arrangements in a timely manner and at a reasonable price. After reviewing the following basic information, contact Technical Sales with your current, voltage, and safety requirements. We look forward to working with you to develop a connector for your specific needs.

BASIC CONNECTOR DIMENSIONS

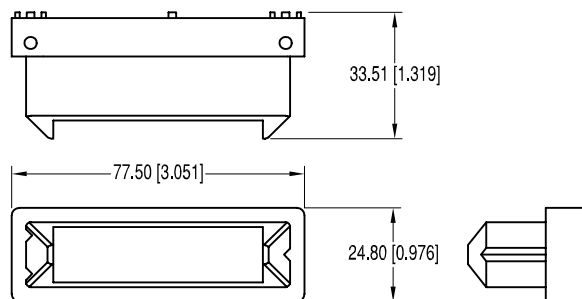
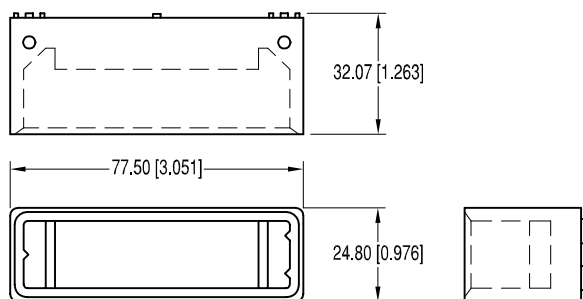
MALE CONNECTOR

FEMALE CONNECTOR

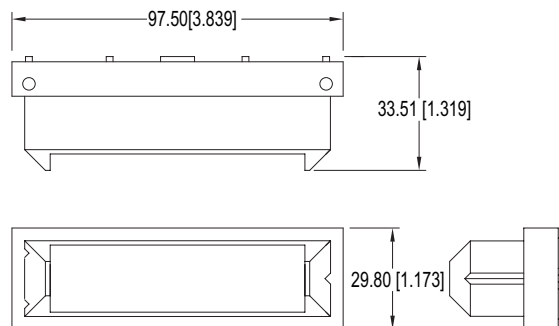
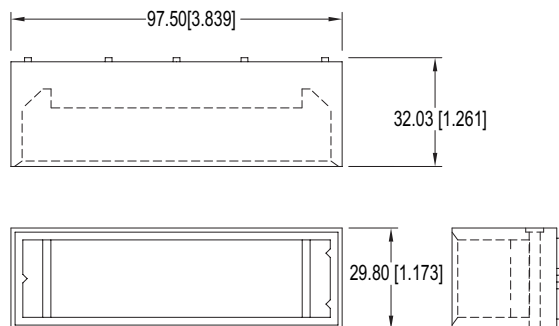
MMIP Series



MMIP Series

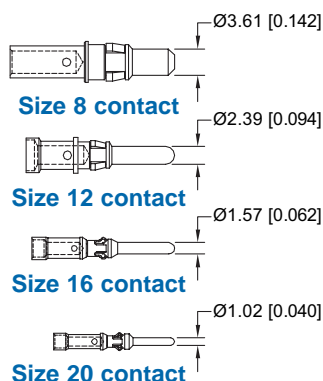


IP Series



Four Contact Sizes to Choose From

A high performance size 8 contact rated at 100 Amps is available for use with 6 AWG wire.



Contact sizes and termination types may be mixed within a single connector.

Many Termination Types Can Be Supplied

Straight Solder or Press-Fit
Right Angle (90°) Solder or Press-Fit
Crimp Removable
Removable Solder Cup
Different Termination Types can be mixed within a single connector

Popular Options

Sequential Mating
Recessed Female Contacts
Selective Loading

Let us know what your current, voltage and safety requirements are as well as contact termination and mounting needs. We look forward to developing a power connector for your specific application.

GENERAL PRODUCT INFORMATION

The Infinity Power Connector series was developed to supply the electronics industry a high power interface with features which allow the user flexibility in overcoming the design challenges created by the increasing power consumption of systems.

The availability of more computing capability in a given space, as well as reductions in the voltages that are required to drive modern electronic devices, facilitated a need for power interfaces with greater power density.

Along with higher power density, today's power interfaces are expected to provide features and options which simplify system designs. Much of the time, these must be packaged into a single connector and of course quality, reliability and value are a must. Infinity High Power Connectors use contacts which are machined from solid copper alloys and utilize Positronic Industries' Large Surface Area contact system. These features provide superior current carrying performance. A multitude of power contacts allow for efficient distribution of current in

multi-voltage centralized power applications. Contacts can also be paralleled together to meet high current requirements of single voltage distributed power applications. This, coupled with many outstanding features and options, makes the connector an excellent choice as the power interface for telecom, datacom, and computing platforms, as well as other power applications.





Positronic Industries
connectpositronic.com

TECHNICAL CHARACTERISTICS

Infinity
High Power
Connector

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel, or 0.76 microns [0.000030 inch] gold over nickel, or 1.27 microns [0.000050 inch] gold over nickel. Solder-coated terminations optional.
Mounting Screws:	Steel, zinc plated.
Push-on Fastener:	Spring-temper copper alloy, tin plated.
Float Mount Bushing:	Steel, zinc plated.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	
Size 12 Contact:	40 amperes, continuous.
Size 16 Contact:	20 amperes, continuous.
Size 20 Contact:	5 amperes.
Initial Contact Resistance; maximum:	
Size 12 Contact:	0.001 ohms.
Size 16 Contact:	0.0016 ohms.
Size 20 Contact:	0.007 ohms. Per IEC 512-2, Test 2b.
Insulator Resistance:	5 G ohms per IEC 512-2, Test 3a.
Voltage Proof:	2000 V rms per IEC 512-2, Test 4a, Method C.
Hot Pluggable (50 Couplings per U.L. 1977, Paragraph 15):	
Size 12 Contact:	250 VAC at 25 amperes.
Creepage Distances:	Consult Technical Sales for information about your specific connector choice.
Clearance Distance:	Consult Technical Sales for information about your specific connector choice.
Working Voltage:	Consult Technical Sales for information about your specific connector choice.

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Molded in guides allow for misalignment up to 4.19 mm [0.165 inch]
Polarization:	Provided by connector body design.
Removable Contacts:	Insert contact in rear face of insulator; release from front face of insulator. Female contacts feature "Closed Entry" design.
Removable Contact Retention in Connector Body:	
Size 12 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 16 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 20 Contact:	44N [10 lbs.] per IEC 512-8, Test 15a.
Fixed Contacts:	Printed board terminations, both straight and right angle (90°). Size 12 and 16 female contacts feature "Closed Entry" design. Size 20 female contacts feature "Rugged Open Entry" design.
Fixed Contact Retention in Connector Body:	44N [10 lbs.], minimum.
Resistance to Solder Heat:	260°C [500°F] for 10 seconds duration per IEC 512-6, Test 12e, 25-watt soldering iron.
Sequential Contact Mating System:	Two level and three level systems featured. Consult Technical Sales for application assistance with contact sequencing.
Safety "Recessed in Insulator" Contacts:	Size 16 female contacts may be recessed 5.00 mm [0.197 inch] below the face of the female connector insulator per safety requirements. Consult Technical Sales for ordering information.
Compliant Press-Fit Terminations:	Size 12, 16 and 20 contacts are available with Compliant Press-Fit Contact Terminations. Consult Technical Sales for electrical and mechanical characteristics.
Printed Board and Panel Mounting Holes:	Mounting holes provided in connector body for both printed board and panel mounting. Self-tapping screws or push-on fastener options are available.
Float Mount Shoulder Screw:	Provides up to 2.03 mm [0.080 inch] float.
Mechanical Operations:	
Systems 1, 2 & 7:	200 couplings.
Systems 3, 4 & 5:	250 couplings.

CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
-----------------------------	------------------

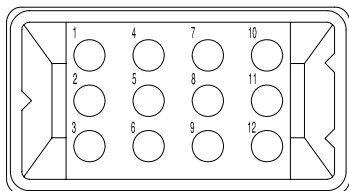


For RoHS options
see page 16.

Recognized by various safety agencies.
Consult Technical Sales for updated list.

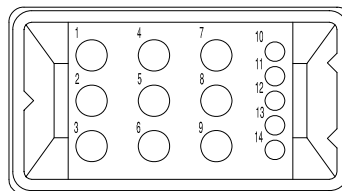
CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



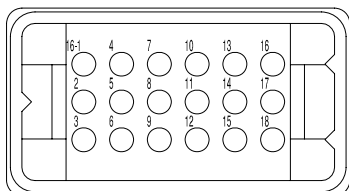
MMIP12W12 VARIANT

12 Size 12 Contacts



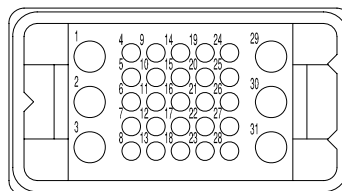
MMIP14W9 VARIANT

9 Size 12 and 5 Size 20 Contacts



MMIP18 VARIANT

18 Size 16 Contacts

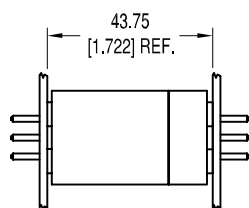


MMIP31W6 VARIANT

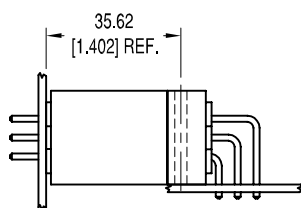
6 Size 12 and 25 Size 20 Contacts

Refer to pages 7 & 8 for
Application Specific Arrangements

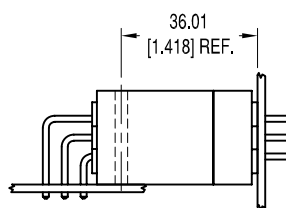
CONNECTOR MATING DIMENSIONS



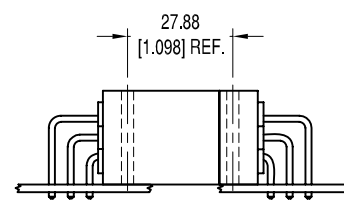
**Straight Board Mount or
Panel Mount Female to
Straight Board Mount or
Panel Mount Male**



**Right Angle (90°) Board
Mount Female to
Straight Board Mount
or Panel Mount Male.**



**Straight Board Mount
or Panel Mount Female
to Right Angle (90°)
Board Mount Male.**



**Right Angle (90°)
Board Mount Female
to Right Angle (90°)
Board Mount Male.**



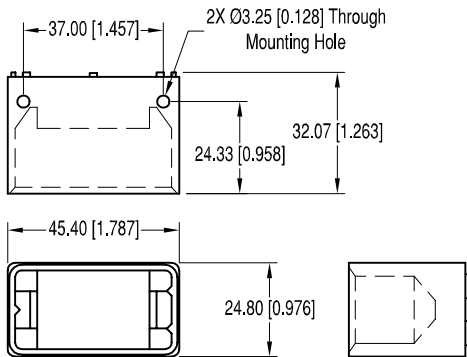
Positronic Industries
connectpositronic.com

CONNECTOR OUTLINE DIMENSIONS AND CABLE CONNECTOR

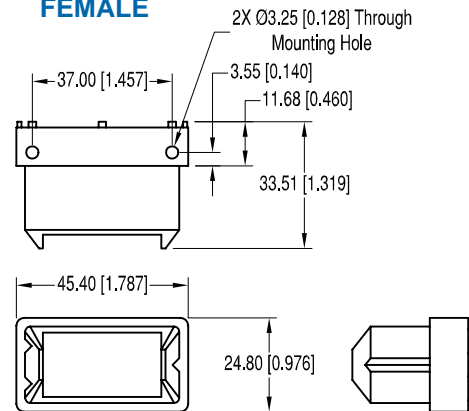
Infinity
High Power
Connector

CONNECTOR OUTLINE DIMENSIONS FOR USE WITH CODE 0, 3, 32, 93, 4, 42, AND 63

MALE



FEMALE

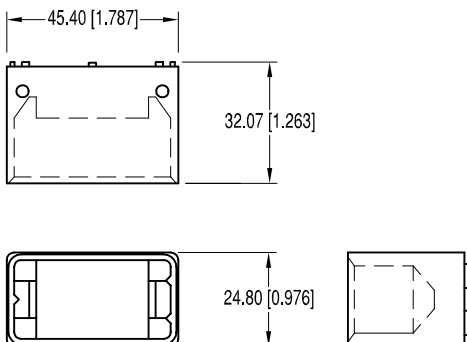


CABLE CONNECTOR

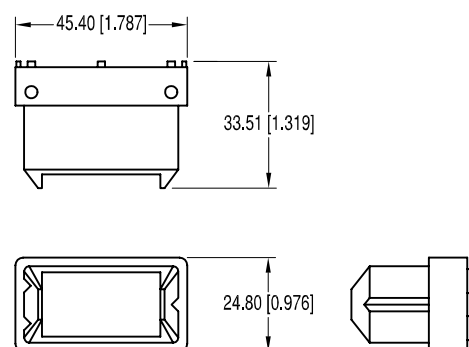
FOR USE WITH SIZE 12, 16 AND 20 REMOVABLE CONTACTS
CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

MALE



FEMALE



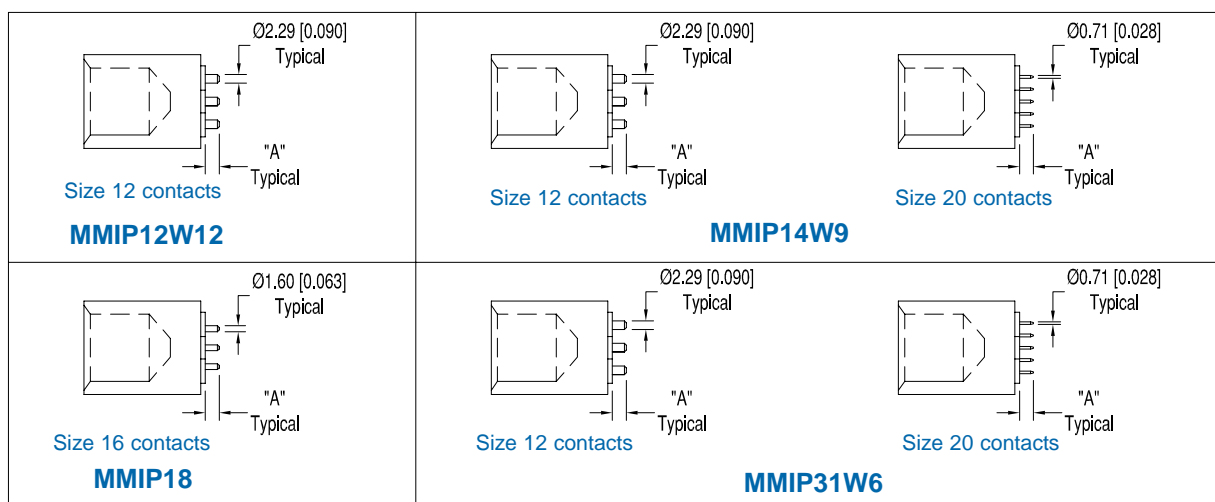
For information regarding size 12, 16 and 20 removable contacts, see Removable Contact section, pages 41-48.

CODE	"A" LENGTH
3	3.70 [0.146]
32	9.58 [0.377]

STRAIGHT SOLDER BOARD MOUNT CONNECTORS

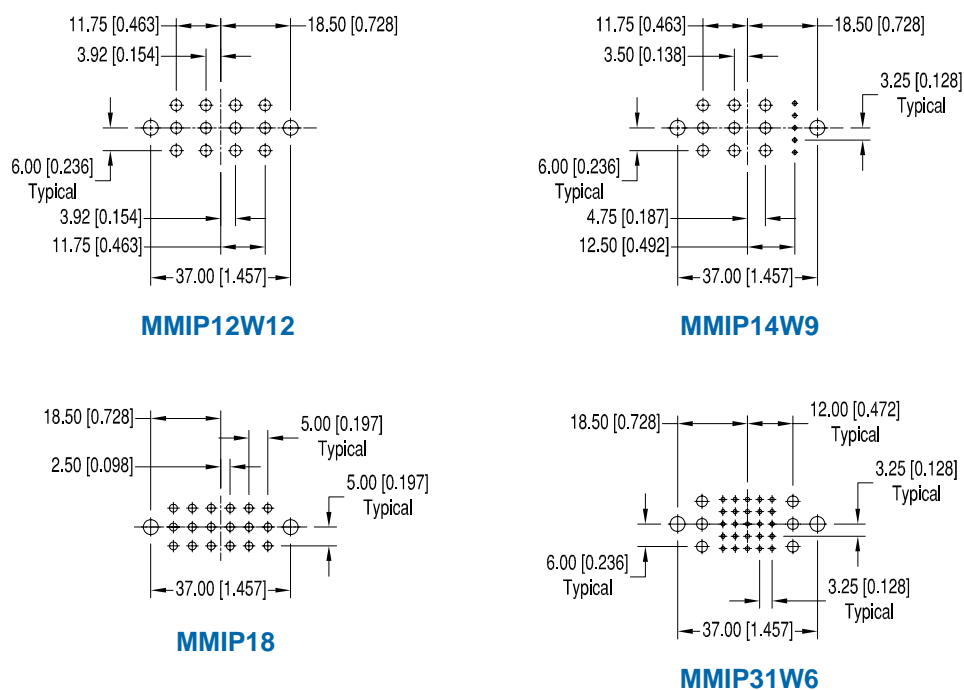
CODE 3 AND CODE 32

MALE CONNECTOR SHOWN FOR REFERENCE ONLY



STRAIGHT SOLDER CONTACT HOLE PATTERNS

HOLE PATTERN SHOWN IS FOR MALE CONNECTOR
USE MIRROR IMAGE FOR FEMALE CONNECTOR



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggested $\varnothing 1.14$ [0.045] holes for size 20 contact holes.
Suggested $\varnothing 2.11$ [0.083] holes for size 16 contact holes.
Suggested $\varnothing 2.90$ [0.114] holes for size 12 contact holes.
Suggested $\varnothing 3.96 \pm 0.08$ [0.156 \pm 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

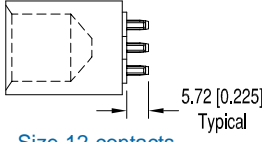
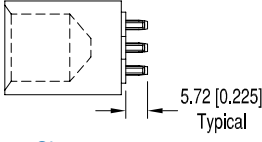
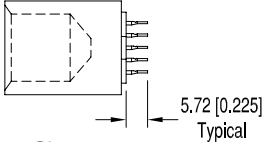
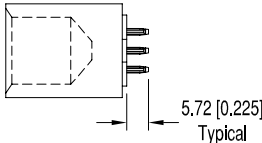
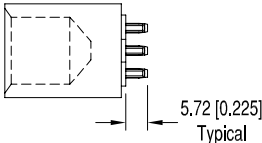
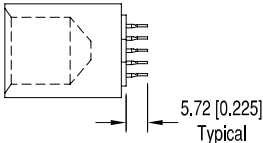
STRAIGHT COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS AND HOLE PATTERNS

Infinity
High Power
Connector

STRAIGHT COMPLIANT PRESS-FIT CONNECTORS

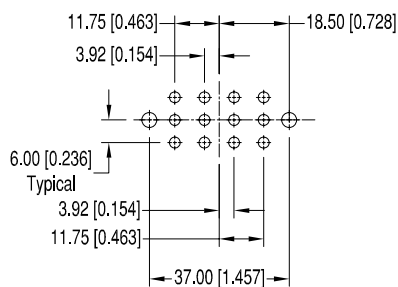
CODE 93

MALE CONNECTOR SHOWN FOR REFERENCE ONLY

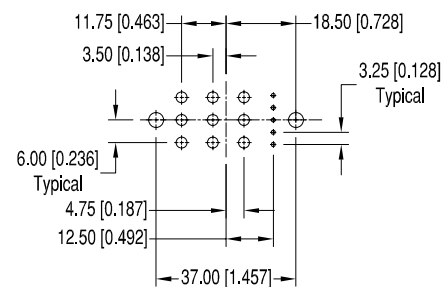
 <p>Size 12 contacts</p> <p>MMIP12W12</p>	 <p>Size 12 contacts</p> <p>MMIP14W9</p>	 <p>Size 20 contacts</p> <p>MMIP18</p>
 <p>Size 16 contacts</p> <p>MMIP31W6</p>	 <p>Size 12 contacts</p> <p>MMIP12W12</p>	 <p>Size 20 contacts</p> <p>MMIP14W9</p>

STRAIGHT COMPLIANT PRESS-FIT CONTACT HOLE PATTERNS

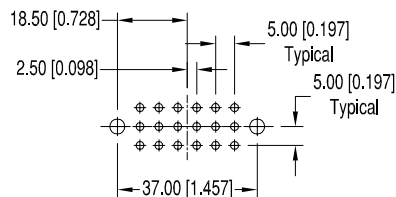
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR
USE MIRROR IMAGE FOR FEMALE CONNECTOR



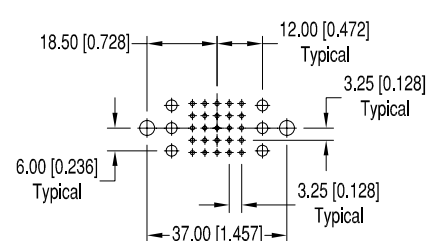
MMIP12W12



MMIP14W9



MMIP18



MMIP31W6

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

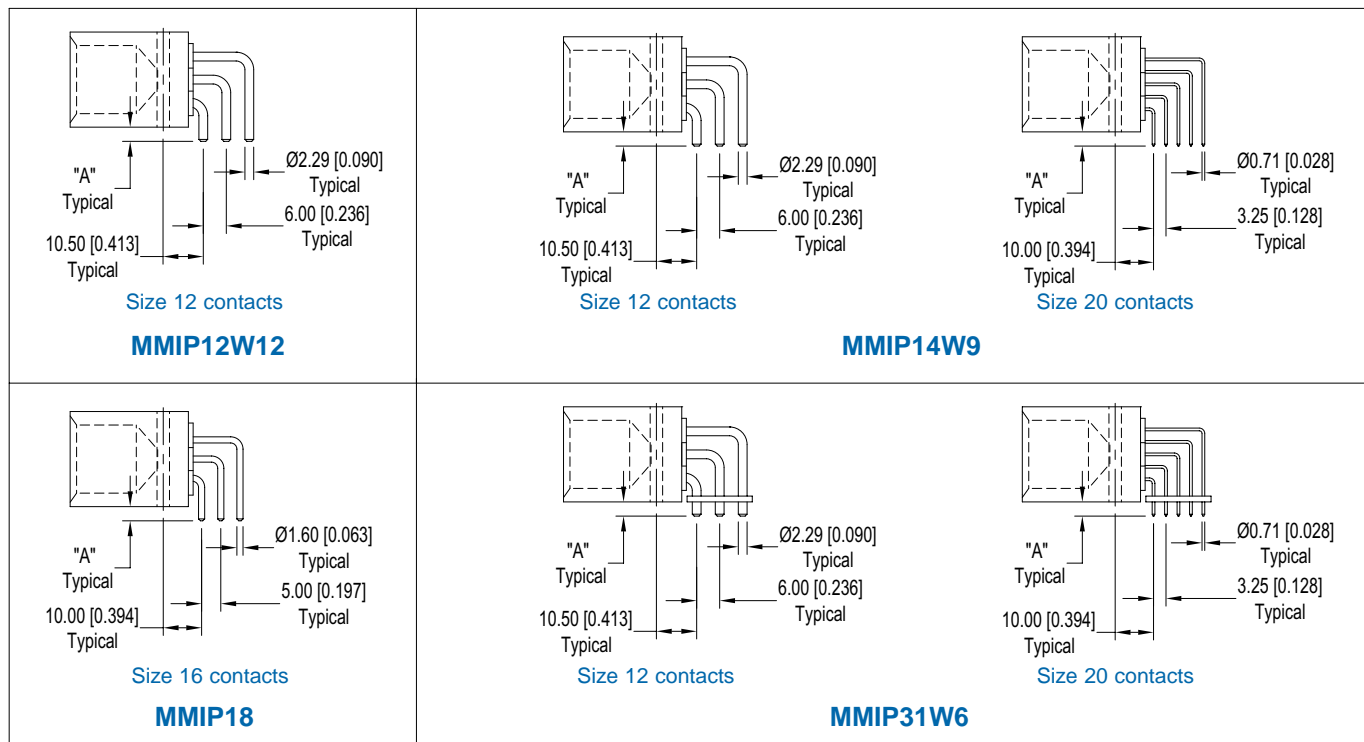
For mounting screw options, see page 55.

CODE	"A" LENGTH
4	3.70 [0.146]
42	9.58 [0.377]

RIGHT ANGLE (90°) SOLDER BOARD MOUNT CONNECTORS

CODE 4 AND CODE 42

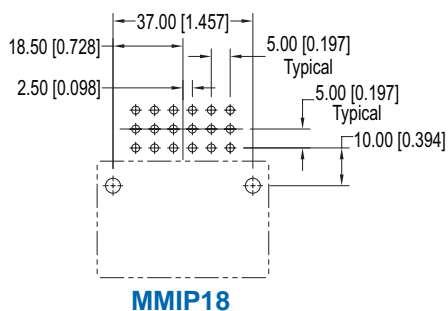
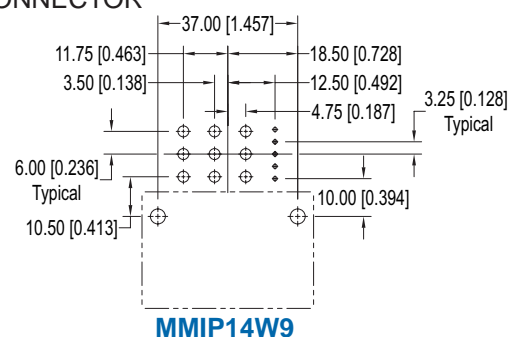
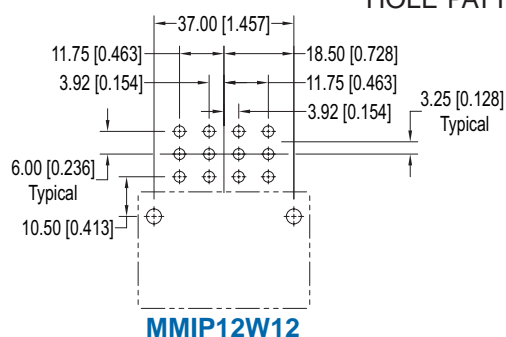
MALE CONNECTOR SHOWN FOR REFERENCE ONLY



RIGHT ANGLE (90°) SOLDER CONTACT HOLE PATTERNS

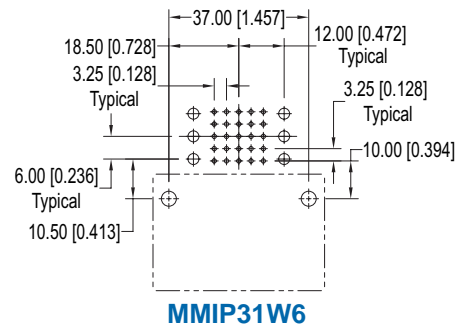
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR

USE MIRROR IMAGE FOR FEMALE CONNECTOR



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggested $\phi 1.14$ [0.045] holes for size 20 contact holes.
Suggested $\phi 2.11$ [0.083] holes for size 16 contact holes.
Suggested $\phi 2.90$ [0.114] holes for size 12 contact holes.
Suggested $\phi 3.96 \pm 0.08$ [0.156 \pm 0.003] holes for connector mounting holes.



DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

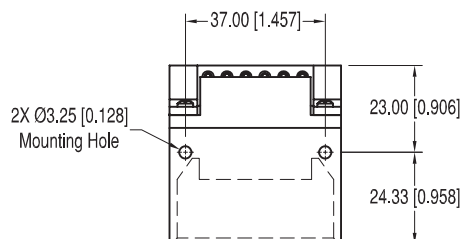
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS AND HOLE PATTERN

Infinity
High Power
Connector

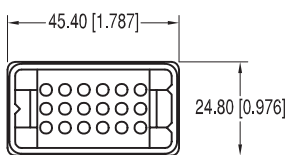
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS

CODE 63

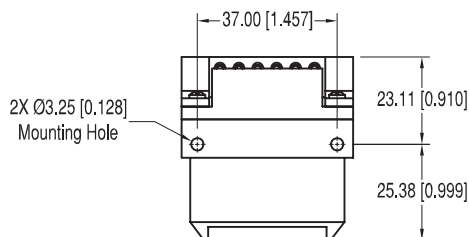
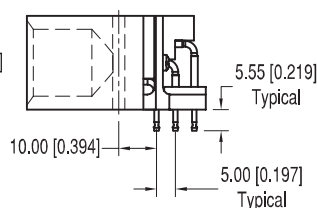
MALE AND FEMALE



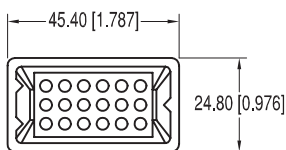
MALE



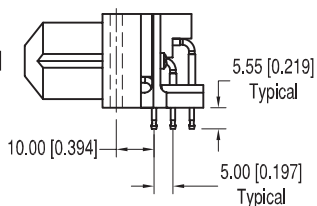
MMIP18



FEMALE



MMIP18



RIGHT ANGLE (90°) COMPLIANT PRESS-FIT CONTACT HOLE PATTERN

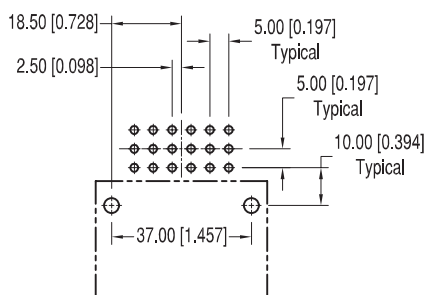
MALE AND FEMALE

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.



MMIP18

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	MMIP	12W12	F	32	0	0	A1	/AA	

STEP 1 - BASIC SERIES

MMIP - Mini-Mini-Infinity

STEP 2 - CONNECTOR VARIANTS

- 12W12- 12 size 12 contacts
- 14W9 - 9 size 12 and 5 size 20 contacts
- 18 - 18 size 16 contacts
- 31W6 - 6 size 12 and 25 size 20 contacts

STEP 3 - CONNECTOR GENDER

- M - Male
- F - Female

STEP 4 - CONTACT TERMINATION TYPE

- 0 - Order contacts separately for cable connectors for connection systems 2, 4 and 5. See pages 41-48.
- 3 - Solder, Straight Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1 and 4.
- 32- Solder, Straight Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1 and 4.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1, 2, 3 and 7.
- 42- Solder, Right Angle (90°) Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1, 2, 3 and 7.
- 63 - Press-Fit, Compliant Termination Right Angle (90°) Printed Board Mount, for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. With cross bar. Connection systems 1, 2, 3 and 7. Available on connector variant 18 only.
- 93 - Press-Fit, Compliant Termination Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection systems 1 and 4.

STEP 5 - MOUNTING STYLE

- 0 - None, mounting screws supplied with board mount connector.
- N - Push-on fasteners supplied installed on board mount connector. Not recommended for code 63 and 93.

STEP 6 - PANEL MOUNT

- 0 - None.
- 82 - Panel Mount 1.52 [0.060] panel thickness
- 83 - Panel Mount 2.28 [0.090] panel thickness

***Hot Plug Note:** If UL approval is required for a Hot Plug connector, HP must be added to the part number. This is to be prior to any special plating or MOS requirements.

Example part numbers:

MMIP12W12M300A1-HP
MIP31W6M400A1-HP-294.0

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

- * Sequential Mating
- Recessed Female Contacts
- Customer Specified Contact Arrangement
- Hot Plug (see below*)
- Other Customer Requirements

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

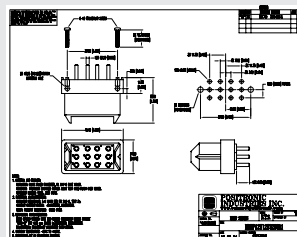


NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: MMIP12W12F3200A1

STEP 7 - CONTACT PLATING

- 0 - Crimp contacts ordered separately. See pages 41-48.
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 63 and 93 in Step 4.
- C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.
- D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES file.



SK Drawing



3-dimensional model

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel, or 0.76 microns [0.000030 inch] gold over nickel, or 1.27 microns [0.000050 inch] gold over nickel. Solder-coated terminations optional.
Mounting Screws:	Steel, zinc plated.
Push-on Fastener:	Spring-temper copper alloy, tin plated.
Float Mount Bushing:	Steel, zinc plated.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	
Size 8 Contact:	60 amperes, continuous.
Size 12 Contact:	40 amperes, continuous.
Size 16 Contact:	20 amperes, continuous.
Size 20 Contact:	5 amperes.
	Temperature Rise Curves per IEC 512-3, Test 5a. See page 19 of this catalog for performance curves.
Initial Contact Resistance; maximum:	
Size 8 Contact:	0.0005 ohms.
Size 12 Contact:	0.001 ohms.
Size 16 Contact:	0.0016 ohms.
Size 20 Contact:	0.007 ohms.
	Per IEC 512-2, Test 2b.
Insulator Resistance:	5 G ohms per IEC 512-2, Test 3a.
Voltage Proof:	2000 V rms per IEC 512-2, Test 4a, Method C.
Hot Pluggable (50 Couplings per U.L. 1977, Paragraph 15):	
Size 8 Contact:	250 VAC at 25 amperes.
Size 12 Contact:	250 VAC at 25 amperes.
Creepage Distances:	Consult Technical Sales for information about your specific connector choice.
Clearance Distance:	Consult Technical Sales for information about your specific connector choice.
Working Voltage:	Consult Technical Sales for information about your specific connector choice.

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Molded in guides allow for misalignment up to 7.62 mm [0.300 inch]
Polarization:	Provided by connector body design.
Removable Contacts:	Insert contact in rear face of insulator; release from front face of insulator. Female contacts feature "Closed Entry" design.
Removable Contact Retention in Connector Body:	
Size 8 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 12 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 16 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 20 Contact:	44N [10 lbs.] per IEC 512-8, Test 15a.
Fixed Contacts:	Printed board terminations, both straight and right angle (90°). Size 8, 12 and 16 female contacts feature "Closed Entry" design. Size 20 female contacts feature "Rugged Open Entry" design.
Fixed Contact Retention in Connector Body:	44N [10 lbs.], minimum.
Resistance to Solder Heat:	260°C [500°F] for 10 seconds duration per IEC 512-6, Test 12e, 25-watt soldering iron.
Sequential Contact Mating System:	Two level and three level systems featured. Consult Technical Sales for application assistance with contact sequencing.
Safety "Recessed in Insulator" Contacts:	Size 16 female contacts may be recessed 5.00 mm [0.197 inch] below the face of the female connector insulator per safety requirements. Consult Technical Sales for ordering information.
Compliant Press-Fit Terminations:	Size 8, 12, 16 and 20 contacts are available with Compliant Press-Fit Contact Terminations. Consult Technical Sales for electrical and mechanical characteristics.
Printed Board and Panel Mounting Holes:	Mounting holes provided in connector body for both printed board and panel mounting. Self-tapping screws or push-on fastener options are available.
Float Mount Shoulder Screw:	Provides up to 2.03 mm [0.080 inch] float.
Mechanical Operations:	
Systems 1, 2 & 7:	200 couplings.
Systems 3, 4 & 5:	250 couplings.

CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
-----------------------------	------------------

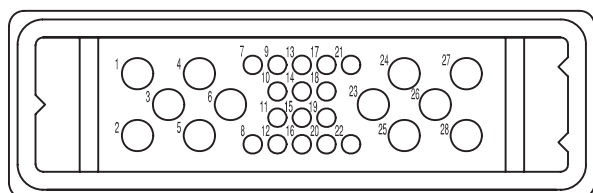


**For RoHS options
see page 28.**

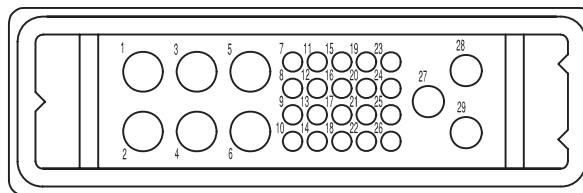
**Recognized by various safety agencies.
Consult Technical Sales for updated list.**

CONNECTOR VARIANTS

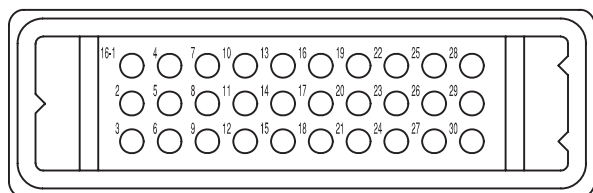
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



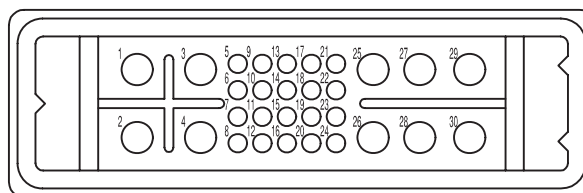
MIP28W12 VARIANT
12 Size 12 and 16 Size 20 Contacts



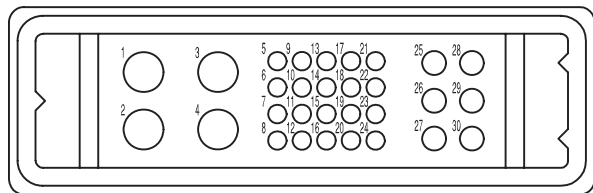
MIP29W9 VARIANT
6 Size 8, 3 Size 12, 20 Size 20 Contacts



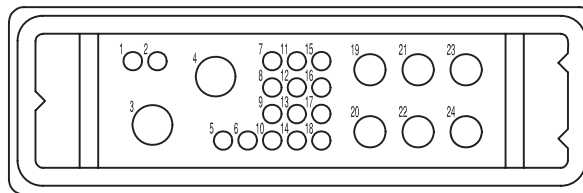
MIP30 VARIANT
30 Size 16 Contacts



MIP30WA10 VARIANT
10 Size 12 and 20 Size 20 Contacts



MIP30WB10 VARIANT
4 Size 8, 6 Size 16, 20 Size 20 Contacts



MIP24W8 VARIANT
2 Size 8
(See page 46 for high current or pages 45-48 for standard)
Size 12, 16 Size 20 Contacts
ONLY AVAILABLE FOR USE WITH CRIMP CONTACTS.

Refer to pages 7 & 8 for
Application Specific Arrangements



Positronic Industries
connectpositronic.com

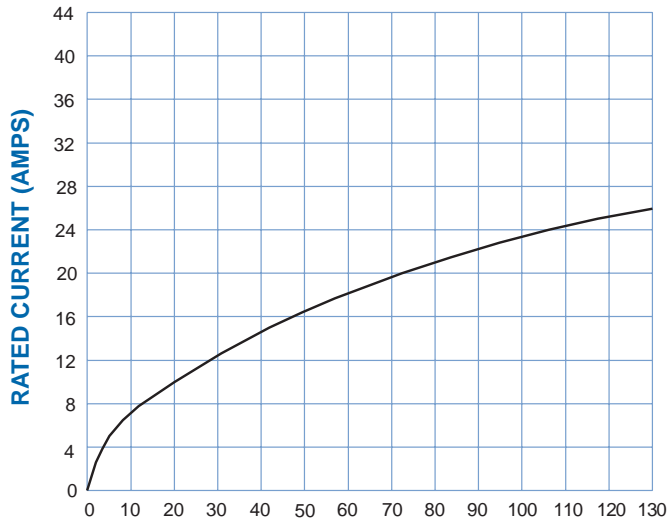
TEMPERATURE RISE CURVES AND CONNECTOR MATING DIMENSIONS

Infinity
High Power
Connector

CONNECTOR TEMPERATURE RISE CURVES

Tested per IEC Publication 512-3, Test 5a

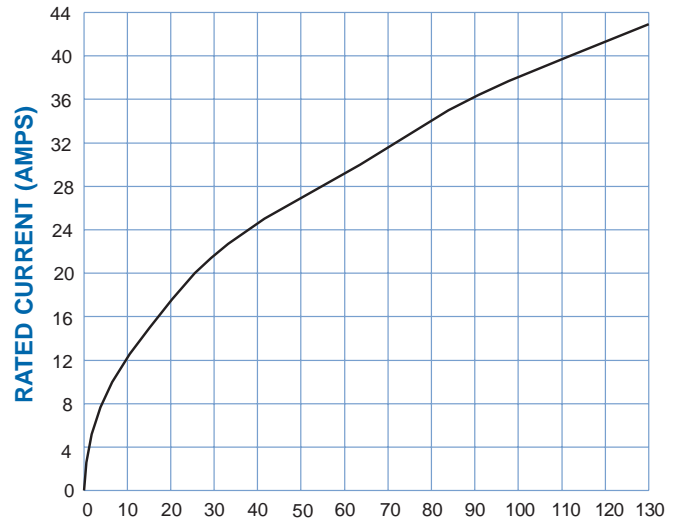
SIZE 16 CONTACTS



TEMPERATURE RISE (°C)

Above curve developed using MIP30M0000 and MIP30F0000 connectors with MC112N and FC112N2 contacts and 12 AWG wire. All contacts under load.

SIZE 12 CONTACTS



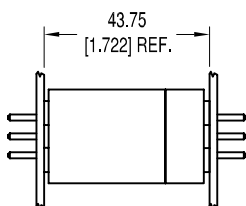
TEMPERATURE RISE (°C)

Above curve developed using MIP30WA10M0000 and MIP30WA10F0000 connectors and MC612N with FC612N2 contacts and 12 AWG wire. All contacts under load. Size 20 contact positions not filled and tested.

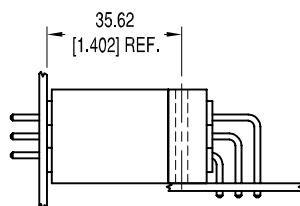
NOTE:

- 1) These temperature rise curves were developed using standard contact materials. High conductivity contact materials are available. These alternate materials allow for more favorable current carrying performance; consult Technical Sales for details.
- 2) Consult Technical Sales for Electrical and Mechanical characteristics of press-fit terminations.

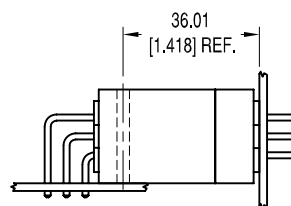
CONNECTOR MATING DIMENSIONS



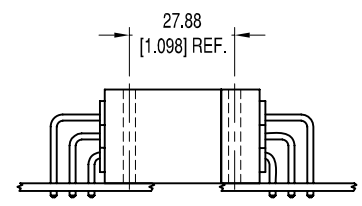
Straight Board Mount or
Panel Mount Female to
Straight Board Mount or
Panel Mount Male.



Right Angle (90°)
Board Mount Female to
Straight Board Mount or
Panel Mount Male.

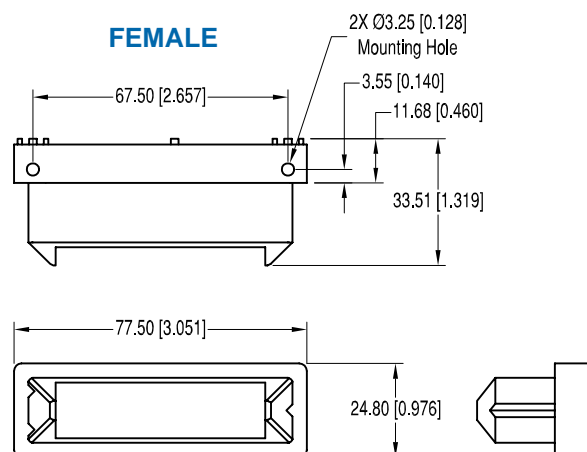
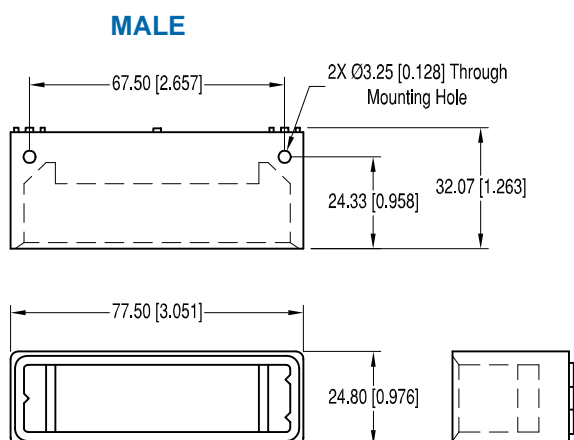


Straight Board Mount
or Panel Mount Female
to Right Angle (90°)
Board Mount Male.



Right Angle (90°)
Board Mount Female
to Right Angle (90°)
Board Mount Male.

CONNECTOR OUTLINE DIMENSIONS FOR USE WITH CODE 0, 3, 32, 93, 4, 42, AND 63

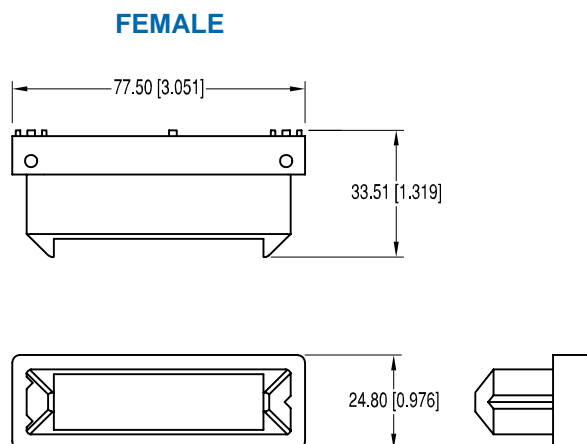
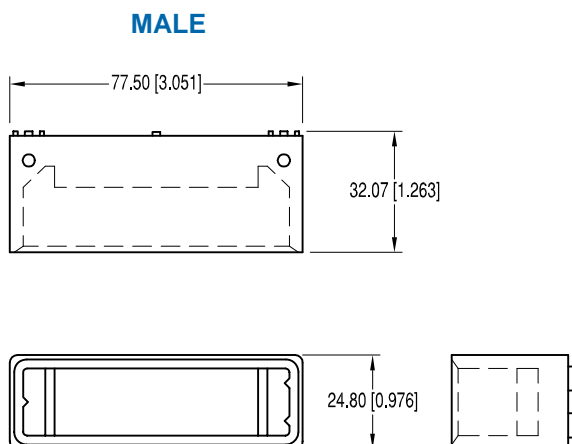


CABLE CONNECTOR

FOR USE WITH SIZE 8, 12, 16 AND 20 REMOVABLE CONTACTS

CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



For information regarding size 8, 12, 16 and 20 removable contacts, see Removable Contact section, pages 41-48.



STRAIGHT SOLDER BOARD MOUNT CONNECTORS

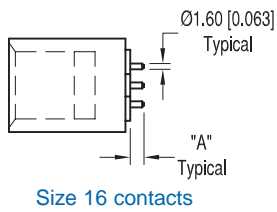
Infinity
High Power
Connector

CODE	"A" LENGTH
3	3.70 [0.146]
32	9.58 [0.377]

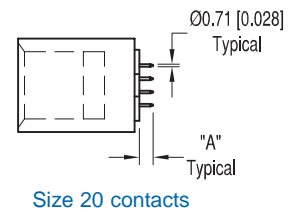
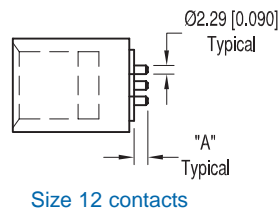
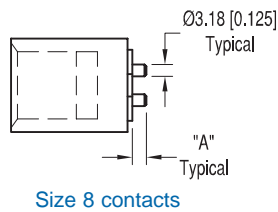
STRAIGHT SOLDER BOARD MOUNT CONNECTORS

CODE 3 AND CODE 32

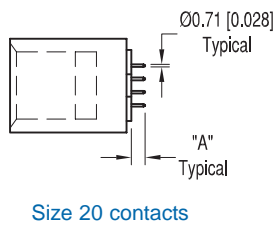
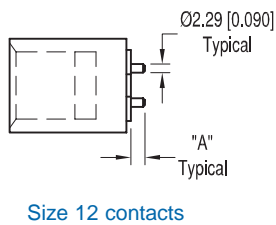
MALE CONNECTOR SHOWN FOR REFERENCE ONLY



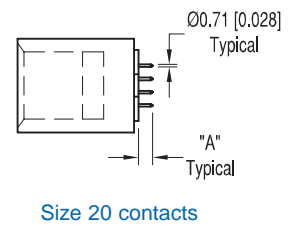
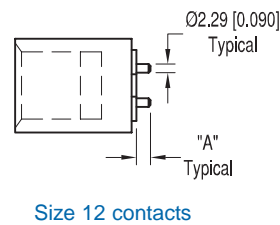
MIP30



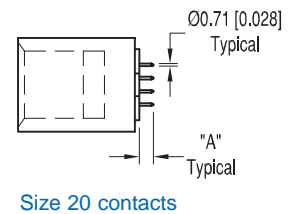
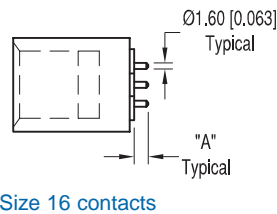
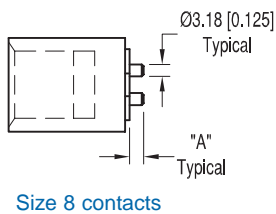
MIP29W9



MIP30WA10



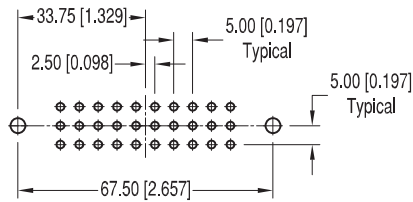
MIP28W12



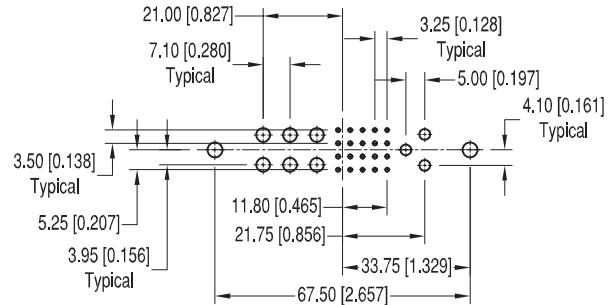
MIP30WB10

STRAIGHT SOLDER CONTACT HOLE PATTERNS

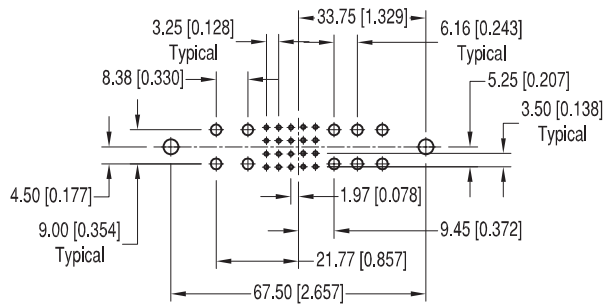
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR
USE MIRROR IMAGE FOR FEMALE CONNECTOR



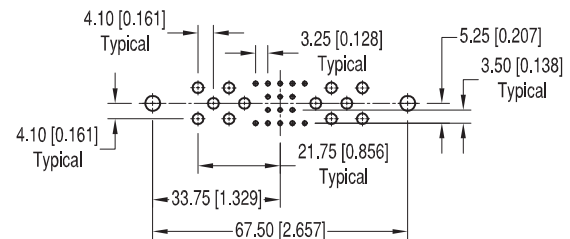
MIP30



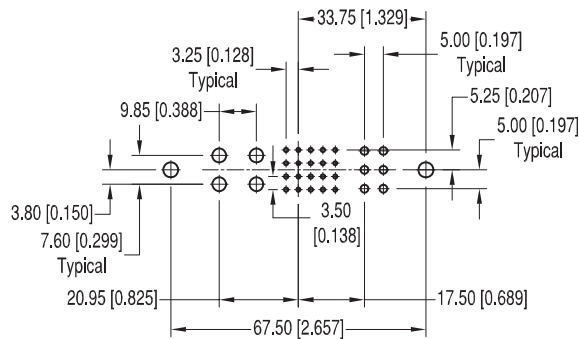
MIP29W9



MIP30WA10



MIP28W12



MIP30WB10

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggested $\varnothing 1.14$ [0.045] holes for size 20 straight contact holes.
Suggested $\varnothing 2.11$ [0.083] holes for size 16 straight contact holes.
Suggested $\varnothing 2.90$ [0.114] holes for size 12 straight contact holes.
Suggested $\varnothing 3.68$ [0.145] holes for size 8 straight contact holes.
Suggested $\varnothing 3.96 \pm 0.08$ [0.156 \pm 0.003] holes for connector mounting holes.



Positronic Industries
connectpositronic.com

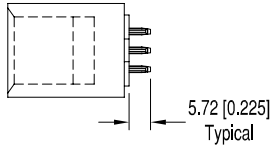
STRAIGHT COMPLIANT PRESS-FIT CONNECTORS

Infinity
High Power
Connector

STRAIGHT COMPLIANT PRESS-FIT CONNECTORS

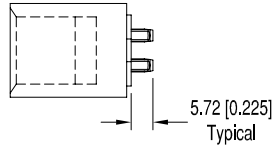
CODE 93

MALE CONNECTOR SHOWN FOR REFERENCE ONLY

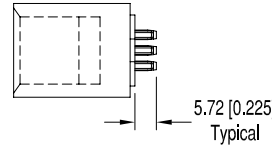


Size 16 contacts

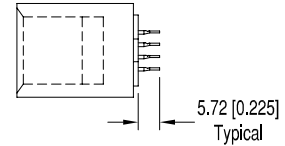
MIP30



Size 8 contacts

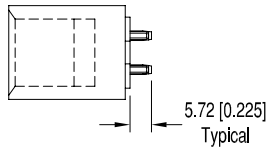


Size 12 contacts

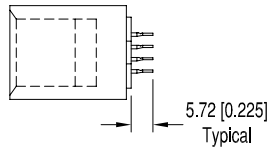


Size 20 contacts

MIP29W9

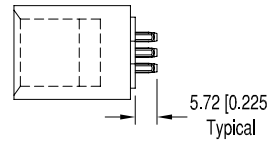


Size 12 contacts

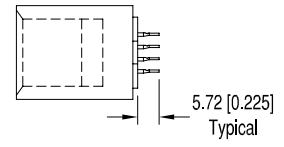


Size 20 contacts

MIP30WA10

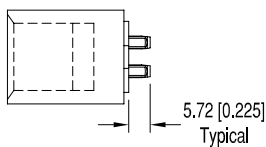


Size 12 contacts

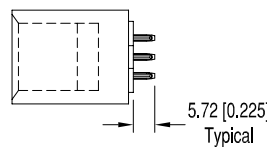


Size 20 contacts

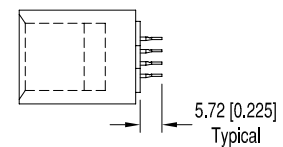
MIP28W12



Size 8 contacts



Size 16 contacts

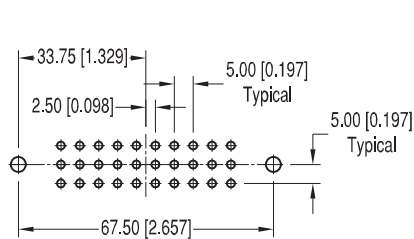


Size 20 contacts

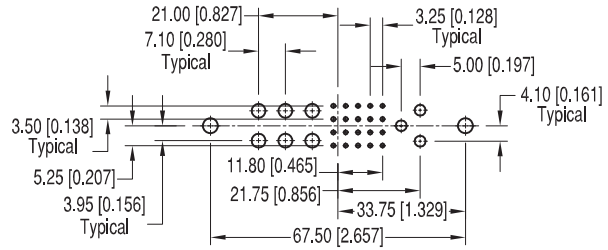
MIP30WB10

STRAIGHT COMPLIANT PRESS-FIT CONTACT HOLE PATTERNS

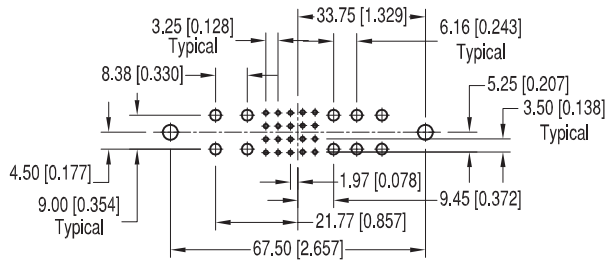
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR



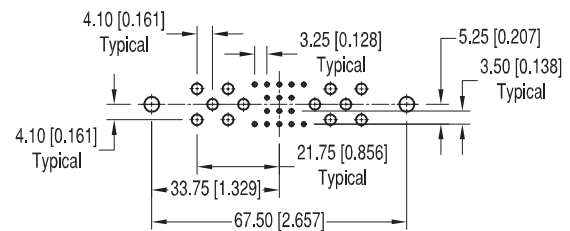
MIP30



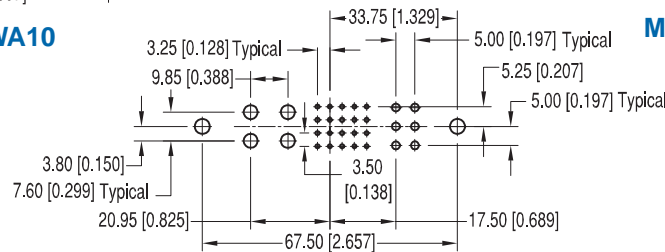
MIP29W9



MIP30WA10



MIP28W12



MIP30WB10

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.



Positronic Industries
connectpositronic.com

RIGHT ANGLE (90°) SOLDER BOARD MOUNT CONNECTORS

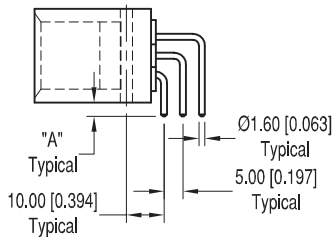
Infinity
High Power
Connector

RIGHT ANGLE (90°) SOLDER BOARD MOUNT CONNECTORS

CODE 4 AND CODE 42

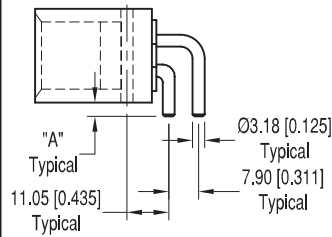
MALE CONNECTOR SHOWN FOR REFERENCE ONLY

CODE	"A" LENGTH
4	3.70 [0.146]
42	9.58 [0.377]

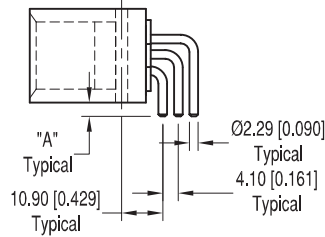


Size 16 contacts

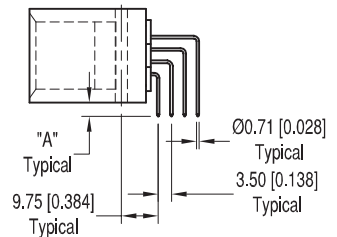
MIP30



Size 8 contacts

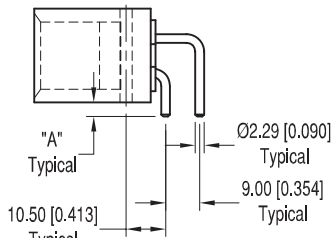


Size 12 contacts

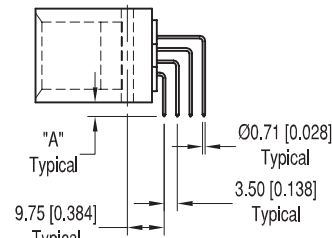


Size 20 contacts

MIP29W9

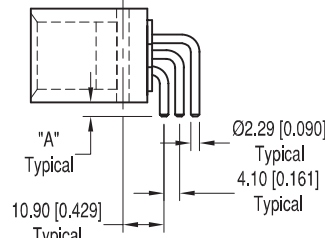


Size 12 contacts

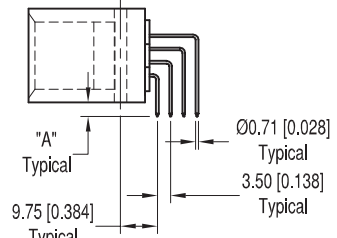


Size 20 contacts

MIP30WA10

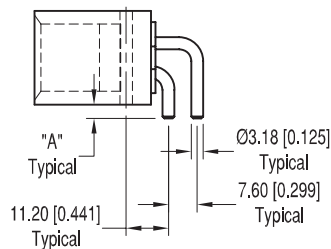


Size 12 contacts

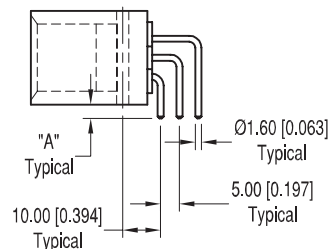


Size 20 contacts

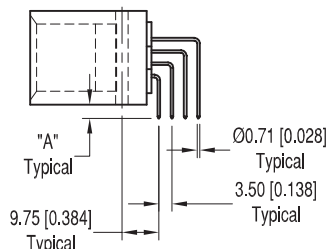
MIP28W12



Size 8 contacts



Size 16 contacts

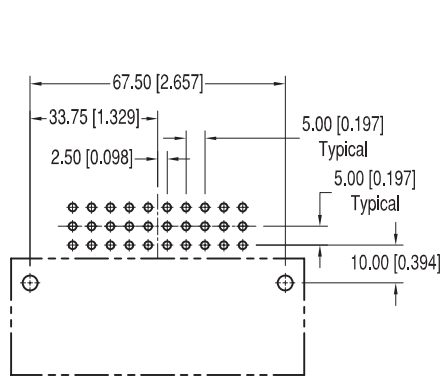


Size 20 contacts

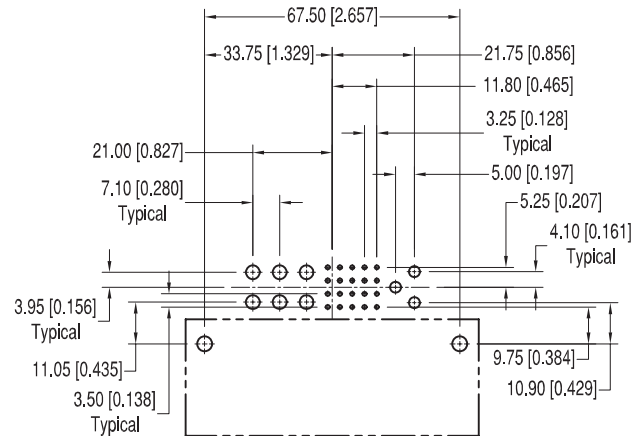
MIP30WB10

RIGHT ANGLE (90°) SOLDER CONTACT HOLE PATTERNS

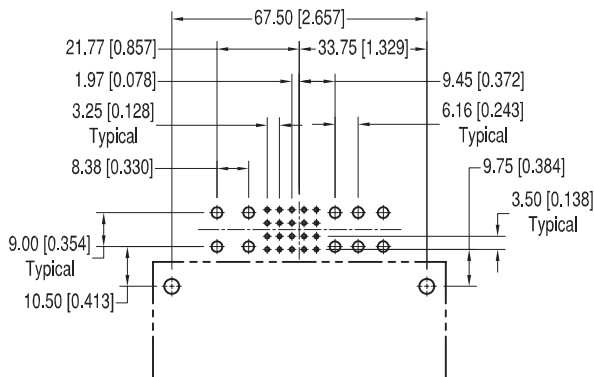
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR
USE MIRROR IMAGE FOR FEMALE CONNECTOR



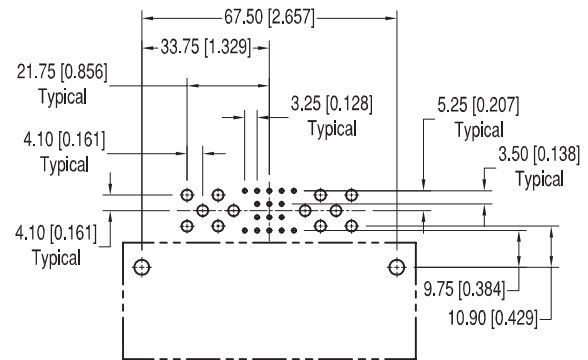
MIP30



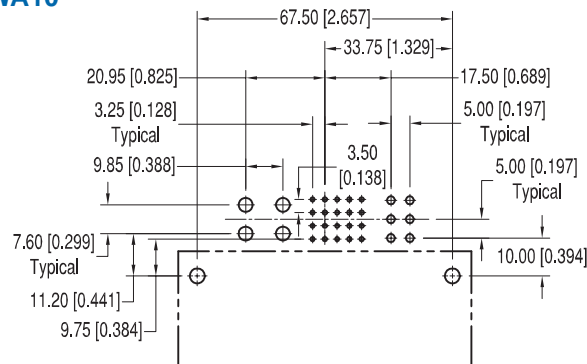
MIP29W9



MIP30WA10



MIP28W12



MIP30WB10

SUGGESTED PRINTED BOARD HOLE SIZES:

- Suggested $\phi 1.14$ [0.045] holes for size 20 contact holes.
- Suggested $\phi 2.11$ [0.083] holes for size 16 contact holes.
- Suggested $\phi 2.90$ [0.114] holes for size 12 contact holes.
- Suggested $\phi 3.68$ [0.145] holes for size 8 contact holes.
- Suggested $\phi 3.96 \pm 0.08$ [0.156 \pm 0.003] holes for connector mounting holes.



Positronic Industries
connectpositronic.com

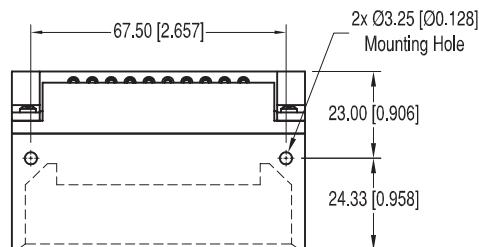
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS AND HOLE PATTERN

Infinity
High Power
Connector

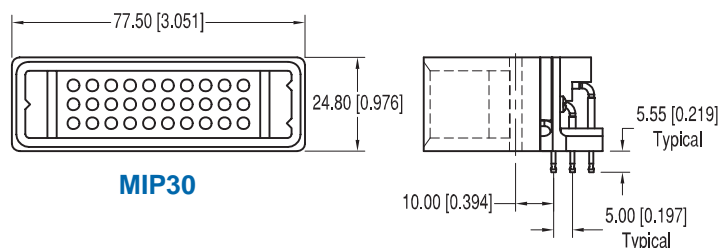
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS

CODE 63

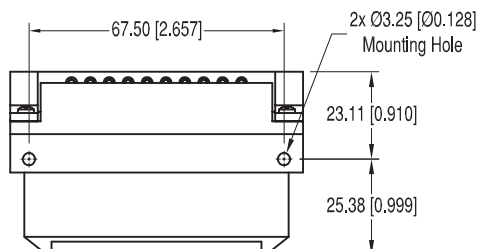
MALE AND FEMALE



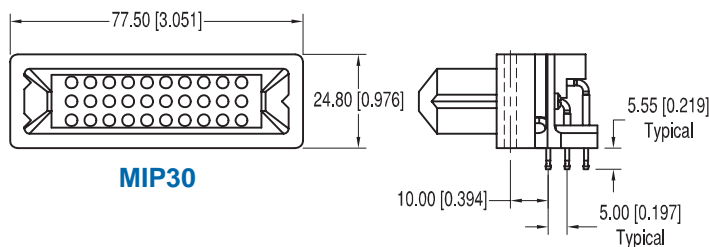
MALE



MIP30



FEMALE



MIP30

RIGHT ANGLE (90°) COMPLIANT PRESS-FIT CONTACT HOLE PATTERN

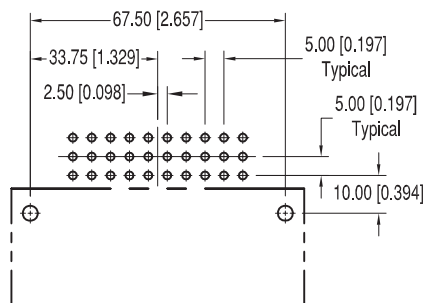
MALE AND FEMALE

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.



MIP30

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	MIP	29W9	F	32	0	0	A1	/AA	

STEP 1 - BASIC SERIES

MIP - Mini-Infinity

STEP 2 - CONNECTOR VARIANTS

- 24W8 - 2 high performance size 8, 6 size 12 and 16 size 20 contacts. Only available for use with crimp contacts.
- 28W12 - 12 size 12 and 16 size 20 contacts
- 29W9 - 6 size 8, 3 size 12, and 20 size 20 contacts
- 30 - 30 size 16 contacts
- 30WA10 - 10 size 12 and 20 size 20 contacts
- 30WB10 - 4 size 8, 6 size 16, and 20 size 20 contacts

STEP 3 - CONNECTOR GENDER

- M - Male
- F - Female

STEP 4 - CONTACT TERMINATION TYPE

- 0 - Order contacts separately for cable connectors for connection systems 2, 4 and 5. See pages 41-48.
- 3 - Solder, Straight Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1 and 4.
- 32- Solder, Straight Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1 and 4.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1, 2, 3 and 7.
- 42- Solder, Right Angle (90°) Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1, 2, 3 and 7.
- 63 - Press-Fit, Compliant Termination Right Angle (90°) Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. With cross bar. Connection systems 1, 2, 3 and 7. Available on connector variant 30 only.
- 93 - Press-Fit, Compliant Termination Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection systems 1 and 4.

STEP 5 - MOUNTING STYLE

- 0 - None, mounting screws supplied with board mount connector.
- N - Push-on fasteners supplied installed on board mount connector. Not recommended for code 63 and 93.

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

- Sequential Mating Systems
- Recessed Female Contacts
- Customer Specified Contact Arrangement
- Hot Plug (see below*)
- Other Customer Requirements

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)



NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: MIP29W9F3200A1

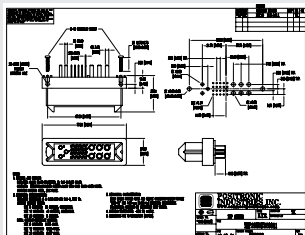
STEP 7 - CONTACT PLATING

- 0 - Crimp contacts ordered separately, see pages 41-48.
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 63 and 93 in Step 4.
- C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.
- D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.

STEP 6 - PANEL MOUNT

- 0 - None.
- 82 - Panel Mount 1.52 [0.060] panel thickness
- 83 - Panel Mount 2.28 [0.090] panel thickness

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES file.



SK Drawing



3-dimensional model

***Hot Plug Note:** If UL approval is required for a Hot Plug connector, HP must be added to the part number. This is to be prior to any special plating or MOS requirements.

Example part numbers:

MIP28W12M300A1-HP
MIP30WA10M400A1-HP-294.0



Positronic Industries
connectpositronic.com

TECHNICAL INFORMATION

Infinity
High Power
Connector

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel, or 0.76 microns [0.000030 inch] gold over nickel, or 1.27 microns [0.000050 inch] gold over nickel. Solder-coated terminations optional.
Cable Adapter:	Thermoplastic and metallized plastic.
Mounting Screws:	Steel, zinc plated.
Jackscrows:	Stainless steel, passivated. Knobs are aluminum with black anodized coating.
Push-on Fastener:	Spring-temper copper alloy, tin plated.
Mounting Plate:	Steel with zinc plate.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	
Size 12 Contact:	40 amperes, continuous
Size 16 Contact:	20 amperes, continuous.
Size 20 Contact:	5 amperes
	Temperature Rise Curves per IEC 512-3, Test 5a. See page 31 of this catalog for performance curves.
Initial Contact Resistance per IEC 512-2, Test 2b.:	
Size 12 Contact:	0.001 ohms, maximum.
Size 16 Contact:	0.0016 ohms, maximum.
Size 20 Contact:	0.007 ohms
Insulator Resistance:	5 G ohms per IEC 512-2, Test 3a.
Voltage Proof:	2000 V rms per IEC 512-2, Test 4a, Method C.
Hot Pluggable (50 Couplings per U.L. 1977, Paragraph 15):	
Size 12 Contact:	250 VAC at 25 amperes.
Primary Circuit Contact Positions:	12-2, 12-5, 12-9, 12-11, 12-14, and 12-18.
Secondary Circuit Contact Positions:	12-1, 12-3, 12-4, 12-6, 12-7, 12-8, 12-10, 12-12, 12-13, 12-15, 12-16, and 12-17.
Creepage Distances:	Consult Technical Sales for information about your specific connector choice.
Clearance Distance:	Consult Technical Sales for information about your specific connector choice.
Working Voltage:	Consult Technical Sales for information about your specific connector choice.

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Male and female connector bodies provide "lead-in" for 7.62 mm [0.300 inch] diametral misalignment.
Polarization:	Provided by connector body design.
Removable Contacts:	Insert contact in rear face of insulator; release from front face of insulator. Female contacts feature "Closed Entry" design.
Removable Contact Retention in Connector Body:	
Size 12 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 16 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 20 Contact:	44N [10 lbs.] per IEC 512-8, Test 15a.
Fixed Contacts:	Printed board terminations, both straight and right angle (90°). Size 12 and 16 female contacts feature "Closed Entry" design. Size 20 female contacts feature "Rugged Open Entry" design.
Fixed Contact Retention in Connector Body:	44N (10 lbs.), minimum.
Resistance to Solder Heat:	260°C (500°F) for 10 seconds duration per IEC 512-6, Test 12e, 25-watt soldering iron.
Sequential Contact Mating System:	Two level and three level systems featured. Consult Technical Sales for application assistance with contact sequencing.
Safety "Recessed in Insulator" Contacts:	Size 12 and 16 female contacts may be recessed 5.00 mm [0.197 inch] below the face of the female connector insulator per safety requirements. Consult Technical Sales for ordering information.
Compliant Press-Fit Terminations:	Size 12, 16 and 20 contacts are available with Compliant Press-Fit Contact Terminations. Consult Technical Sales for electrical and mechanical characteristics.
Locking and Coupling System:	Center jackscrew, M4X0.7 thread. Long jackscrews for use with cable adapter or short jackscrews for use without cable adapter.
Printed Board and Panel Mounting Holes:	Mounting holes provided in connector body for both printed board and panel mounting. Self-tapping screws or push-on fastener options are available.
Mounting Plate with Float Bushings:	Provides up to 2.54 X 4.88 mm [0.100 X 0.192 inch] float.
Mechanical Operations:	
Systems 1 & 2:	200 couplings.
Systems 3, 4, 5, & 6:	500 couplings.
CLIMATIC CHARACTERISTICS:	
Working Temperature:	-55°C to +125°C.

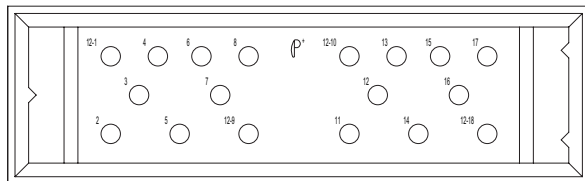


For RoHS options
see page 40.

UL Recognized: File #E49351
CSA Recognized: File #LR54219

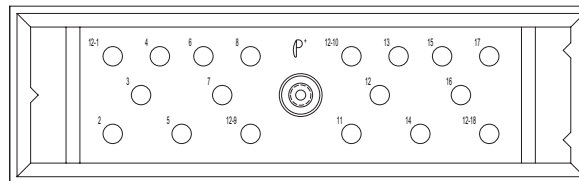
CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE



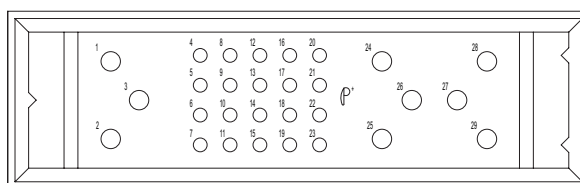
IP18 VARIANT

18 Size 12 Contacts



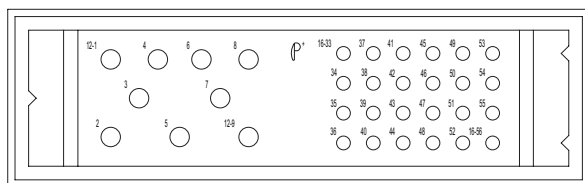
IP18 VARIANT

18 Size 12 Contacts with Jackscrew *



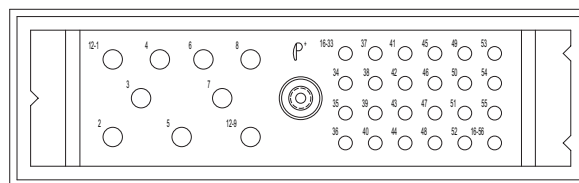
IP29W9 VARIANT

9 Size 12 and 20 Size 16 Contacts



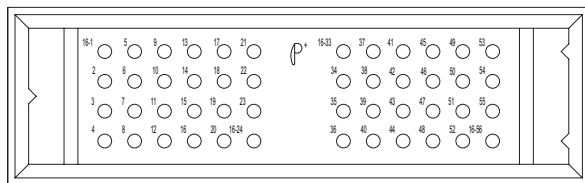
IP33W9 VARIANT

9 Size 12 and 24 Size 16 Contacts



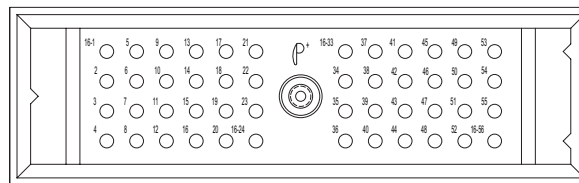
IP33W9 VARIANT

9 Size 12 and 24 Size 16 Contacts with Jackscrew *



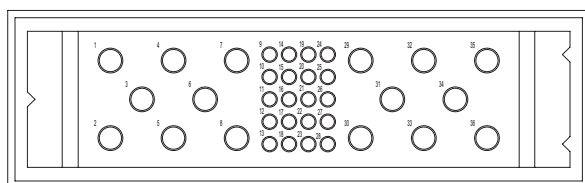
IP48 VARIANT

48 Size 16 Contacts



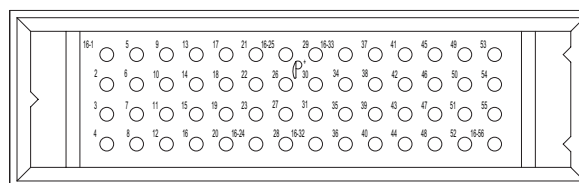
IP48 VARIANT

48 Size 16 Contacts with Jackscrew *



IP36W16 VARIANT

16 Size 12 and 20 Size 20 Contacts



IP56 VARIANT

56 Size 16 Contacts

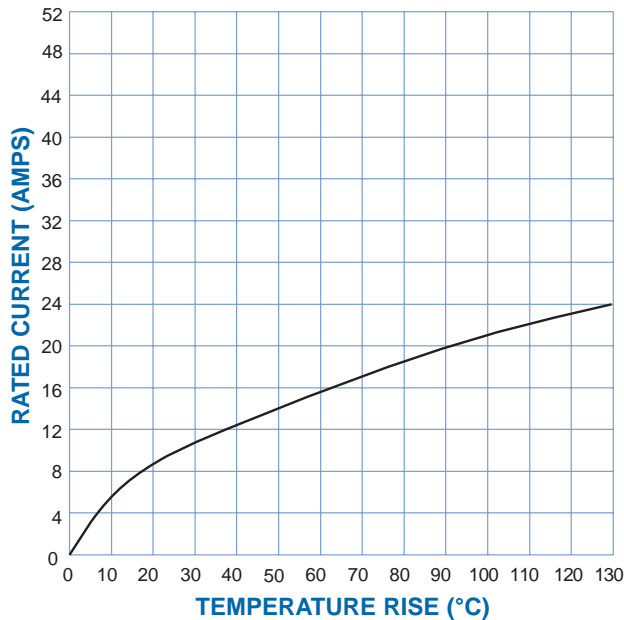
*** NOTE:**

Male connectors are offered with rotating jackscrews. Female connectors are offered with fixed jackscrews.



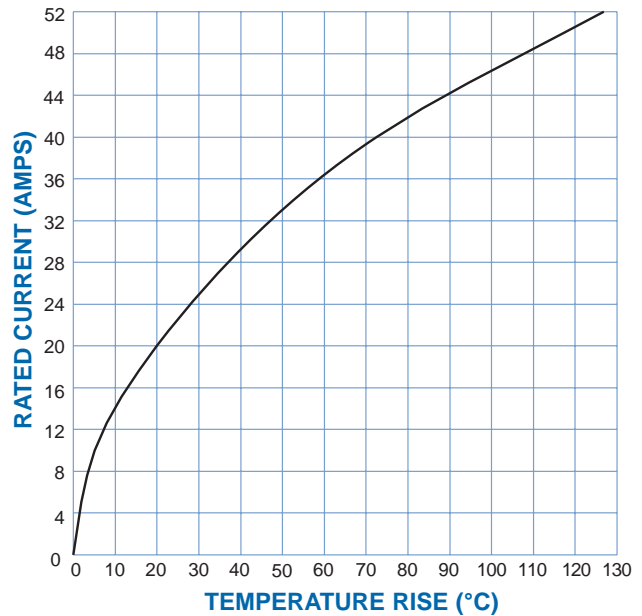
TEMPERATURE RISE CURVES TESTED PER IEC PUBLICATION 512-3, TEST 5A

SIZE 16 CONTACTS



Above curve developed using IP56M400A1 and IP56F300A1 connectors and 12 AWG wire. All contacts under load.

SIZE 12 CONTACTS

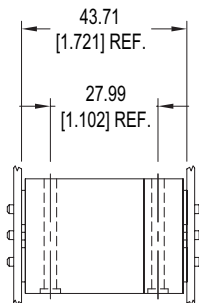


Above curve developed using a IP33W9M0000 connector with MC612N contacts and a IP33W9F0000 connector with FC612N2 contacts and 12 AWG wire on both. All contacts under load. Size 16 contact positions not filled and tested.

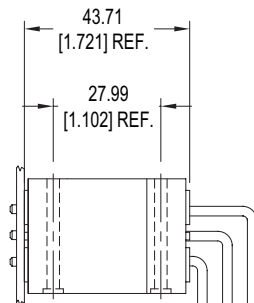
NOTE:

These temperature rise curves were developed using standard contact materials. High conductivity contact materials are available. These alternate materials allow for more favorable current carrying performance; consult Technical Sales for details.

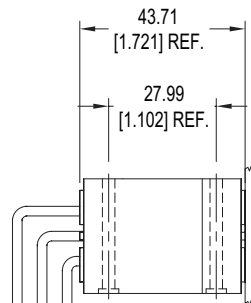
CONNECTOR MATING DIMENSIONS



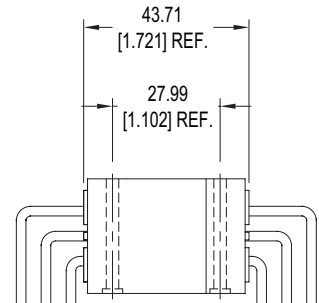
Straight Board Mount or Panel Mount Female to Straight Board Mount or Panel Mount Male.



Right Angle (90°) Board Mount Female to Straight Board Mount or Panel Mount Male.



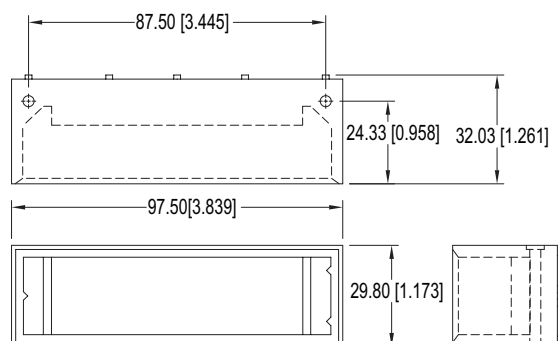
Straight Board Mount or Panel Mount Female to Right Angle (90°) Board Mount Male.



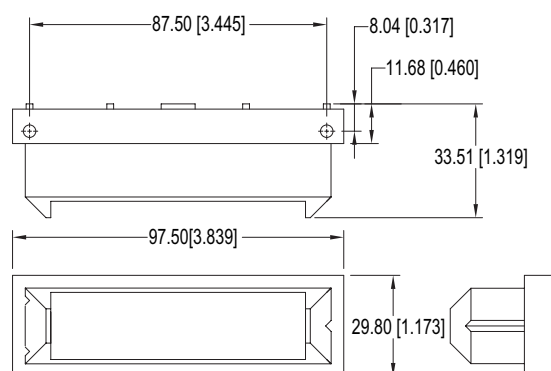
Right Angle (90°) Board Mount Female to Right Angle (90°) Board Mount Male.

CONNECTOR OUTLINE DIMENSIONS FOR USE WITH CODE 0, 3, 32, 93, 4, 42, AND 63

MALE



FEMALE

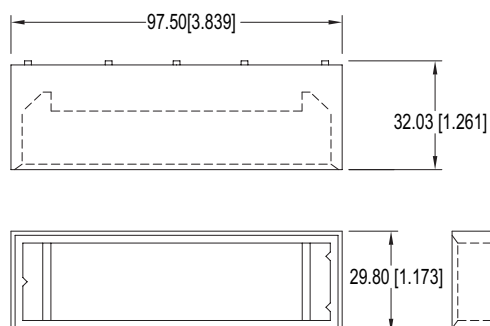


CABLE CONNECTOR

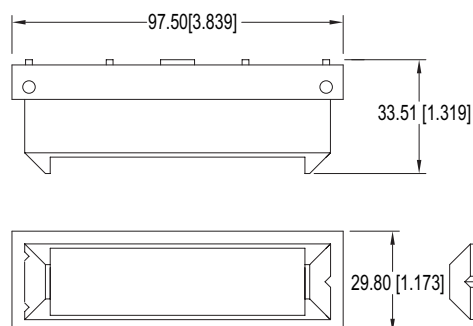
FOR USE WITH SIZE 12, 16 AND 20 REMOVABLE CONTACTS
CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

MALE



FEMALE



For information regarding size 12, 16 and 20 removable contacts, see Removable Contact section, pages 41-48.

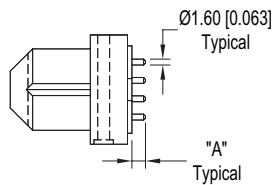


STRAIGHT SOLDER BOARD MOUNT CONNECTORS

CODE 3 AND CODE 32

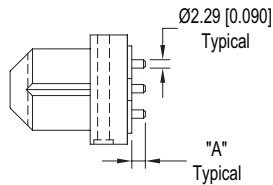
FEMALE CONNECTOR SHOWN FOR REFERENCE ONLY

CODE	"A" LENGTH
3	3.70 [0.146]
32	9.58 [0.377]



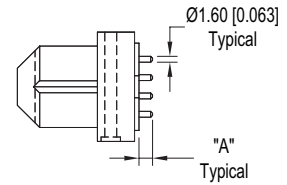
Size 16 contacts

IP56

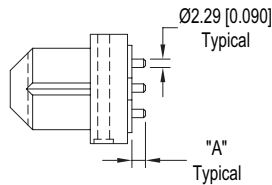


Size 12 contacts

IP33W9

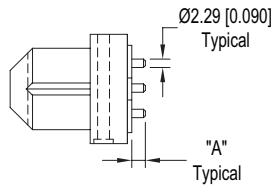


Size 16 contacts



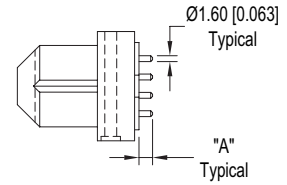
Size 12 contacts

IP18

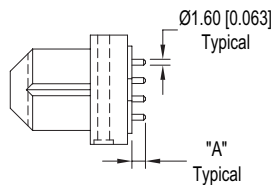


Size 12 contacts

IP29W9

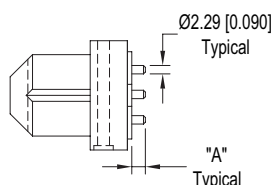


Size 16 contacts



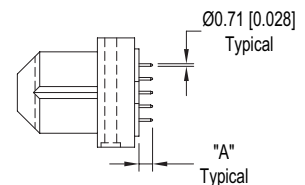
Size 16 contacts

IP48



Size 12 contacts

IP36W16



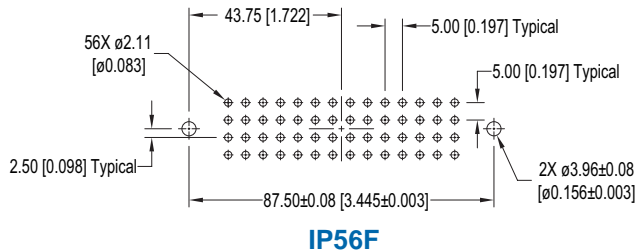
Size 20 contacts

NOTE:

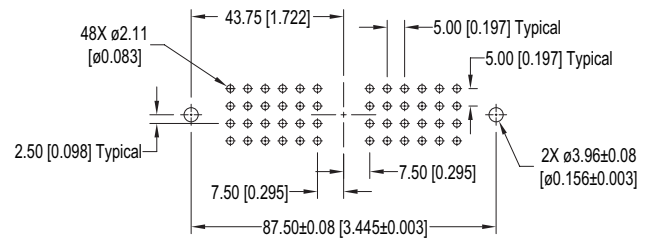
For customer specific contact extensions below the printed board, contact Technical Sales for ordering information.

STRAIGHT SOLDER CONTACT HOLE PATTERNS

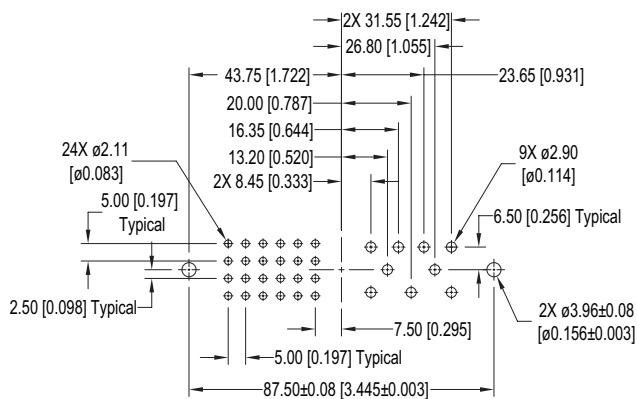
HOLE PATTERN SHOWN IS FOR FEMALE CONNECTOR
USE MIRROR IMAGE FOR MALE CONNECTOR



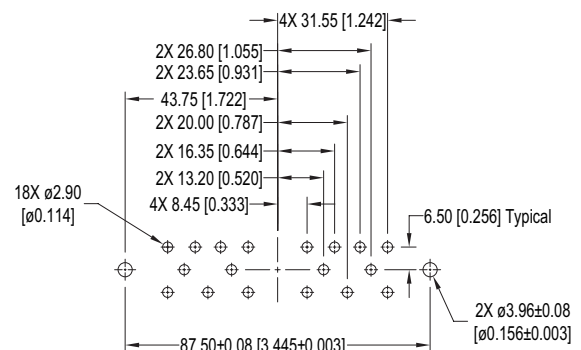
IP56F



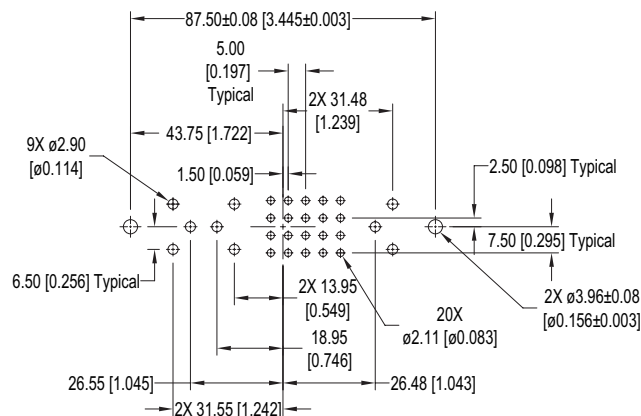
IP48F



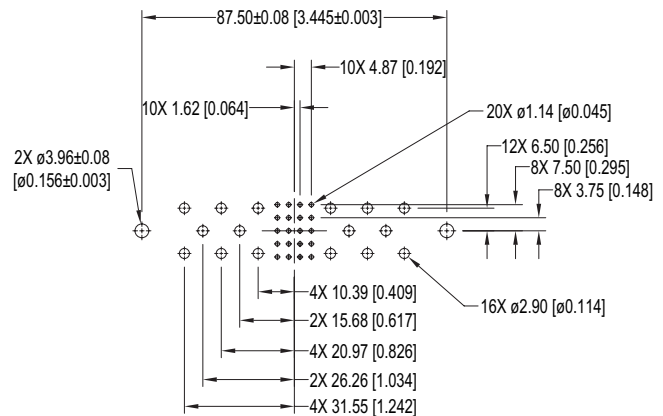
IP33W9F



IP18F



IP29W9F



IP36W16F

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggested $\phi 1.14$ [0.045] holes for size 20 straight contact holes.
Suggested $\phi 2.11$ [0.083] holes for size 16 straight contact holes.
Suggested $\phi 2.90$ [0.114] holes for size 12 straight contact holes.
Suggested $\phi 3.96 \pm 0.08$ [0.156 ± 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



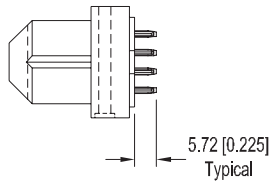
STRAIGHT COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS

Infinity
High Power
Connector

STRAIGHT COMPLIANT PRESS-FIT CONNECTORS

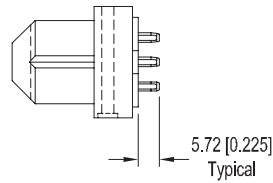
CODE 93

FEMALE CONNECTOR SHOWN FOR REFERENCE ONLY



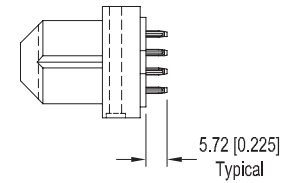
Size 16 contacts

IP56

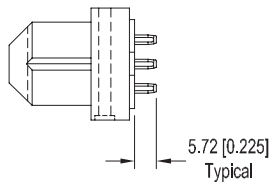


Size 12 contacts

IP33W9

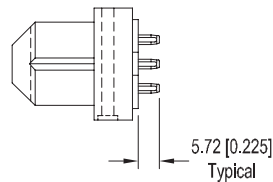


Size 16 contacts



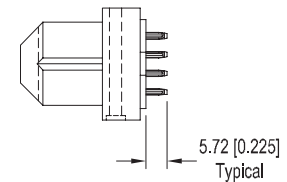
Size 12 contacts

IP18

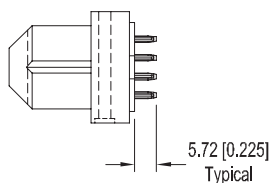


Size 12 contacts

IP29W9

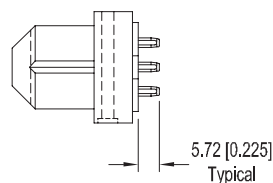


Size 16 contacts



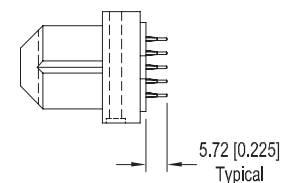
Size 16 contacts

IP48



Size 12 contacts

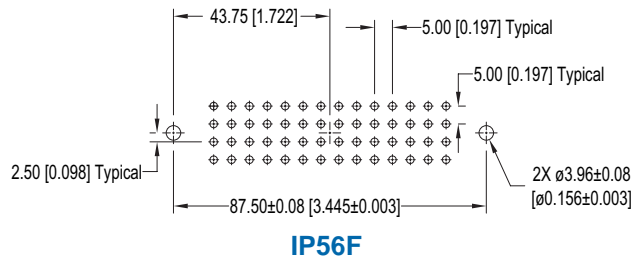
IP36W16



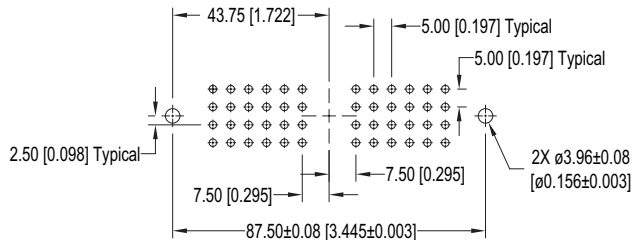
Size 20 contacts

STRAIGHT COMPLIANT PRESS-FIT CONTACT HOLE PATTERNS

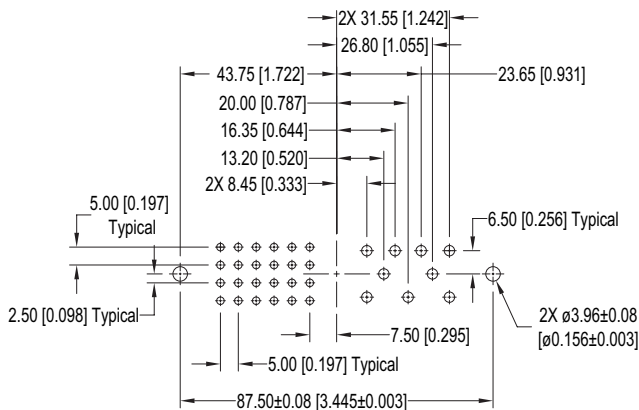
HOLE PATTERN SHOWN IS FOR FEMALE CONNECTOR; USE MIRROR IMAGE FOR MALE CONNECTOR



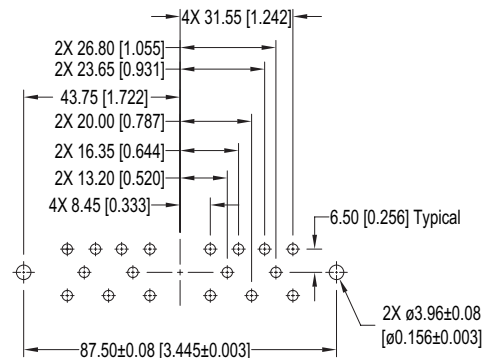
IP56F



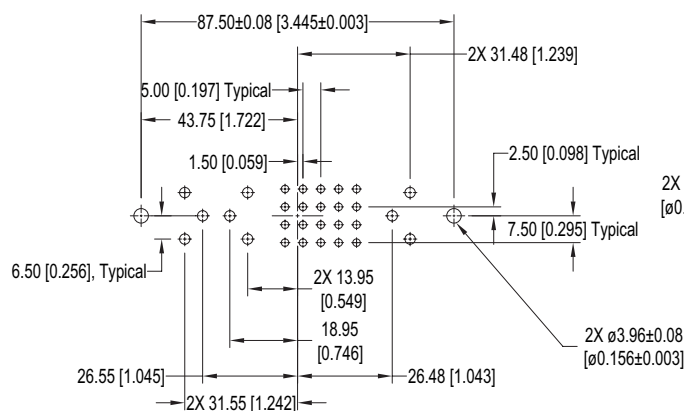
IP48F



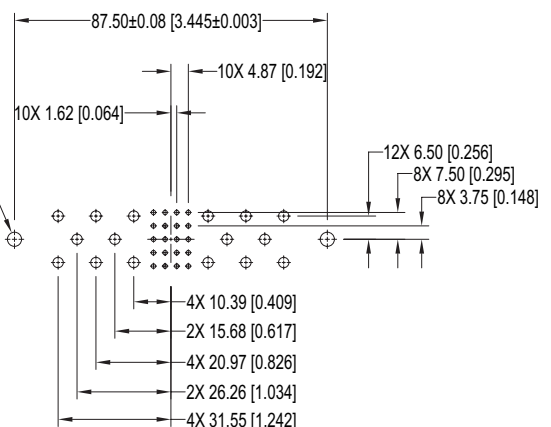
IP33W9F



IP18F



IP29W9F



IP36W16

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.



Positronic Industries
connectpositronic.com

RIGHT ANGLE (90°) SOLDER BOARD MOUNT CONNECTORS

Infinity
High Power
Connector

RIGHT ANGLE (90°) SOLDER BOARD MOUNT CONNECTORS

CODE 4 AND CODE 42

FEMALE CONNECTOR SHOWN FOR REFERENCE ONLY

CODE	"A" LENGTH
4	3.70 [0.146]
42	9.58 [0.377]

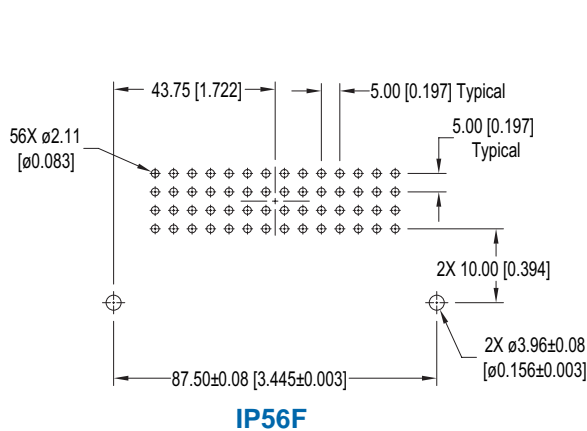
<p>Size 16 contacts</p> <p>IP56</p>	<p>Size 12 contacts</p> <p>IP33W9</p>	<p>Size 16 contacts</p> <p>IP33W9</p>
<p>Size 12 contacts</p> <p>IP18</p>	<p>Size 12 contacts</p> <p>IP29W9</p>	<p>Size 16 contacts</p> <p>IP29W9</p>
<p>Size 16 contacts</p> <p>IP48</p>	<p>Size 12 contacts</p> <p>IP36W16</p>	<p>Size 20 contacts</p> <p>IP36W16</p>

NOTE:

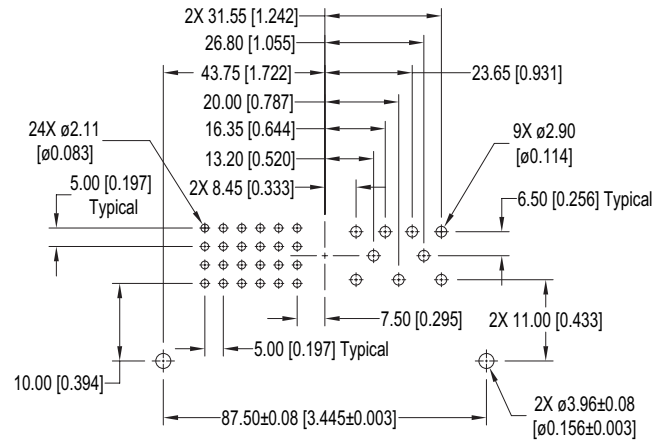
For customer specific contact extensions below the printed board, contact Technical Sales for ordering information.

RIGHT ANGLE (90°) SOLDER CONTACT HOLE PATTERNS

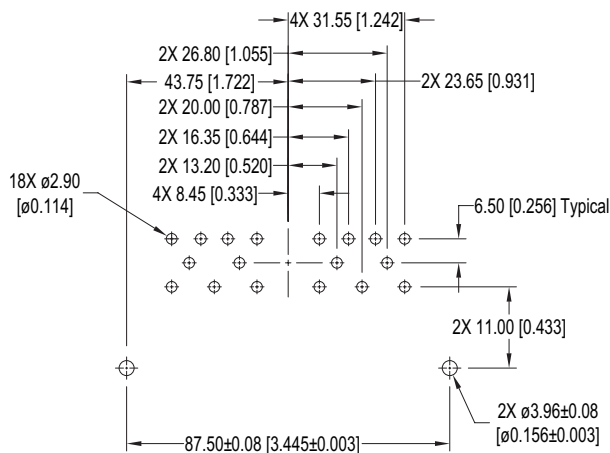
HOLE PATTERN SHOWN IS FOR FEMALE CONNECTOR
USE MIRROR IMAGE FOR MALE CONNECTOR



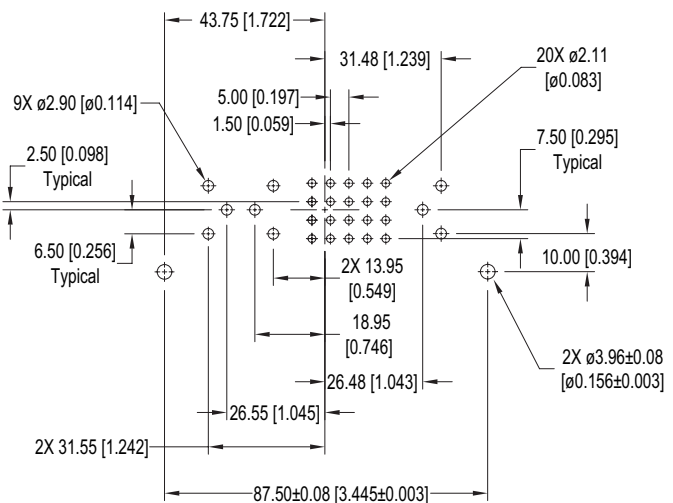
IP56F



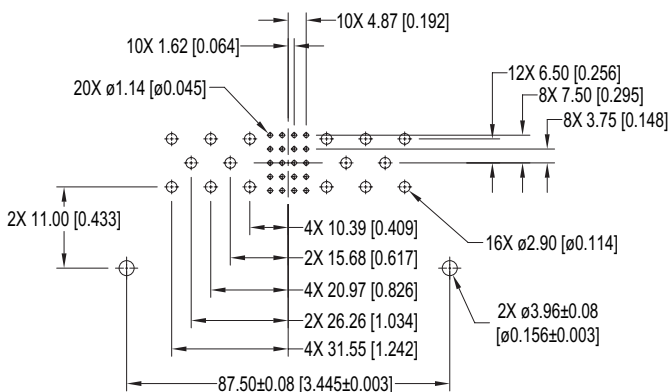
IP33W9F



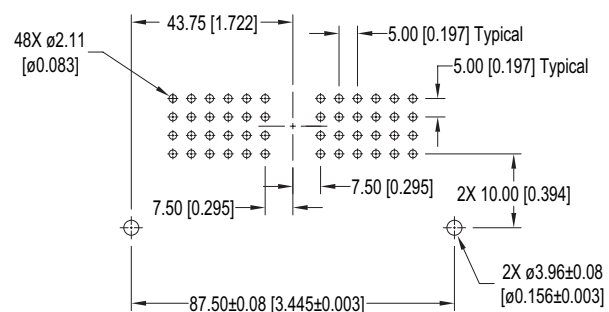
IP18F



IP29W9F



IP36W16F



IP48F

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggested $\phi 1.14$ [0.045] holes for size 20 straight contact holes.
Suggested $\phi 2.11$ [0.083] holes for size 16 straight contact holes.
Suggested $\phi 2.90$ [0.114] holes for size 12 straight contact holes.
Suggested $\phi 3.96 \pm 0.08$ [0.156 ± 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS AND HOLE PATTERN

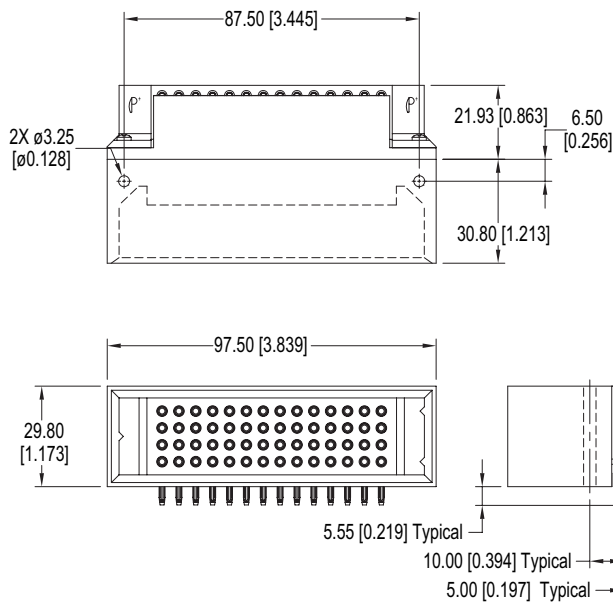
Infinity
High Power
Connector

RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS

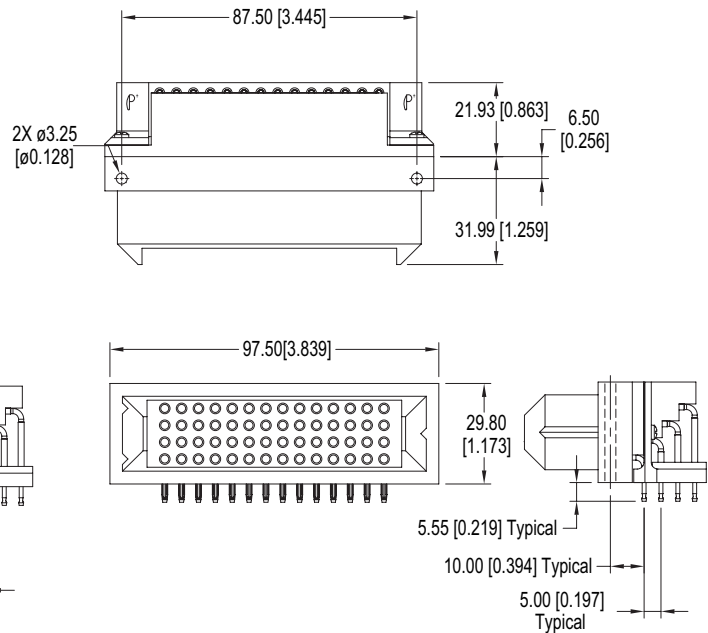
CODE 63

MALE AND FEMALE

MALE

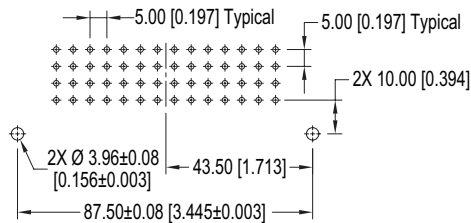


FEMALE



RIGHT ANGLE (90°) COMPLIANT PRESS-FIT CONTACT HOLE PATTERN

MALE AND FEMALE



SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.

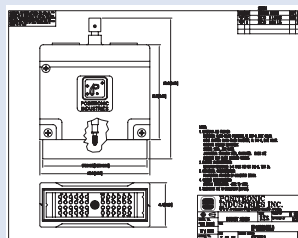
ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9		
EXAMPLE	IP	48	M	0	J	EL	0	/AA			
STEP 1 - BASIC SERIES IP - Infinity		STEP 2 - CONNECTOR VARIANTS 56 - 56 size 16 contacts 48 - 48 size 16 contacts 33W9 - 9 size 12 and 24 size 16 contacts 18 - 18 size 12 contacts 29W9 - 9 size 12 and 20 size 16 contacts 36W16 - 16 size 12 and 20 size 20 contacts		STEP 3 - CONNECTOR GENDER M - Male F - Female		STEP 4 - CONTACT TERMINATION TYPE 0 - Order contacts separately for cable connectors for connection systems 1, 2, 4, 5 and 6. See pages 41-48. 3 - Solder, Straight Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1 and 4. 32 - Solder, Straight Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1 and 4. 4 - Solder, Right Angle (90°) Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1, 2 and 3. 42 - Solder, Right Angle (90°) Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1, 2 and 3. 63 - Press-Fit, Compliant Termination Right Angle (90°) Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. With Cross Bar. Connection systems 1 and 2. Connector variant 48 and 56 connectors only. 93 - Press-Fit, Compliant Termination Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection systems 1 and 4.		STEP 5 - MOUNTING STYLE AND CABLE ADAPTER 0 - None, mounting screws supplied with board mount connector. H - Mounting Plate with Floating Bushings. J - Robust plastic cable adapter N - Push-on fasteners supplied installed on connector.		STEP 6 - JACKSCREWS 0 - None. *E - Rotating Male Jackscrew, for use with male connectors without cable adapter only. *EL - Rotating Male Jackscrew, for use with male connectors with cable adapter only. *T - Fixed Female Jackscrew, for use with female connectors only.	
						STEP 7 - CONTACT PLATING FOR PRINTED BOARD TYPE CONNECTORS 0 - Crimp contacts ordered separately, see pages 41-48. A1 - Gold flash over nickel on mating end and termination end. A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 63 and 93 in Step 4. C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end. C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4. D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end. D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.		STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS) NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: IP48M0JEL0			
						STEP 9 - SPECIAL OPTIONS CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS <ul style="list-style-type: none"> Sequential Mating Systems Recessed Female Contacts Customer Specified Contact Arrangement Other Customer Requirements 					



NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES file.



SK Drawing



3-dimensional model

*Available on connector variants 48, 33W9, and 18 only.



Positronic Industries
connectpositronic.com

REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

Infinity
High Power
Connector

REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

SIZE 20 REMOVABLE CONTACT

MATERIALS AND FINISHES:

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

STANDARD: Insert contact to rear face of insulator, release from front face of insulator. Size 20 contacts, 1.02 mm [0.040 inch] diameter male contacts, closed entry design female contacts.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes.
Initial Contact Resistance: 0.007 ohms max. per IEC 512-2, test 2b.

SIZE 16 REMOVABLE CONTACT

MATERIALS AND FINISHES:

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH CONDUCTIVITY: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

STANDARD AND HIGH CONDUCTIVITY: Insert contact to rear face of insulator, release from front face of insulator. Size 16 contacts, 1.57 mm [0.062 inch] diameter male contacts. Female contact closed entry for highest reliability.

ELECTRICAL CHARACTERISTICS:

STANDARD:
Contact Current Rating: 20 amperes, continuous.
Initial Contact Resistance: 0.0016 ohms max. per IEC 512-2, test 2b.

HIGH CONDUCTIVITY:
Contact Current Rating: Consult Technical Sales for detail information.
Initial Contact Resistance: Consult Technical Sales for detail information.

SIZE 12 REMOVABLE CONTACT

MATERIALS AND FINISHES:

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH CONDUCTIVITY: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

SHIELDED:
Dielectric Material: PTFE teflon
Inner Contacts: Brass & phosphor bronze, 0.000030 inch [0.76μ] gold over nickel. Other finishes are available, see optional plating finishes for -15.
Outer Contacts: Brass & phosphor bronze, gold flash over nickel. Other finishes are available, see optional finishes for -14

MECHANICAL CHARACTERISTICS:

STANDARD AND HIGH CONDUCTIVITY: Insert contact to rear face of insulator, release from front face of insulator. Size 12 contacts, 2.39 mm [0.094 inch] diameter male contacts. Female contact closed entry for highest reliability.

SHIELDED: Insert contact to rear face of insulator, release from front face of insulator. Size 12 contacts, 2.39 mm [0.094 inch] diameter male contacts.

Durability: 100 cycles minimum.
Vibration: 20g from 10 Hz to 500 Hz
Shock: 30g - 11 rms

ELECTRICAL CHARACTERISTICS:

STANDARD:
Contact Current Rating: 40 amperes, continuous.
Initial Contact Resistance: 0.001 ohms max. per IEC 512-2, test 2b.

HIGH CONDUCTIVITY:
Contact Current Rating: Consult Technical sales for detail information.
Initial Contact Resistance: Consult Technical sales for detail information.

SHIELDED:
Initial Contact Resistance: 0.010 ohms maximum
Nominal Impedance: 50 ohms
Insulator Resistance: 5 G ohms
***Insertion Loss:** 0.35 dB at 1 GHz
1.35 dB at 2 GHz
1.53 dB at 3 GHz
***VSWR:** 1.20 average at 1 GHz
1.45 average at 2 GHz
1.63 average at 3 GHz
***Proof Voltage:** 600 V r.m.s.

**Above values measured using frequency domain techniques.*

SIZE 8 REMOVABLE CONTACT

MATERIALS AND FINISHES:

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH CONDUCTIVITY: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH VOLTAGE:
Insulator Material: PTFE teflon
Contacts: Male contacts, brass. Female contacts, phosphor bronze. 0.76μ [0.000030 inch] gold over nickel. Other finishes are available, see optional plating finishes for -15.

HIGH CURRENT: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

SHIELDED:
Dielectric Material: PTFE teflon
Inner Contacts: Brass and phosphor bronze, 0.76μ [0.000030 inch] gold over nickel. Other finishes are available, see optional finishes for -15.
Outer Contacts: Brass and phosphor bronze, gold flash over nickel. Other finishes are available, see optional finishes for -14.

... Continued on next page

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.

REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

Continued from previous page . . .

SIZE 8 REMOVABLE CONTACT

MECHANICAL CHARACTERISTICS:

STANDARD AND

HIGH CONDUCTIVITY:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts, 3.61 mm [0.142 inch] diameter male contacts, closed entry design female contacts.

HIGH VOLTAGE:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. Straight and right angle (90°) terminations. 1.04 mm [0.041 inch] minimum hole diameter.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz

Shock:

30g - 11 ms

HIGH CURRENT:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts, 3.61 mm [0.142 inch] diameter male contacts, closed entry design female contacts.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz

Shock:

30g - 11 ms

SHIELDED:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts, 3.86 mm [0.152 inch] diameter male contacts. See page 48 table of cable sizes for contact termination dimensions.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz

Shock:

30g - 11 ms

ELECTRICAL CHARACTERISTICS:

STANDARD:

Contact Current Rating:

60 amperes, continuous.

Initial Contact Resistance:

0.0005 ohms max. per IEC 512-2, test 2b.

HIGH CONDUCTIVITY:

Contact Current Rating:

Consult Technical Sales for detail information.

Initial Contact Resistance:

0.00035 ohms max. per IEC 512-2, test 2b.

HIGH VOLTAGE:

Flash over Voltage:

3600 V r.m.s.

Proof Voltage:

2700 V r.m.s.

Initial Contact Resistance:

0.008 ohms maximum.

HIGH CURRENT:

Contact Current Rating:

Consult Technical Sales for detail information.

Initial Contact Resistance:

0.0003 ohms max. per IEC 512-2, test 2b.

SHIELDED:

Initial Contact Resistance:

0.008 ohms maximum.

Nominal Impedance:

50 ohms.

*Insertion Loss:

-0.46 dB at 1 GHz

-1.5 dB at 2 GHz

*VSWR:

1.15 average at 1 GHz

1.56 average at 2 GHz

*Proof Voltage:

1000 V r.m.s.

*Above values measured using frequency domain techniques.

OPTIONAL PLATING FINISHES

-14

0.76 μ [0.000030 inch] gold over nickel by adding "-14" suffix onto part number. *Example: FC720N2-14.*

-15

1.27 μ [0.000050 inch] gold over nickel by adding "-15". *Example: FC720N2-15.*

RoHS OPTIONS:

/AA

Environmental Compliance Option (RoHS), compliant per EU Directive 2002/95/EC can be achieved by adding "/AA" suffix onto part number. *Examples: FC720N2/AA or for optional finishes use FC720N2/AA-14.*

REMOVABLE CRIMP CONTACT

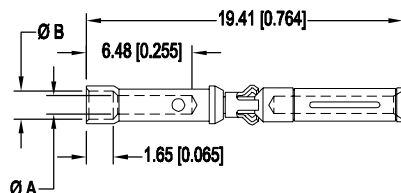
FOR USE WITH MMIP, MIP AND IP SERIES CONNECTORS

CONTACTS MUST BE ORDERED SEPARATELY

SIZE 20

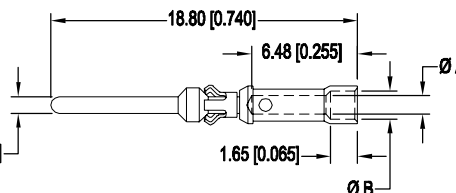
FEMALE CONTACT

"CLOSED ENTRY" DESIGN



PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB
FC720N2	20 / 22 / 24 [0.5 / 0.3 / 0.25]	1.14 [0.045]	1.73 [0.068]

MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB
MC720N	20 / 22 / 24 [0.5 / 0.3 / 0.25]	1.14 [0.045]	1.73 [0.068]

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.



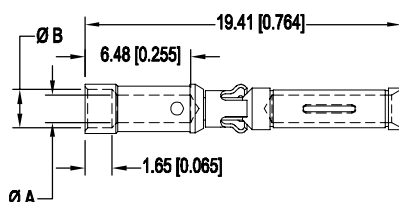
Positronic Industries
connectpositronic.com

REMOVABLE CRIMP AND SOLDER CUP CONTACTS, SIZE 16

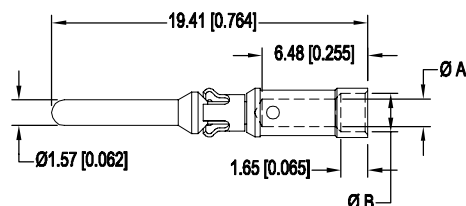
Infinity
High Power
Connector

REMOVABLE CRIMP CONTACT FOR USE WITH MMIP, MIP AND IP SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 16

***FEMALE CONTACT**
"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
FC112N2	12 [4.0]	2.49 [0.098]	N/A
NEW FC112N2S	12 [4.0]	2.49 [0.098]	N/A
FC114N2	14-16 [2.5-1.5]	2.06 [0.081]	2.67 [0.105]
FC116N2	16-18 [1.5-1.0]	1.70 [0.067]	2.36 [0.093]
FC120N2	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.65 [0.065]

"S" in
part number
indicates high
conductivity
material.

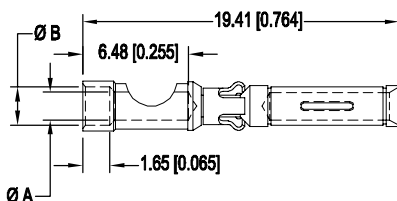
PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
MC112N	12 [4.0]	2.49 [0.098]	N/A
NEW MC112NS	12 [4.0]	2.49 [0.098]	N/A
MC114N	14-16 [2.5-1.5]	2.06 [0.081]	2.67 [0.105]
MC116N	16-18 [1.5-1.0]	1.70 [0.067]	2.36 [0.093]
MC120N	20-22-24 [0.5-0.3-0.25]	1.14 [0.045]	1.65 [0.065]

***NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

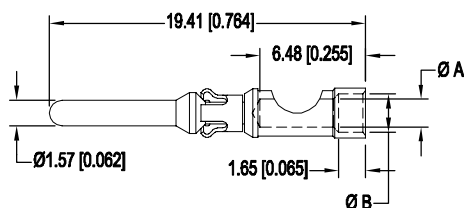


REMOVABLE SOLDER CUP CONTACT FOR USE WITH MMIP, MIP AND IP SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 16

***FEMALE CONTACT**
"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
FS112N2	12 [4.0]	2.49 [0.098]	N/A
FS112N2S	12 [4.0]	2.49 [0.098]	N/A
FS114N2	14 [2.5]	2.06 [0.081]	2.67 [0.105]
FS116N2	16 [1.5]	1.70 [0.067]	2.36 [0.093]
FS120N2	20 [0.5]	1.14 [0.045]	1.65 [0.065]

"S" in
part number
indicates high
conductivity
material.

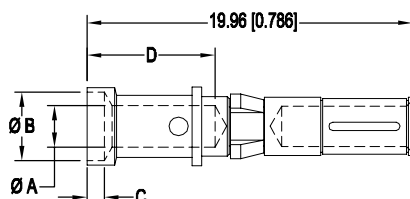
PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
MS112N	12 [4.0]	2.49 [0.098]	N/A
MS112NS	12 [4.0]	2.49 [0.098]	N/A
MS114N	14 [2.5]	2.06 [0.081]	2.67 [0.105]
MS116N	16 [1.5]	1.70 [0.067]	2.36 [0.093]
MS120N	20 [0.5]	1.14 [0.045]	1.65 [0.065]

***NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

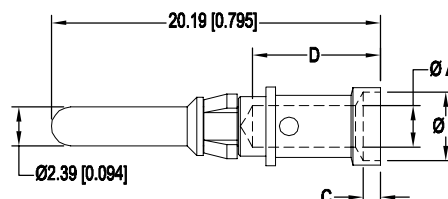
For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.

REMOVABLE CRIMP CONTACT FOR USE WITH MMIP, MIP AND IP SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 12

***FEMALE CONTACT**
"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB	C	D
FC610N2S	10 [6.0]	3.73 [0.147]	N/A	N/A	6.45 [0.254]
FC612N2	12 [4.0]	2.54 [0.100]	4.19 [0.165]	1.06 [0.042]	7.85 [0.309]

"S" in
part number
indicates high
conductivity
material.

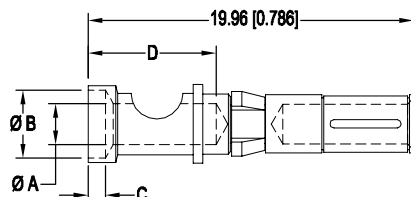
PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB	C	D
MC610NS	10 [6.0]	3.73 [0.147]	N/A	N/A	6.45 [0.254]
MC612N	12 [4.0]	2.54 [0.100]	4.19 [0.165]	1.06 [0.042]	7.85 [0.309]

***NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

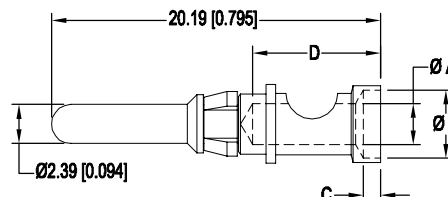


REMOVABLE SOLDER CUP CONTACT FOR USE WITH MMIP, MIP AND IP SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 12

***FEMALE CONTACT**
"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB	C	D
FS610N2S	10 [6.0]	3.73 [0.147]	N/A	N/A	6.45 [0.254]
FS612N2	12 [4.0]	2.54 [0.100]	4.19 [0.165]	1.06 [0.042]	7.85 [0.309]

"S" in
part number
indicates high
conductivity
material.

PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB	C	D
MS610NS	10 [6.0]	3.73 [0.147]	N/A	N/A	6.45 [0.254]
MS612N	12 [4.0]	2.54 [0.100]	4.19 [0.165]	1.06 [0.042]	7.85 [0.309]

***NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.



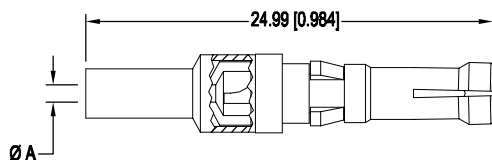
Positronic Industries
connectpositronic.com

REMOVABLE SHIELDED CRIMP , SIZE 12 AND CRIMP CONTACTS, SIZE 8

Infinity
High Power
Connector

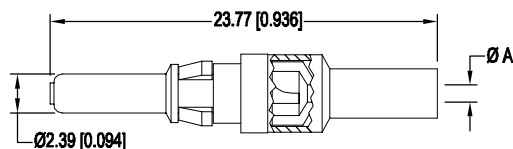
REMOVABLE SHIELDED CRIMP CONTACTS FOR USE WITH MMIP, MIP AND IP SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 12

FEMALE CONTACT



PART NUMBER	Ø A	RG CABLE SIZE
FC601D	1.04 [0.041]	178 B/U 196 B/U
FC602D	1.78 [0.070]	179 B/U 316 /U

MALE CONTACT

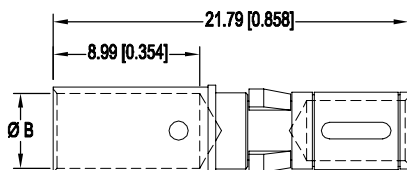


PART NUMBER	Ø A	RG CABLE SIZE
MC601D	1.04 [0.041]	178 B/U 196 B/U
MC602D	1.78 [0.070]	179 B/U 316 /U

REMOVABLE CRIMP CONTACT FOR USE WITH MIP SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 8

*FEMALE CONTACT

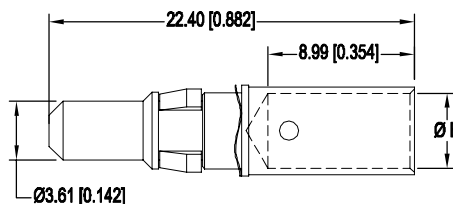
"CLOSED ENTRY" DESIGN, L.S.A.



PART NUMBER	WIRE SIZE AWG/[mm²]	ØB
FC4008D	8 / [10.0]	4.60 [0.181]
NEW! FC4008DS	8 / [10.0]	4.60 [0.181]
FC4010D	10 / [6.0]	3.10 [0.122]
FC4012D	12 / [4.0]	2.57 [0.101]
FC4016D	16 / [1.5]	1.70 [0.067]

"S" in
part number
indicates high
conductivity
material.

MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm²]	ØB
MC4008D	8 / [10.0]	4.60 [0.181]
NEW! MC4008DS	8 / [10.0]	4.60 [0.181]
MC4010D	10 / [6.0]	3.10 [0.122]
MC4012D	12 / [4.0]	2.57 [0.101]
MC4016D	16 / [1.5]	1.70 [0.067]

*NOTE: Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.

REMOVABLE SUPER HIGH CURRENT CRIMP CONTACT

FOR USE WITH MIP24W8 CONNECTORS ONLY

CONTACTS USED WITH 6 AWG WIRE

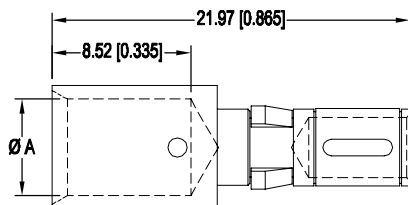
6 AWG [16.0mm²] max.

CONTACTS MUST BE ORDERED SEPARATELY

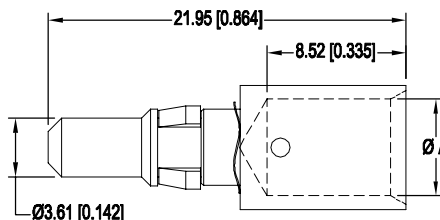
SIZE 8

*FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"
FC4006D	6 [16.0]	5.92 [0.233]

PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"
MC4006D	6 [16.0]	5.92 [0.233]

***NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.



REMOVABLE SOLDER CUP CONTACT

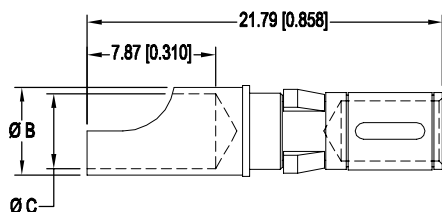
FOR USE WITH MIP SERIES CONNECTORS

CONTACTS MUST BE ORDERED SEPARATELY

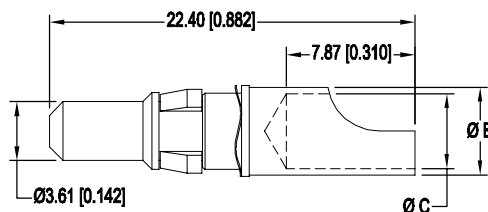
SIZE 8

*FEMALE CONTACT

"CLOSED ENTRY" DESIGN, L.S.A.



MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	Ø B	Ø C
FS4008D	8 / [10.0]	5.56 [0.219]	4.78 [0.188]
FS4012D	12 / [4.0]	3.63 [0.143]	2.84 [0.112]
FS4016D	16 / [1.5]	2.54 [0.100]	1.75 [0.069]

PART NUMBER	WIRE SIZE AWG/[mm ²]	Ø B	Ø C
MS4008D	8 / [10.0]	5.56 [0.219]	4.78 [0.188]
MS4012D	12 / [4.0]	3.63 [0.143]	2.84 [0.112]
MS4016D	16 / [1.5]	2.54 [0.100]	1.75 [0.069]

***NOTE:** Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.



Positronic Industries
connectpositronic.com

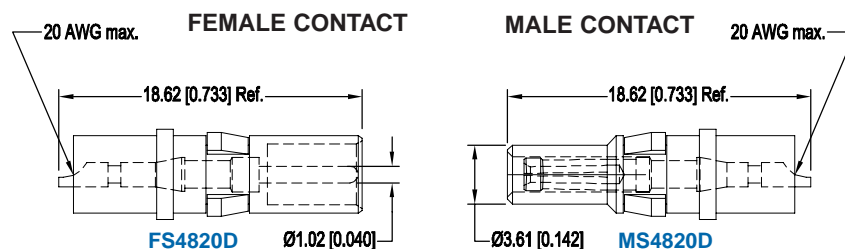
REMOVABLE HIGH VOLTAGE CRIMP CONTACT, SIZE 8

Infinity
High Power
Connector

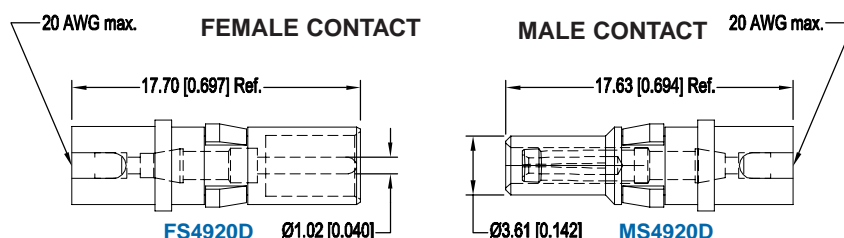


REMOVABLE HIGH VOLTAGE CONTACT
FOR USE WITH MIP SERIES CONNECTORS
CONTACTS MUST BE ORDERED SEPARATELY
SIZE 8

STRAIGHT SOLDER WIRE TERMINATION



RIGHT ANGLE (90°) SOLDER WIRE TERMINATION



Connectors Designed To Customer Specifications

Positronic connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware.

Positronic can develop and tool new connector designs with reasonable price and delivery.

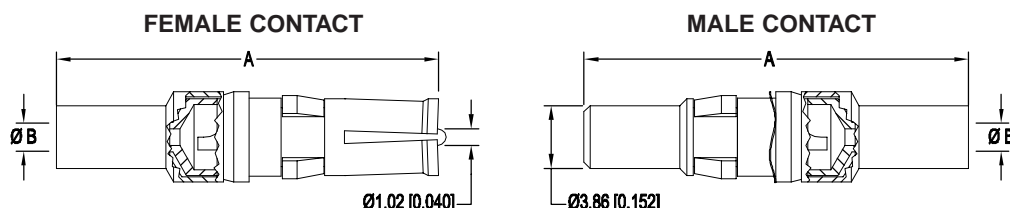
Contact Technical Sales with your particular requirements.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.

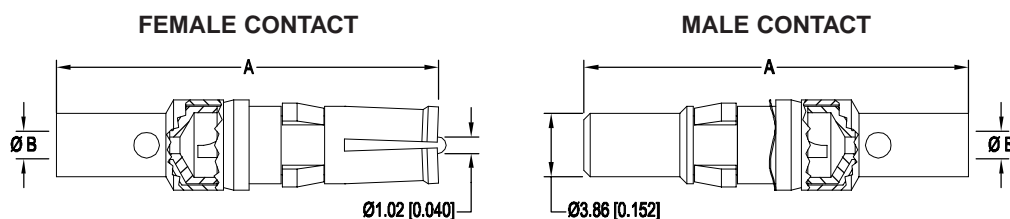


REMOVABLE SHIELDED CONTACT
FOR USE WITH MIP SERIES CONNECTORS
CONTACTS MUST BE ORDERED SEPARATELY
SIZE 8

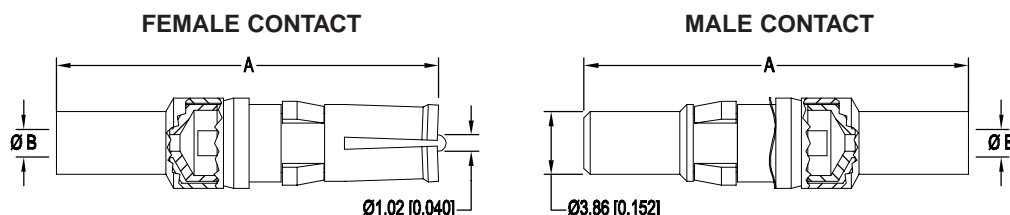
STRAIGHT SOLDER/CRIMP CONTACTS



STRAIGHT SOLDER/SOLDER CONTACTS



STRAIGHT CRIMP/CRIMP CONTACTS



TYPE OF CONTACT	PART NUMBER		A	ØB	RG CABLE NUMBER
	FEMALE	MALE			
SOLDER/CRIMP	FC4101D	MC4101D	23.60 [0.929]	1.02 [0.040]	178 B/U 196 B/U
SOLDER/CRIMP	FC4102D	MC4102D	23.60 [0.929]	1.70 [0.067]	179 B/U 316 /U
SOLDER/CRIMP	FC4103D	MC4103D	26.34 [1.037]	2.74 [0.108]	180 B/U
SOLDER/CRIMP	FC4104D	MC4104D	26.34 [1.037]	3.05 [0.120]	58 B/U
SOLDER/SOLDER	FS4101D	MS4101D	23.60 [0.929]	1.02 [0.040]	178 B/U 196 B/U
SOLDER/SOLDER	FS4102D	MS4102D	23.60 [0.929]	1.70 [0.067]	179 B/U 316 /U
SOLDER/SOLDER	FS4103D	MS4103D	26.34 [1.037]	2.74 [0.108]	180 B/U
SOLDER/SOLDER	FS4104D	MS4104D	26.34 [1.037]	3.05 [0.120]	58 B/U
CRIMP/CRIMP	FCC4101D	MCC4101D	23.60 [0.929]	1.02 [0.040]	178 B/U 196 B/U
CRIMP/CRIMP	FCC4102D	MCC4102D	23.60 [0.929]	1.70 [0.067]	179 B/U 316 /U
CRIMP/CRIMP	FCC4103D	MCC4103D	26.34 [1.037]	2.74 [0.108]	180 B/U
CRIMP/CRIMP	FCC4104D	MCC4104D	26.34 [1.037]	3.05 [0.120]	58 B/U

Two-step crimping
action for signal and
shielding conductors.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 49-54.

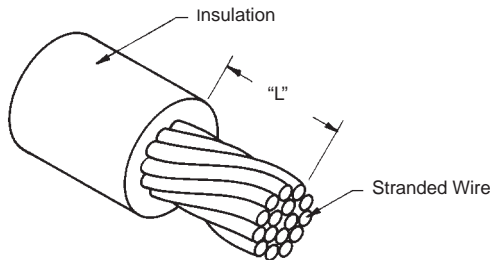


CRIMPING INFORMATION FOR REMOVABLE CRIMP CONTACTS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

STEP 1: STRIP WIRE TO INDICATED LENGTH.

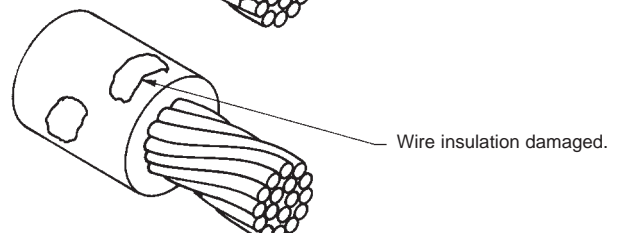
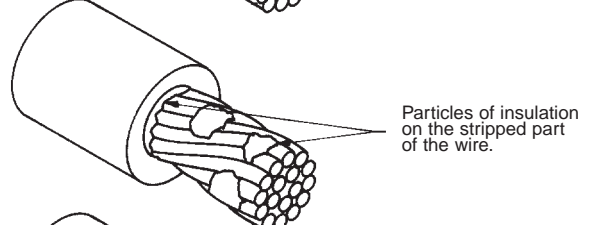
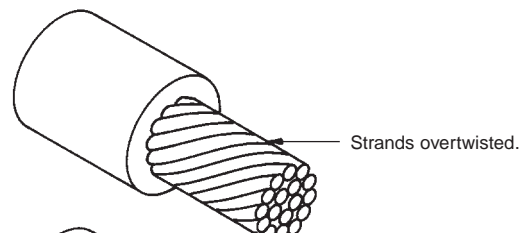
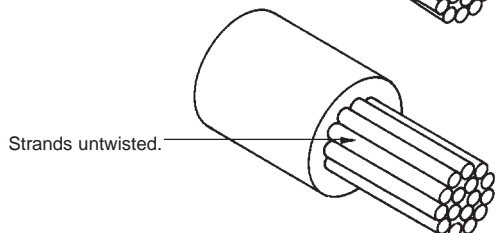
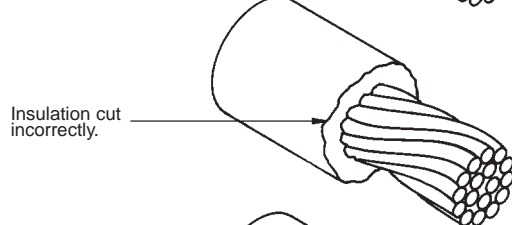
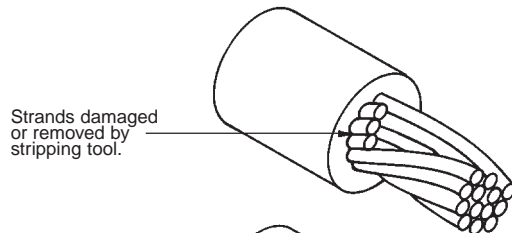
Correctly Stripped Wire



- Take Care Not To:
- Damage or remove strands.
 - Untwist or overtwist strands.
 - Leave insulation particles on strands.
 - Damage insulation.

CONTACT SIZE	CONTACT PART NUMBER		"L" ±0.020 [±0.51]
	FEMALE	MALE	
20	FC720N2	MC720N	5.84 [0.230]
16	FC1**N2	MC1**N	5.84 [0.230]
16	FS1**N2	MS1**N	5.84 [0.230]
16	F*112N2S	M*112NS	5.84 [0.230]
12	FC610N2S	MC610NS	5.84 [0.230]
12	FC612N2	MC612N	7.37 [0.290]
12	FS610N2S	MS610NS	5.84 [0.230]
12	FS612N2	MS612N	7.37 [0.290]
8	FC40**D	MC40**D	8.89 [0.350]
8	FS40**D	MS40**D	8.89 [0.350]
8	FC4008DS	MC4008DS	8.89 [0.350]
8	FS4*20D	MS4*20D	2.54 [0.100]

Examples of Stripping Faults



CRIMPING INFORMATION FOR REMOVABLE CRIMP CONTACTS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

STEP 2: CRIMP WIRE TO CONTACT.

- For Hand Crimp Tool:**
- Place contact into crimping tool.
 - Insert wire into contact.
 - Center contact by slowly closing the crimping tool until the crimp indenters make contact with the crimp barrel.
 - Complete the cycle of the crimping tool in one smooth motion.
 - Remove the crimped contact.

- For Automatic Crimp Tool:**
- Insert the wire into the contact, positioned in the crimp tool by the plastic carrier.
 - Depress the activating device of the crimping tool to start the crimping cycle.
 - Remove the crimped contact.

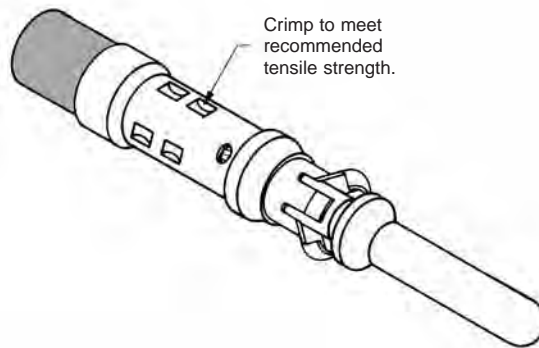
Conductor tensile strength
values are derived using
silver-tin plated copper wires.

Values may change depending
upon what type of wire is used.

Positronic Recommended Conductor Tensile Strength	
WIRE SIZE AWG/[mm ²]	AXIAL LOAD POUNDS/[N]
6 [16.0]	110 [489]
8 [10.0]	110 [489]
10 [5.3]	110 [489]
12 [4.0]	110 [489]
14 [2.5]	70 [311]
16 [1.5]	50 [222]
18 [1.0]	28 [125]
20 [0.5]	20 [89]
22 [0.3]	12 [53]
24 [0.25]	8 [36]

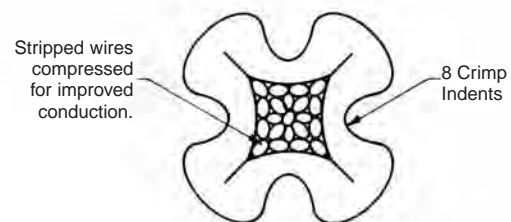
STEP 3: INSPECT THE CRIMP.

Correctly Crimped Contact

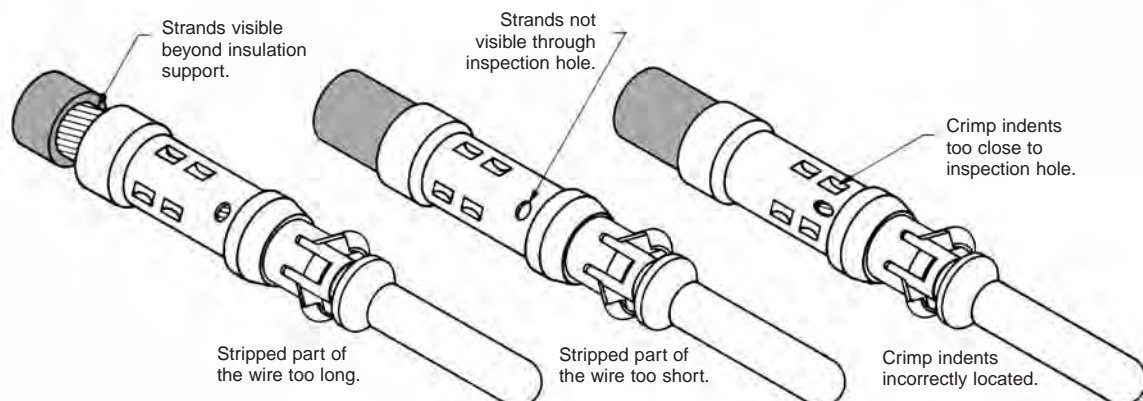


- For All Tools:**
- Strands to be visible through the inspection hole.
 - Strands not to be visible beyond the insulation support.
 - Crimped contact to meet recommended conductor tensile force shown in chart.
 - Check for peeled gold and bent contacts.

Cross Section of Correctly Crimped Contact



Examples of Crimping Faults





Positronic Industries
connectpositronic.com

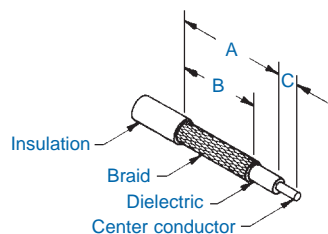


SOLDERING AND CRIMPING INFORMATION FOR SHIELDED CONTACTS

Infinity
High Power
Connector

SOLDERING AND CRIMPING INFORMATION FOR SHIELDED CONTACTS

STEP 1: STRIP WIRE TO INDICATED LENGTH



TAKE CARE NOT TO:

- Damage or remove strands.
- Untwist or overtwist strands.
- Leave insulation particles on strands.
- Damage insulation.

STEP 2: CRIMP WIRE TO CONTACT

- Trim cable.
- Slide ferrule over jacket. Insert dielectric and center conductor into barrel. Crimp center conductor into contact.
- Butt ferrule against shoulder. Crimp ferrule over braid.

STEP 2: SOLDER WIRE TO CONTACT

- Trim cable. Tin center conductor.
- Slide ferrule over jacket. Insert dielectric and center conductor into barrel. Solder center conductor into contact.
- Butt ferrule against shoulder. Solder cable to barrel through hole in ferrule. Solder cap into body.

STEP 2: SOLDER/CRIMP WIRE TO CONTACT

- Trim cable. Tin center conductor.
- Slide ferrule over jacket. Insert dielectric and center conductor into barrel. Solder center conductor into contact.
- Butt ferrule against shoulder. Crimp ferrule over braid. Solder cap into body.



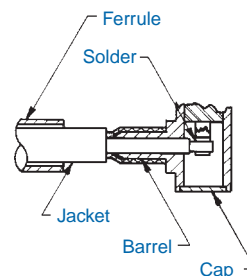
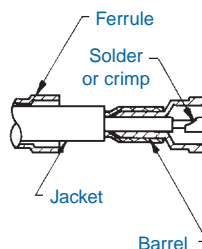
Shielded Contact Hand Crimp Tool

For crimp tool part numbers, see Contact Application Tools Cross Reference Chart on pages 53 & 54.

MMIP, MIP & IP SERIES	CONTACT SIZE	PART NUMBER	RG CABLE NUMBER	A	B	C
	12	MC601D	178 B/U	6.99	5.72	3.18
		FC601D	196 B/U	[0.275]	[0.225]	[0.125]
		MC602D	179 B/U	6.99	5.72	3.18
		FC602D	316 /U	[0.275]	[0.225]	[0.125]
MIP SERIES	8	*C4101D	178 B/U	7.14	6.35	1.98
		*S4101D				
		*C4102D	179 B/U	7.14	6.35	1.98
		*S4102D				
		*C4103D	180 B/U	9.53	7.92	1.98
		*S4103D				
		*C4104D	58 B/U	9.53	7.92	1.98
		*S4104D				
		*CC4101D	178 B/U	7.14	6.35	3.05
		*CC4102D	179 B/U	[0.281]	[0.250]	[0.120]
		*CC4103D	180 B/U	9.53	7.92	3.05
		*CC4104D	58 B/U	[0.375]	[0.312]	[0.120]

*Contact gender is designated by M for male contacts and F for female contacts.

Typical Part Number: FC4101D

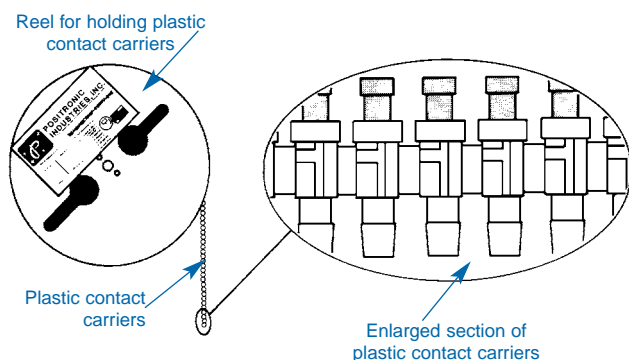




**AUTOMATIC CRIMP TOOL,
PNEUMATICALLY ACTUATED
(SHOWN FOR REFERENCE ONLY)**

This fast cycling automatic crimp tool produces a four double-indent crimp on wire sizes. For use with size 8, 12, 16 and 20 contacts. Contacts must be ordered on reels. Foot control valve is supplied as a standard accessory.

For complete automatic crimp tool selection part numbers, see Contact Application Tools Cross Reference Chart on pages 53 & 54.



**CONTACT REELS FOR
AUTOMATIC PNEUMATIC CRIMP TOOLS**

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part numbers 9550-0 and 9550-1; packaged in reels holding 1,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9555-0-2. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC112NR for a male contact and FC112N2R for a female contact.

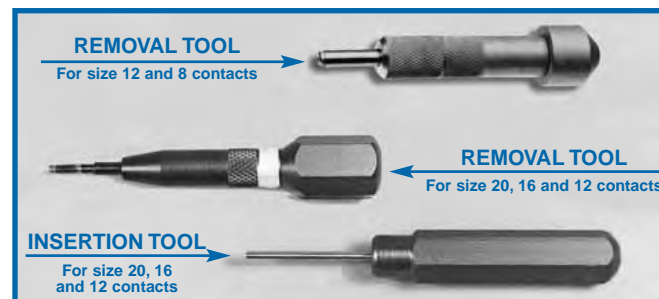


**CYCLE-CONTROLLED HAND CRIMP TOOLS
(SHOWN FOR REFERENCE ONLY)**

The hand crimp tool, pictured at the top of the image uses 8 AWG wire with produces a hex shaped crimp.

All other wire are eight step adjustable hand crimping tool produces a four double-indent crimp configuration. Each positioner is equipped with a data plate which gives the correct crimp-depth setting for each wire size.

For complete crimp tool and positioner selection part numbers, see Contact Application Tools Cross Reference Chart on pages 53 & 54.



**INSERTION AND REMOVAL TOOLS
(SHOWN FOR REFERENCE ONLY)**

An easy-to-use contact insertion tool used for rear insertion of contacts into connector, see illustration below.

The contact removal tool is spring-loaded to simplify the extraction of removable contacts from the connector insulators. For contact removal, simply insert the hollow tool tip over the male or female contact from the front face of the insulator, rotate the tool slightly while increasing the pushing force against the butt of the extraction tool. The contact will be released from the insulator retention system and will "pop out" of the rear face of the insulator.

For insertion and removal tool selection part numbers, see Contact Application Tools Cross Reference Chart on pages 53 & 54.

CONTACT INSERTION



CONTACT REMOVAL





Positronic Industries
connectpositronic.com



CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

Infinity
High Power
Connector

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

M I P S E R I E S														
Contact Size	Positronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mill Equiv	Positioner	Mfg. Cross	Mill Equiv	Insertion Tool	Mfg. Cross	Mill Equiv	Removal Tool	Mfg. Cross	Automatic Crimp Tool
8	FC4006D	9504-20-0-0	9504-1-0-0	HX4	M22520/5-01	9504-20-1-0	Y530					4311-0-0-0	P+	9655-0-2-0
8	FC4008D	9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+	9655-0-2-0
8	FC4008DS	9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+	9655-0-2-0
8	FC4011D	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+	9655-0-2-0
8	FC4101D	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+	
8	FCC4101D	9504-14-0-0	9504-1-0-0	HX4	M22520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+	
8	FCC4102D	9504-13-0-0	9504-1-0-0	HX4	M22520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+	
8	FCC4103D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+	
8	FCC4104D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+	
8	FS4008D											4311-0-0-0	P+	
8	FS4011D											4311-0-0-0	P+	
8	FS4101D											4311-0-0-0	P+	
8	FS4820D											4311-0-0-0	P+	
8	FS4920D											4311-0-0-0	P+	
8	MC4006D	9504-20-0-0	9504-1-0-0	HX4	M22520/5-01	9504-20-1-0	Y530					4311-0-0-0	P+	9655-0-2-0
8	MC4008D	9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+	9655-0-2-0
8	MC4008DS	9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+	9655-0-2-0
8	MC4011D	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+	9655-0-2-0
8	MC4101D	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+	
8	MCC4101D	9504-14-0-0	9504-1-0-0	HX4	M22520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+	
8	MCC4102D	9504-13-0-0	9504-1-0-0	HX4	M22520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+	
8	MCC4103D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+	
8	MCC4104D	9504-15-0-0	9504-1-0-0	HX4	M22520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+	
8	MS4008D											4311-0-0-0	P+	
8	MS4011D											4311-0-0-0	P+	
8	MS4101D											4311-0-0-0	P+	
8	MS4820D											4311-0-0-0	P+	
8	MS4920D											4311-0-0-0	P+	



CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

M M I P , M I P , A N D I P S E R I E S															
Contact Size	Positronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv	Insertion Tool	Mfg. Cross	Mil Equiv	Removal Tool	Mfg. Cross	Mil Equiv	Automatic Crimp Tool
20	FC720N2		9507-0-0-0	AFM8	M22520/2-01	9502-22-0-0	K1196		9099-4-0-0	ITP 1076		9081-2-0-0	RNG2103		9550-1-0-0
20	MC720N		9507-0-0-0	AFM8	M22520/2-01	9502-21-0-0	K1195		9099-4-0-0	ITP 1076		9081-2-0-0	RNG2103		9550-1-0-0
16	FC11N2		9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
16	FC112N2S	9509-3-0-0	9509-4-0-0	GS222		9509-5-0-0	TP-1366		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
16	FC120N2		9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
16	FS11N2								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
16	FS112N2S								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
16	FS120N2								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
16	MC11N		9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
16	MC112NS	9509-3-0-0	9509-4-0-0	GS222		9509-5-0-0	TP-1366		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
16	MC120N		9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
16	MS11N								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
16	MS112NS								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
16	MS120N								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
12	FC60D	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322		9099-3-0-0	ITP 1168		2711-0-0-0	P+		
12	FC610N2S	9509-6-0-0	9509-6-1-0	GS223		9509-6-2-0	TP-1386		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9555-0-2-0
12	FC612N2		9501-0-0-0	AF8	M22520/1-01	9502-19-0-0	TP1199		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9555-0-2-0
12	FS610N2S								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
12	FS612N2								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
12	MC60D	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322		9099-3-0-0	ITP 1168		2711-0-0-0	P+		
12	MC610NS	9509-6-0-0	9509-6-1-0	GS223		9509-6-2-0	TP-1386		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9550-0-0-0
12	MC612N		9501-0-0-0	AF8	M22520/1-01	9502-19-0-0	TP1199		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9550-0-0-0
12	MS610NS								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
12	MS612N								9099-3-0-0	ITP 1168		2711-0-0-0	P+		



PRESS-FIT USER INFORMATION

When properly used, Positronic Industries' Bi-Spring Power Press-Fit terminations provide reliable service even under severe conditions.

Connectors utilizing this leading technology press-fit contact are easy to install:

1. Choose the proper tooling. Inexpensive insertion tooling and single contact repair tooling are available from Positronic.
2. Insert the connector into the P.C. board or backplane and seat connector fully.
3. Secure the connector to the P.C. board or backplane using two self-tapping screws. The screws should be #6 self-tapping screws for plastic.

MOUNTING SCREWS

Stresses that occur during coupling and uncoupling of connectors or through shock and vibration of systems can be transferred to backplanes or P.C. boards through press-fit connector terminations. Avoid concern over electrical integrity of the connector to board interface by using mounting screws. Bellcore GR1217 details a preference for the use of mounting hardware and we recommend this practice.



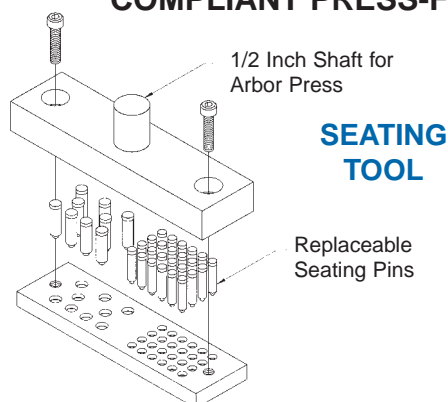
* Mounting screws supplied with board mount connectors

SCREWS ARE #6 SELF-TAPPING FOR PLASTIC.

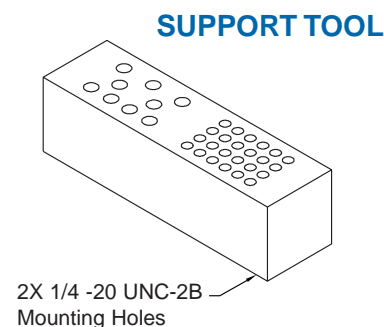
Additional Mounting Screw Ordering Information *			
SCREW PART NUMBER	FOR USE WITH CONTACT CODE	THREAD LENGTH	P.C. BOARD THICKNESS
2076-12-0-16	3, 93	9.53±0.76 [0.375±0.030]	1.52-2.36 [0.060-0.093] Straight mount connectors
2076-12-1-16	32, 4, 42, 63	12.70±0.76 [0.500±0.030]	All right angle (90°) mount connectors
2076-12-5-16		11.10±0.76 [0.437±0.030]	3.18 [0.125] Straight mount connectors

CONSULT TECHNICAL SALES IF AN ALTERNATE SCREW IS REQUIRED.

COMPLIANT PRESS-FIT TERMINATION CONNECTOR INSTALLATION TOOLS



NOTE: Straight mount female connector seating tool shown. Right angle (90°) male and female seating tool not shown. Seating pins are not required for right angle (90°) connector seating tools.



SERIES	CONNECTOR VARIANT	CONNECTOR SEATING TOOL WITH ARBOR PRESS SHAFT		CONNECTOR SEATING TOOL WITHOUT ARBOR PRESS SHAFT		REPLACEMENT PINS	CONNECTOR SUPPORT TOOL
		MALE	FEMALE	MALE	FEMALE	FEMALE	
MINI-MINI INFINITY	MMIP12W12 (CODE 93)	9513-307-2	9513-306-4	9513-307-12	9513-306-14	855-347-11	-
	MMIP14W9 (CODE 93)	9513-307-1	9513-306-1	9513-307-11	9513-306-11	Positions 1-9: 855-347-11 Positions 10-14: 855-347-18	9513-403-1
	MMIP18M (CODE 63)	9513-307-2		9513-307-12		-	9513-403-2
	MMIP18M (CODE 93)	9513-307-2	9513-306-2	9513-307-12	9513-306-12	855-347-3	9513-403-2
	MMIP31W6 (CODE 93)	9513-307-3	9513-306-3	9513-307-13	9513-306-13	Positions 1-3 through 29-31: 855-347-11 Positions 4-28: 855-347-18	9513-403-3
MINI INFINITY	MIP28W12 (CODE 93)	9513-305-4	9513-304-4	9513-305-14	9513-304-14	Positions 1-6 through 23-28: 855-347-11 Positions 7-22: 855-347-18	9513-402-4
	MIP29W9 (CODE 93)	9513-305-5	9513-304-5	9513-305-15	9513-304-15	Positions 1-6: 855-347-17 Positions 7-26: 855-347-18 Positions 27-29: 855-347-11	9513-402-5
	MIP30 (CODE 63)	9513-305-1		9513-305-11		-	9513-402-1
	MIP30 (CODE 93)	9513-305-1	9513-304-1	9513-305-11	9513-304-11	855-347-3	9513-402-1
	MIP30WA10 (CODE 93)	9513-305-2	9513-304-2	9513-305-12	9513-304-12	Positions 1-4 through 25-30: 855-347-11 Positions 5-24: 855-347-18	9513-402-2
	MIP30WB10 (CODE 93)	9513-305-3	9513-304-3	9513-305-13	9513-304-13	Positions 1-4: 855-347-17 Positions 5-24: 855-347-18 Positions 25-30: 855-347-11	9513-402-3
INFINITY	IP18 (CODE 93)	9513-303-1	9513-302-4	913-303-11	9513-302-14	855-347-11	9513-401-3
	IP29W9 (CODE 93)	9513-303-3	9513-302-5	9513-303-3	9513-302-15	Positions 1 through 3 and 24 through 29: 855-347-11 Positions 4 through 23: 855-347-3	9513-401-4
	IP33W9 (CODE 93)	9513-303-2	9513-302-3	9513-303-12	9513-302-13	Positions 12-1 through 12-9: 855-347-11 Positions 16-33 through 16-56: 855-347-3	9513-401-6 - for Male 9513-401-2 - for Female
	IP36W6 (CODE 93)	9513-303-4	9513-302-7	9513-303-14	9513-302-17	Positions 1 through 8 and 29 through 36: 855-347-11 Positions 9 through 28: 855-347-18	9513-401-7
	IP48 (CODE 93)	9513-303-1	9513-302-2	9513-303-11	9513-302-12	855-347-3	9513-401-1
	IP56 (CODE 63)	9513-302-6		9513-302-16		-	9513-401-5
	IP56 (CODE 93)	9513-303-1	9513-302-1	9513-303-11	9513-302-11	855-347-3	9513-401-1



Positronic Industries
connectpositronic.com

COMPLIANT PRESS-FIT CONNECTORS PRINTED BOARD HOLE SIZES

Infinity
High Power
Connector

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

Traditionally, tin-lead has been a popular plating for PBC holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA & BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE

BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	20 OMEGA	$\phi 1.150 \pm 0.025$ [$\phi 0.0453 \pm 0.0010$]	15 μ [0.0006] minimum solder over 25 μ [0.0010] min. copper	$\phi 1.000 + 0.090 - 0.060$ [$\phi 0.0394 + 0.0035 - 0.0024$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 + 0.0035 - 0.0024$ [$\phi 1.600 + 0.090 - 0.060$]
	12 BI-SPRING	$\phi 0.102 \pm 0.001$ [$\phi 2.59 \pm 0.025$]		$\phi 0.096 \pm 0.002$ [$\phi 2.44 \pm 0.05$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]

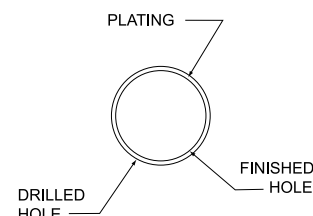
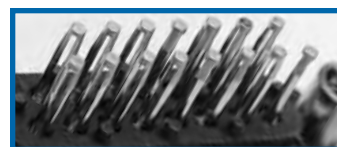
RoHS PCB PLATING OPTIONS

COPPER PCB	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 + 0.090 - 0.060$ [$\phi 0.0630 + 0.0035 - 0.0024$]
	12 BI-SPRING	$\phi 2.59 \pm 0.025$ [$\phi 0.102 \pm 0.001$]		$\phi 2.44 \pm 0.05$ $\phi 0.096 \pm 0.002$
	8 BI-SPRING	$\phi 3.180 \pm 0.025$ [$\phi 0.125 \pm 0.001$]		$\phi 3.02 \pm 0.05$ [$\phi 0.119 \pm 0.002$]
IMMERSION TIN PCB	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.85 $\pm 0.15\mu$ [0.000033 ± 0.000006] immersion tin over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 + 0.090 - 0.060$ [$\phi 0.0630 + 0.0035 - 0.0024$]
	12 BI-SPRING	$\phi 2.59 \pm 0.025$ [$\phi 0.102 \pm 0.001$]		$\phi 2.44 \pm 0.05$ $\phi 0.096 \pm 0.002$
	8 BI-SPRING	$\phi 3.180 \pm 0.025$ [$\phi 0.125 \pm 0.001$]		$\phi 3.02 \pm 0.05$ [$\phi 0.119 \pm 0.002$]
IMMERSION SILVER PCB	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.34 $\pm 0.17\mu$ [0.000013 ± 0.000007] immersion silver over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 + 0.090 - 0.060$ [$\phi 0.0630 + 0.0035 - 0.0024$]
	12 BI-SPRING	$\phi 2.59 \pm 0.025$ [$\phi 0.102 \pm 0.001$]		$\phi 2.44 \pm 0.05$ $\phi 0.096 \pm 0.002$
	8 BI-SPRING	$\phi 3.180 \pm 0.025$ [$\phi 0.125 \pm 0.001$]		$\phi 3.02 \pm 0.05$ [$\phi 0.119 \pm 0.002$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.05 μ [0.000002] min. immersion gold over 4.5 $\pm 1.5\mu$ [0.000177 ± 0.000059] electroless nickel per IPC-4552 over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 + 0.090 - 0.060$ [$\phi 0.0630 + 0.0035 - 0.0024$]
	12 BI-SPRING	$\phi 2.59 \pm 0.025$ [$\phi 0.102 \pm 0.001$]		$\phi 2.44 \pm 0.05$ $\phi 0.096 \pm 0.002$
	8 BI-SPRING	$\phi 3.180 \pm 0.025$ [$\phi 0.125 \pm 0.001$]		$\phi 3.02 \pm 0.05$ [$\phi 0.119 \pm 0.002$]

“Omega” Termination



“Bi-Spring” Termination

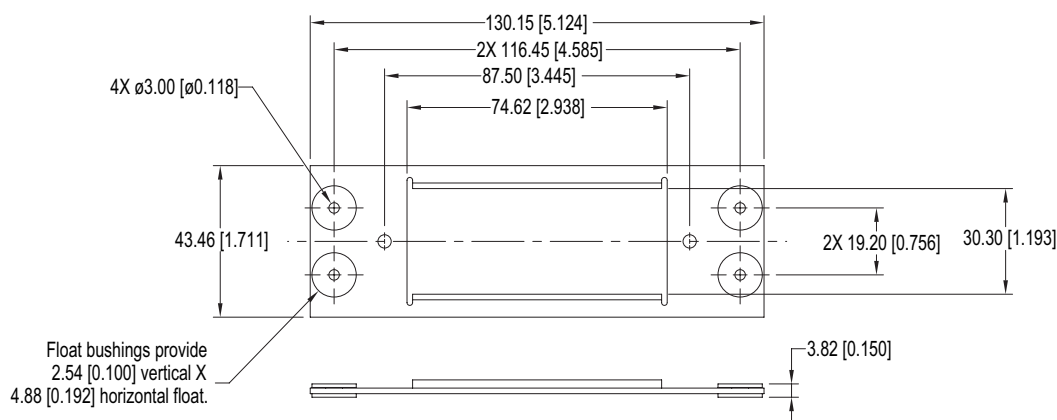


COMPLIANT PRESS-FIT TERMINATION CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

PANEL MOUNTING PLATE WITH FLOATING BUSHINGS

CODE H ON STEP 5 OF ORDERING INFORMATION PAGE



RECOMMENDED PANEL THICKNESS:

1.52 [0.060] - 2.36 [0.093].

MOUNTING SCREWS ARE SUPPLIED WITH CONNECTOR.

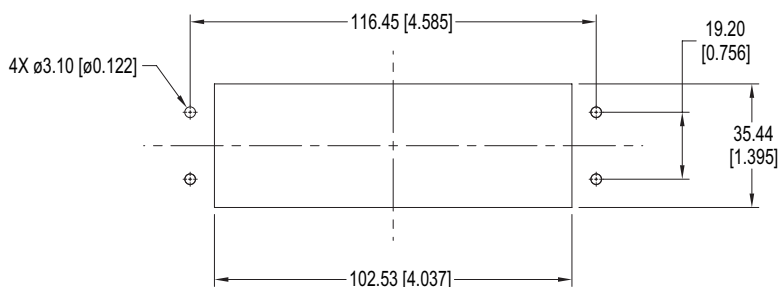
MATERIALS AND FINISHES:

Mounting Plate: Steel with zinc plate and chromate seal.

Floating Bushings: Brass with zinc plate and chromate seal.

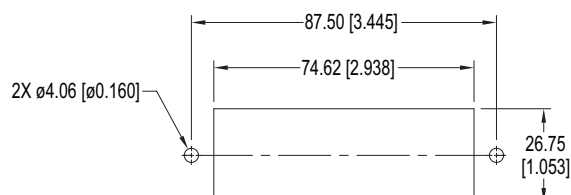
FLOATING BUSHING PANEL MOUNTING CUTOUT

CONNECTOR MOUNTED TO THE PANEL USING THE FLOATING BUSHING MOUNTING PLATE (SHOWN ABOVE).



DIRECT MOUNTING PANEL CUTOUT

CONNECTOR MOUNTED DIRECTLY TO THE PANEL



RECOMMENDED PANEL THICKNESS:

1.52 [0.060] - 2.36 [0.093].

SELF-TAPPING MOUNTING SCREWS ARE SUPPLIED WITH CONNECTOR.



Positronic Industries
connectpositronic.com

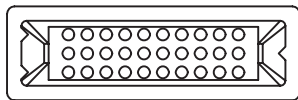
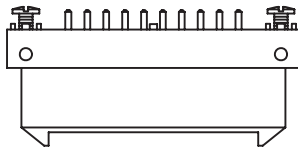
CONNECTOR MOUNTING STYLE OPTIONS AND PANEL FLOAT MOUNT AND CUTOUT

Infinity
High Power
Connector

CONNECTOR MOUNTING STYLE OPTIONS

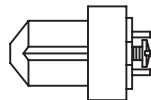
CODE 0 AND CODE N ON STEP 5 OF ORDERING INFORMATION PAGE

CODE 0 SELF-TAPPING MOUNTING SCREWS

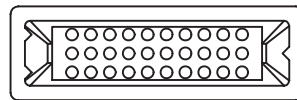
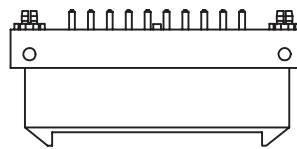


MIP30F300A1

SHOWN FOR REFERENCE

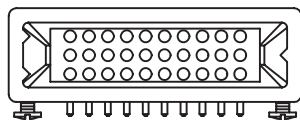
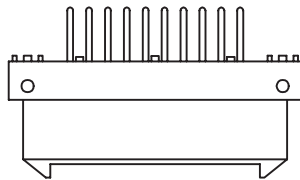
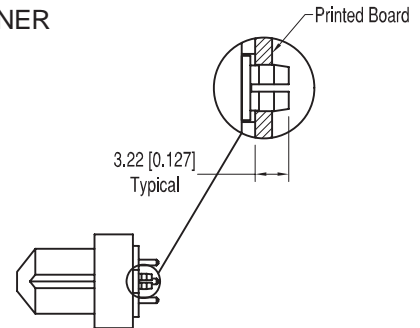


CODE N PUSH-ON FASTENER



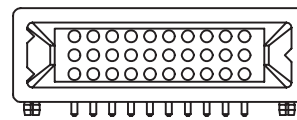
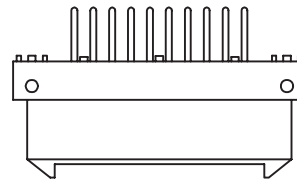
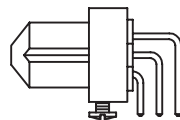
MIP30F3N0A1

SHOWN FOR REFERENCE



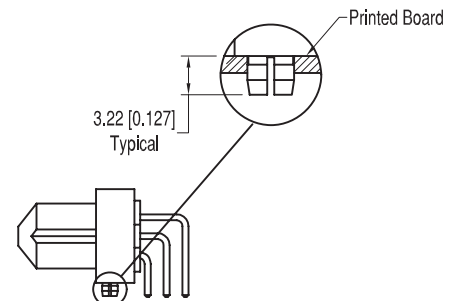
MIP30F400A1

SHOWN FOR REFERENCE



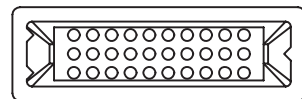
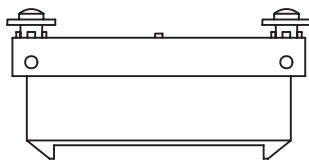
MIP30F4N0A1

SHOWN FOR REFERENCE



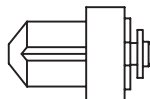
PANEL FLOAT MOUNT

CODE 82 AND CODE 83 ON STEP 6 OF ORDERING INFORMATION PAGE



MIP30F00820

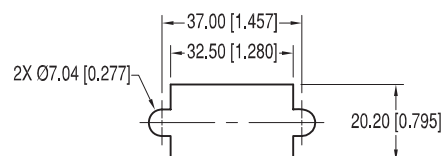
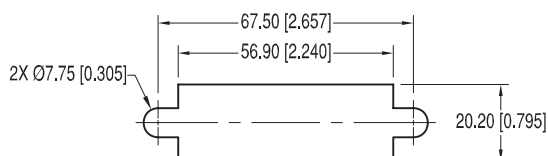
SHOWN FOR REFERENCE



PART NUMBER	PANEL THICKNESS
*IP***82*	1.52 [0.060]
*IP***83*	2.28 [0.090]

Panel float mount system provides lead-in for 2.03 [0.080] axial misalignment. Additional panel thickness may be available. Consult Technical Sales for availability.

FLOAT MOUNT PANEL CUTOUT

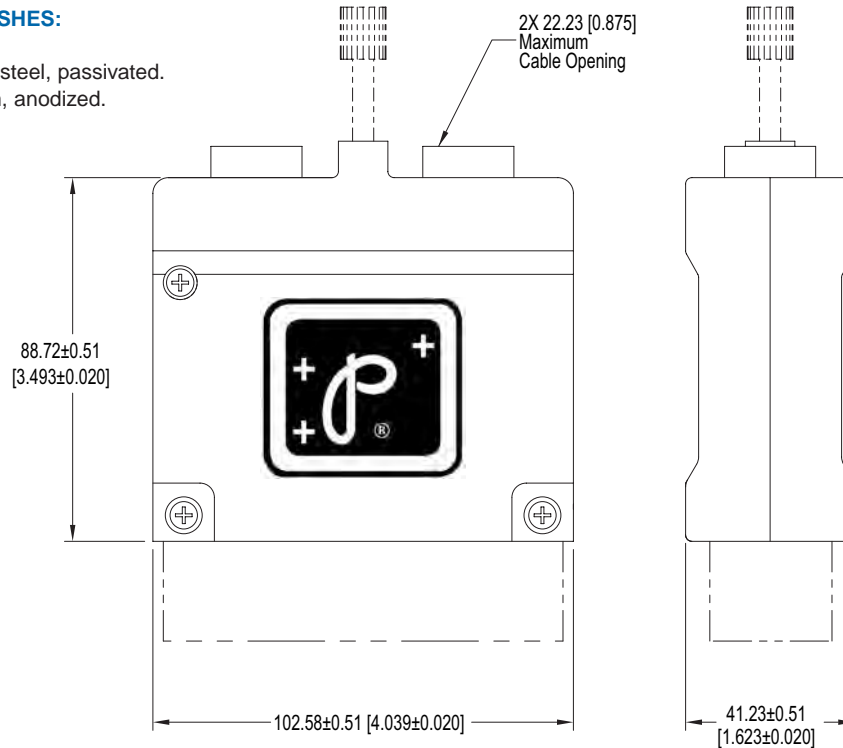


CABLE ADAPTERS

CODE J ON STEP 5 OF ORDERING INFORMATION PAGE
SUPPLIED WITH OR WITHOUT JACKSCREW

MATERIALS AND FINISHES:

Hood: Polyester.
JackscREW: Stainless steel, passivated.
Knob: Aluminum, anodized.

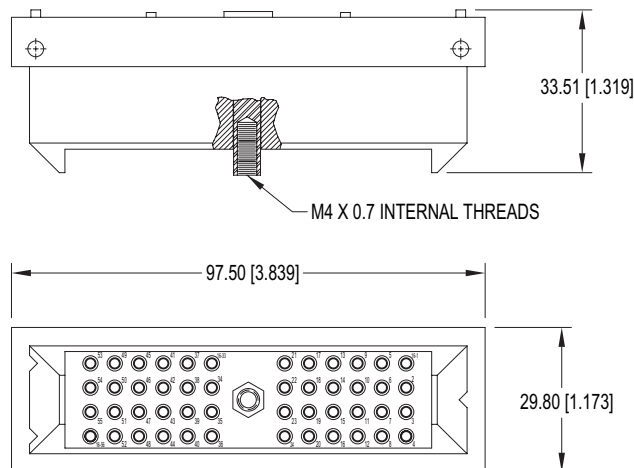


**CABLE ADAPTER
WITHOUT JACKSCREW
EXAMPLE PART NUMBER:
IP48M0J00**

**FOR CABLE ADAPTER
WITH JACKSCREW
EXAMPLE PART NUMBER:
IP48M0JELO**

FIXED FEMALE JACKSCREW

CODE T ON STEP 6 OF ORDERING INFORMATION PAGE
PANEL MOUNT AND CABLE CONNECTORS SUPPLIED WITH OR WITHOUT FIXED JACKSCREWS



IP56F0000

For information regarding size 12, 16 and 20 removable contacts, see Removable Contact section, pages 41-48.



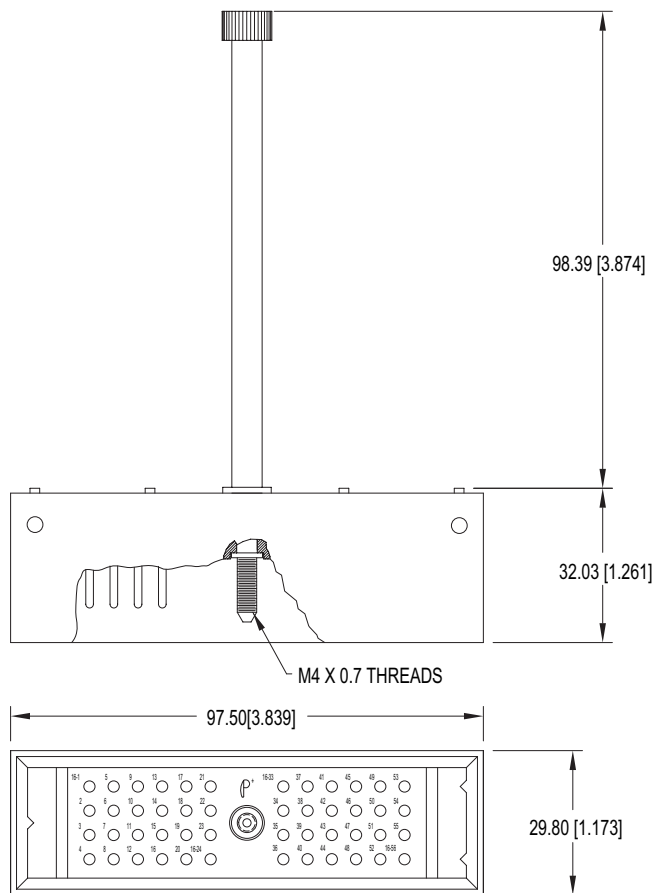
Positronic Industries
connectpositronic.com

JACKSCREWS

Infinity
High Power
Connector

ROTATING MALE JACKSCREW

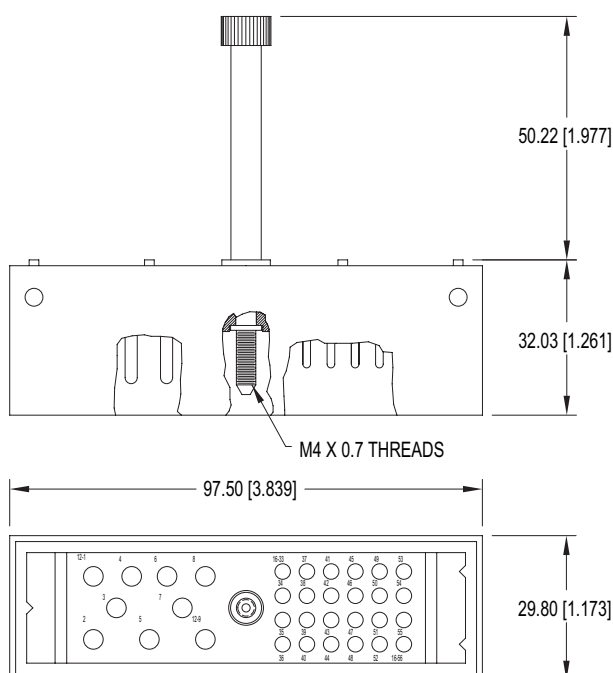
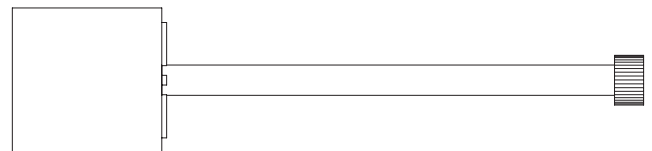
CODE EL AND CODE E ON STEP 6 OF ORDERING INFORMATION PAGE



CABLE CONNECTORS
WITH ROTATING JACKSCREWS

EL

PART NUMBER: IP48M00EL0
with Long Rotating Jackscrew (Shown)

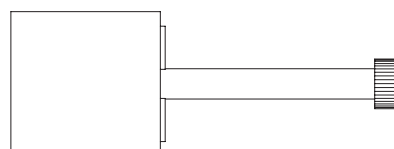


OTHER CONNECTOR VARIANTS ARE AVAILABLE WITH
THE ROTATING JACKSCREW OPTION, SEE ORDERING
INFORMATION ON PAGE 40.

FOR INFORMATION REGARDING SIZE 12, 16 AND 20
REMOVABLE CONTACTS, SEE REMOVABLE CONTACT
SECTION, PAGES 41-48.

E

PART NUMBER: IP33W9M00E0
with Short Rotating Jackscrew (Shown)



Positronic Industries

has the widest variety of

Power Connector Solutions

COMPACT POWER CONNECTOR



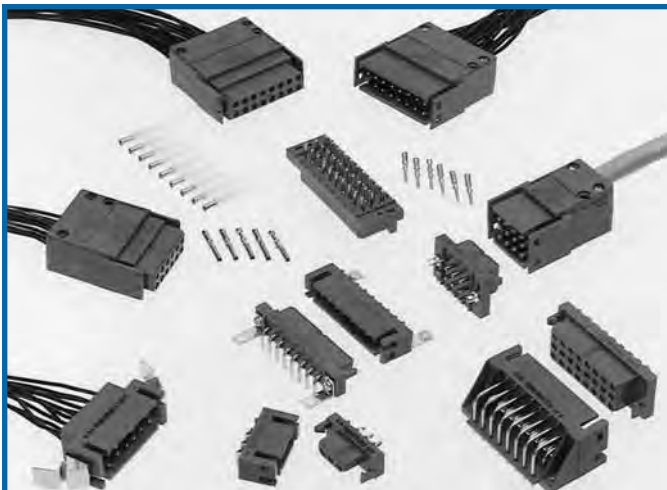
The Power interface for platforms utilizing Eurocard form factors including CompactPCI®, PICMG® 2.11 compliant. Multiple package sizes available.

INFINITY



Ideal for low, mid, and high power applications which demand outstanding blind mating capability.

POWER CONNECTION SYSTEMS



The industry standard for low and mid range power applications. Multiple package sizes available.

COMBO-D



Power, signal, coaxial, high voltage, and thermocouple contacts in an EMI/RFI shielded package.

FRONT RUNNER CIRCULAR



Power, signal, and thermocouple contacts in an environmental and/ or EMI/RFI shielded package.

EACH OF THESE SERIES HAVE ONE OR MORE OF THE FOLLOWING FEATURES:

- Hot swap capability
- A.C./ D.C. operation in a single connector
- Meets safety agency requirements
- Signal contacts for communication with host system
- Superior blind mating capability
- Cable and panel mount options
- Large surface area contact system
- Bi-Spring power press-fit terminations
- Single contact ratings up to 100 amperes
- Wide variety of variants & accessories

D-subminiature Products

Positronic Industries offers full line of D-subminiature connectors in a wide variety of contact variants and package sizes with press-fit, solder and cable terminations. All Positronic connector products provide quality, reliability, and flexibility.

DSUBMINATURE CONNECTORS

Standard and high density connectors with straight and right angle PCB mount, and cable terminations available. Multiple performance options for best economy/performance ratio.



HIGH PERFORMANCE D-SUBMINIATURE CONNECTORS

Standard and high density connectors manufactured to MIL-PRF-24308, Class M; Goddard Space Flight Center S-311-P-4 and Goddard Space Flight Center S-311-P-10.



ENVIRONMENTAL-D CONNECTORS

Standard and high density connectors with environmental protection features to IP67. Straight and right angle, and cable terminations available.



COMBO-D CONNECTORS

Connectors with signal, shielded, power, thermocouple or high voltage contacts in a single package. Power press-fit terminations now available.

DUAL PORT CONNECTORS

Right angle p.c. board mount connectors assembled stacked to maximize real estate; contact variants 9 through 62; available in standard density, high density, and mixed density.



POSITRONIC PRODUCTS

Power

Contact Sizes: 0, 8, 12, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight press-fit and right angle (90°) press-fit
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41



FEATURES: Hot swap capability • AC/DC operation in a single connector • Signal contacts for hardware management • Blind mating • Sequential mating • Large surface area contact mating system • Wide variety of accessories • Customer specified contact arrangements

D-subminiature

Contact Sizes: 8, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder and straight press-fit
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-24308, Goddard Space Flight S-311-P, SAE AS 39029, IP65, IP67



FEATURES: Three performance levels available: professional quality, military quality and space-flight quality provide multiple performance-to-cost choices • Options include thermocouple contacts, air coupling, environmentally sealed and dual port package including mixed density • Broad selection of accessories

Rectangular

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes
Terminations: Crimp, wire solder, straight solder and right angle (90°) solder
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-28748, SAE AS 39029, CCITT V.35



FEATURES: Two performance levels available: industrial quality and military quality provide two performance to cost choices • Large surface area contact mating system • A wide variety of accessories • Broad selection of contact variants and package sizes

Circular

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder and right angle (90°) solder
Configurations: Multiple variants
Qualifications: Environmental protection to IP67



FEATURES: Non-corrodible / lightweight composite construction • EMI/RFI shielded versions • Thermocouple contacts • Environmentally sealed versions • Rear insertion/front release of removable contacts • Two level sequential mating • Overmolding available on full assemblies

Cable

All Positronic connector products can be supplied as part of cable assemblies whose technical characteristics would reflect those of the connectors being used within the assembly.



FEATURES: Shorten the supply chain and reduce additional costs and delays by "cabling" • Overmolding available • Shielded and environmentally sealed versions available • Power cables and access boxes which meet the SAE J2496 specification

Hermetic

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-subminiature and circular configurations above
Qualifications: Space-D32



FEATURES: Intended for use as an electrical feedthrough in high vacuum applications • Leakage rate: 5×10^{-9} mbar.l/s @ vacuum 1.5×10^{-5} atm • Signal, power, coax and high voltage versions available • Connectors can be mounted on flange assembly per customer specification

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office as given on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices (800) 641-4054

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices (800) 641-4054

MEXICO

Factory Sales and Engineering Offices (800) 872-7674

CANADA

Factory Sales and Engineering Offices (800) 327-8272

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices (65) 6842 1419

singapore@connectpositronic.com

ASIA, Direct Sales Offices

China -Shenzhen Sales Office (86) 755 2643 7578

shenzhen@connectpositronic.com

China -Shanghai Sales Office (86) 158 2907 9779

shanghai@connectpositronic.com

China -Xian/Beijing Sales Office (86) 29 8839 5306

xian@connectpositronic.com

Korea Sales Office (82) 31 909 8047 or 8

korea@connectpositronic.com

Taiwan Sales Office (88) 62 2937 8775

taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices (81) 3 5812 7720

japan@connectpositronic.com

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices (91) 20 2439 4810

india@connectpositronic.com

Bangalore Sales Office

bangalore@connectpositronic.com

New Delhi Sales Office

delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines, Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 5 62 63 44 91

contact@connectpositronic.com

EUROPE, Direct Sales Offices

Northern France Sales Office 33 1 45 88 13 88

jchalaux@connectpositronic.com

Southern France Sales Office 33 5 62 63 44 91

plafon@connectpositronic.com

Italy Sales Office 39 02 54 1161 06

rmagni@connectpositronic.com

Germany Sales Office 49 2351 63 47 39

cbouche@connectpositronic.com

UK Sales Office 44 1993 831 939

lbridwell@connectpositronic.com

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC™
GLOBAL *Connector* SOLUTIONS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 5 62 63 44 91 • Fax 33 5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS

+

Miniature Circle Hex Connectors



Featuring High Performance,
Lightweight, Composite Construction

+

Catalog C-013 Rev. D

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG® and VITA.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, C.UL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 369,000.

Support

- **Quality Systems:** Select locations qualified to ISO9001:2000, ISO14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic®, Positronic Industries, Inc.®, P+ logo, Positronic Global Connector Solutions®, Connector Excellence® and their logo designs are registered trademarks of Positronic Industries, Inc.



G H S E R I E S

General Product Information	1
Technical Characteristics	1
Exploded View of Typical Connector Assembly	2
Solder Cup Termination	3
Straight Solder Printed Board Mount Termination	3
Contact Hole Position Dimensions and Printed Board Mount Contact Hole Patterns	3
Connector Insulator Dimensions	4
Typical Mating Assemblies	4
Locking Devices	5
Aluminum Hoods	5
Plastic Hoods	6
Panel Mounting Information	7
Ordering Information	8

L G H S E R I E S

General Product Information	9
Technical Characteristics	9
Solder Cup Termination	10
Straight Solder Printed Board Mount Termination	10
Contact Hole Position Dimensions and Printed Board Mount Contact Hole Patterns	10
Panel Mounting Information	10
Connector Insulator Dimensions	11
Ordering Information	11

M G H S E R I E S

General Product Information	12
Technical Characteristics	12
Typical Assemblies	13
Panel Mounting Information	13
Ordering Information	14

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/products/51/CircleHex/catalogs/>

POSITRONIC CABLIZED CONNECTORS

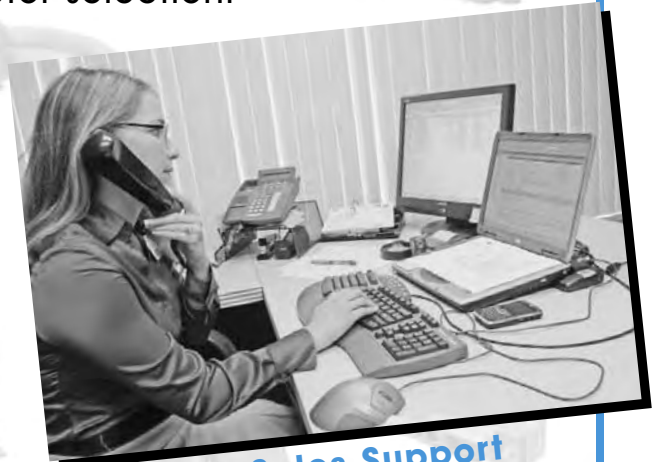
SAVE TIME AND MONEY!

Let Positronic support you by cablizing your
GH / LGH / MGH connector selection.

Cable Assembly Design Support

We work closely with customers to:

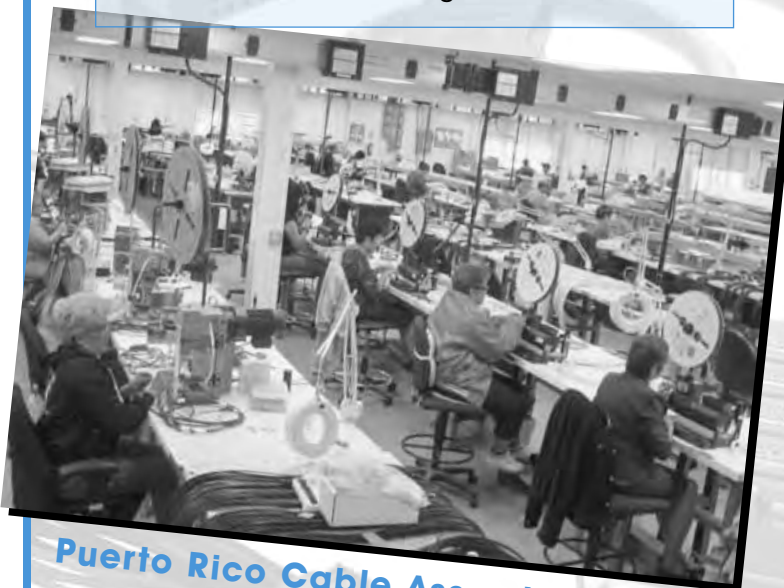
1. Design assemblies in accordance with customer specifications.
2. Prepare cablized connector configuration and performance specifications.
3. Design each system in accordance with applicable customer, domestic, and international standards.
4. Define and conduct performance and verification testing.



Technical Sales Support



Engineering Support



Puerto Rico Cable Assembly



Quality Assurance

FOR MORE DETAILS CONTACT **TECHNICAL SALES**
OR VISIT OUR **WEB SITE** AT:

**[HTTP://WWW.CONNECTPOSITRONIC.COM/
PRODUCTS/47/CABLEASSEMBLIES](http://www.connectpositronic.com/products/47/cableassemblies)**

Size 20 Contacts
High Performance
Construction
5 Insulator Variants
4 through 10 Contacts

UL Recognized
File #E49351



GH series connectors are high reliability, hexagonal connectors offered with solder and straight solder terminations. Contacts have 0.040 inch [1.02 mm] diameters and are rated to 7.5 amperes per contact. Five connector variants, four through ten poles, are offered.

GH series connectors have DAP insulators. A variety of plastic and metal hoods are available, and the locking system is achieved by a lock-ring spring mechanism. Polarization is accomplished by contact layouts or by an oversized contact.

GH series connectors are ideal for use in industrial and instrumentation applications where light weight, miniature, high reliability interconnections are necessary.



For RoHS options
see page 8.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled DAP per ASTM-D-5948, Type SDG-F. Grey color is standard.
Contacts:	Precision machined copper alloy.
Contact Plating:	Gold flash over nickel.
Hoods:	Aluminum with yellow or black anodize. Glass-filled DAP.
Lock Rings and Lock Springs:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 20 contact, male - 0.040 inch [1.02 mm] diameter. Female contact - open entry is standard. "Closed entry" is available on solder cup contacts for high reliability applications.
Contact Retention in Insulator:	10 lbs. [44.5N], minimum.
Contact Termination:	Solder cup - 0.046 inch [1.17 mm] hole diameter for 20 AWG [0.5 mm ²] wire maximum Straight printed board mount - 0.025 inch [0.64 mm] termination diameter.
Locking Systems:	Friction, lock spring with lock ring.

MECHANICAL CHARACTERISTICS, continued:

Polarization:	0.056 inch [1.42 mm] diameter male contact in position "A" on Size 4 connector. Molding configuration provides polarization on other sizes.
Mechanical Operations:	
Open Entry Contacts:	250 operations per IEC 60512-5.
Closed Entry Contacts:	500 operations per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amperes, maximum.
Initial Contact Resistance:	0.010 ohms, maximum.
Flash over Voltage:	1,750 VAC (rms).
Test Voltage:	1,200 VAC (rms).
Insulation Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.025 inch [0.64 mm], minimum.
Working Voltage:	600 VAC (rms).

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days.



Positronic Industries
connectpositronic.com

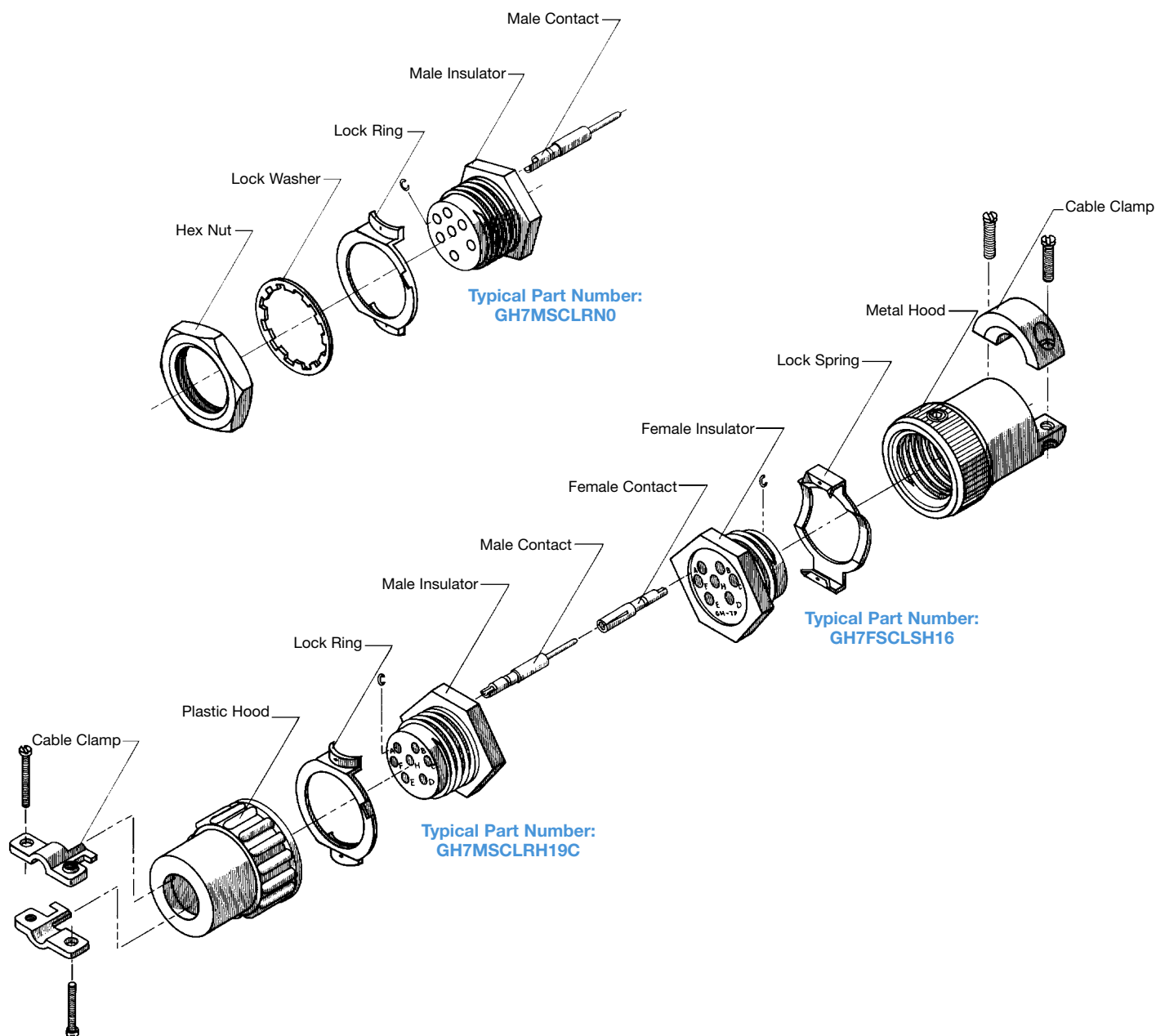
GH SERIES

PROFESSIONAL QUALITY / FIXED CONTACTS

MINIATURE CIRCLE HEX CONNECTORS

Circle
Hex

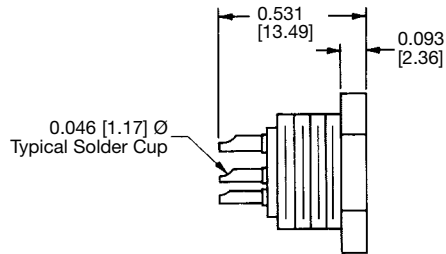
EXPLODED VIEW OF TYPICAL CONNECTOR ASSEMBLY



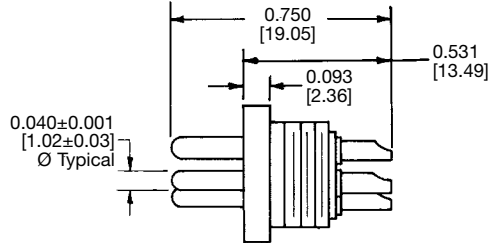
SOLDER CUP TERMINATION

CODE SC ^{*1}

For solder cup contacts, specify contact code "SC" in Step 4 of the ordering information on page 8.



TYPICAL PART NUMBER: GH4FSC00



TYPICAL PART NUMBER: GH4MSC00

NOTE:

^{*1} GH4 has 0.056±0.001 [1.42±0.03] Ø Pin in "A" position for polarization.

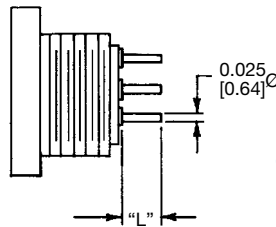
STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION

CODE DS3, DS4, DS5 and DS6 ^{*1}

For straight solder contacts, specify contact code (DS3, DS4, DS5, or DS6) for desired length of contact termination in Step 4 of the ordering information on page 8.

NOTE:

^{*1} Straight solder contacts are not available in GH4 connector.

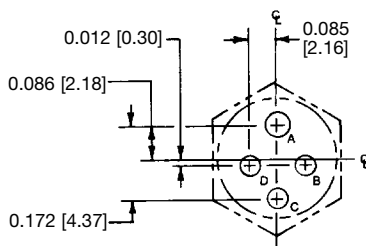


TYPICAL PART NUMBER
GH5FDS400

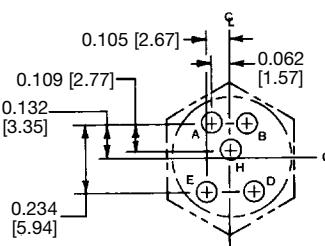
CONTACT CODE	"L"
DS3	0.093 [2.36]
DS4	0.125 [3.18]
DS5	0.156 [3.96]
DS6	0.187 [4.75]

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD MOUNT CONTACT HOLE PATTERN

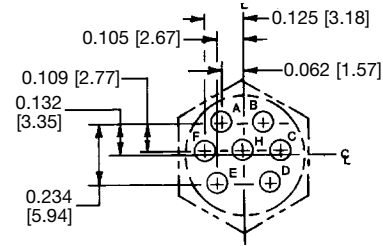
HOLE IDENTIFICATION SHOWN IS FOR MATING FACE OF FEMALE CONNECTOR. USE MIRROR IMAGE FOR MALE CONNECTOR.



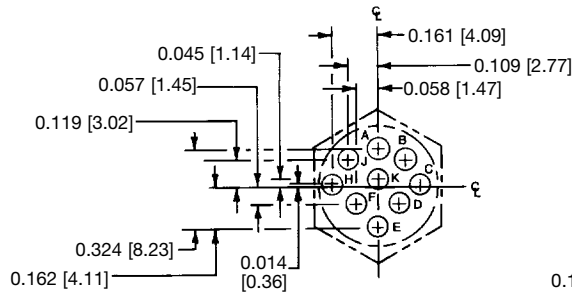
GH4



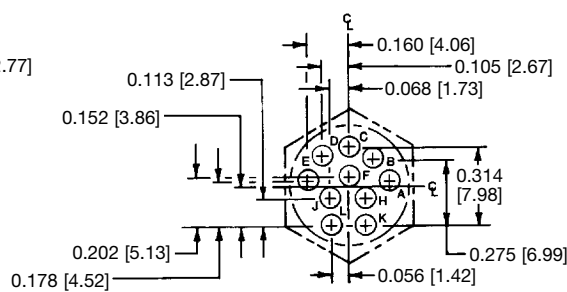
GH5



GH7



GH9



GH10

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.040 [1.01] Ø holes in printed board for contact terminations.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic Industries
connectpositronic.com

GH SERIES

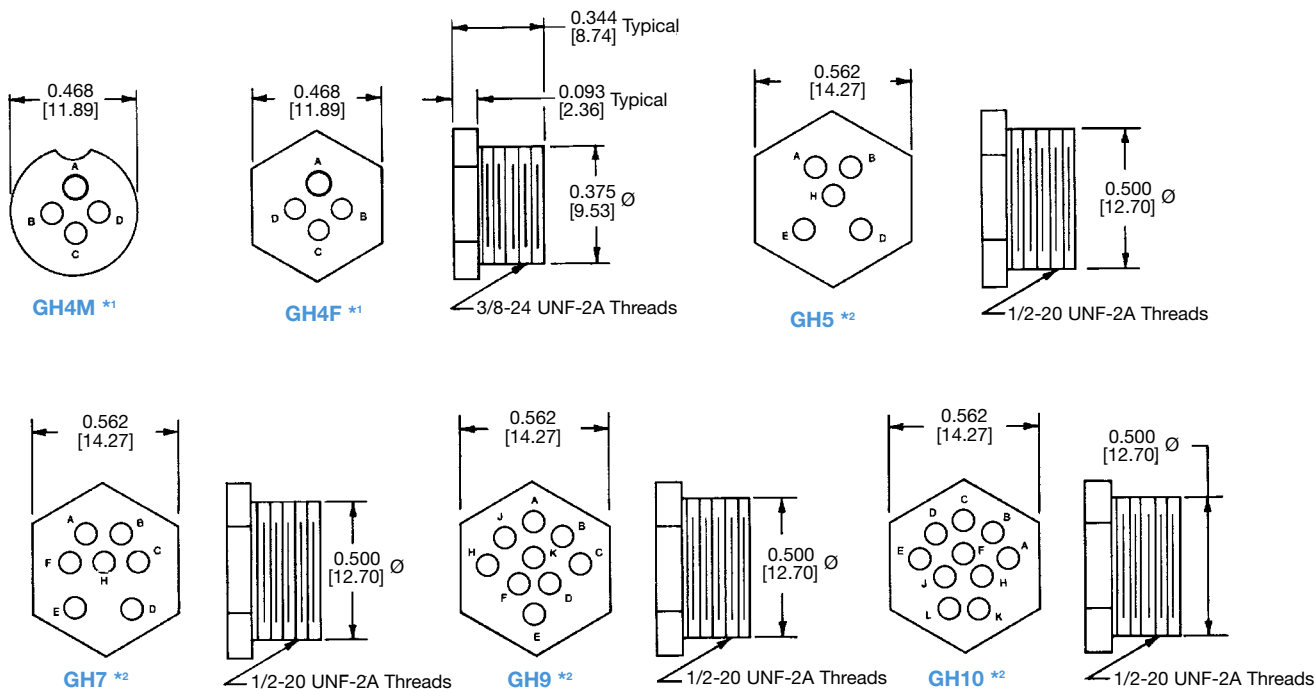
PROFESSIONAL QUALITY / FIXED CONTACTS

MINIATURE CIRCLE HEX CONNECTORS

Circle
Hex

INSULATOR DIMENSIONS

MATING FACE OF FEMALE CONNECTOR FOR SIZES GH 5, 7, 9, AND 10.



NOTES:

*1 Size GH4 uses 0.056 [1.42] Ø pin in position "A" for polarization. For all other sizes, the body design provides polarization.

*2 For Sizes 5 through 10, male and female connector dimensions are typical.

See GH Series Printed Board Hole Patterns, page 3 of this catalog, for contact variant hole positions.

TYPICAL MATING ASSEMBLIES

GH4MSCLSH10C



GH4FSCLRNO

GH5FSCLRHH19S



GH5MSCLSH19

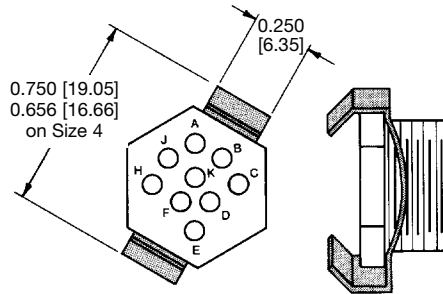
GH10FSCLSH16



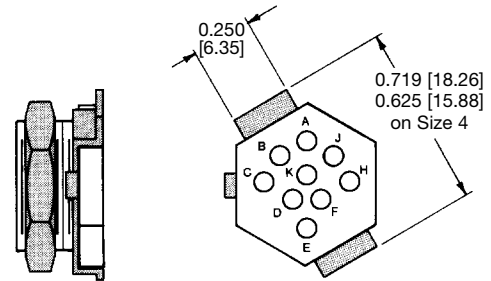
GH10MDS4LRNO

LOCKING DEVICES

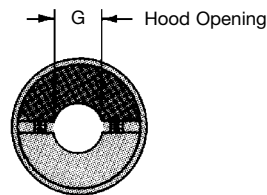
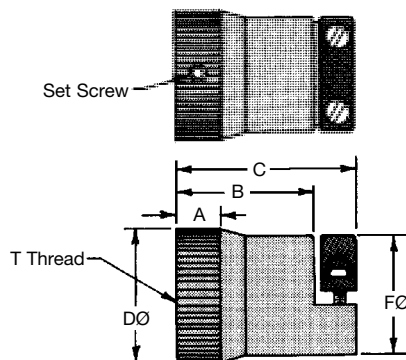
LOCK SPRING CODE LS



LOCK RING AND NUT CODE LRN



ALUMINUM HOODS CODE H14 and H16

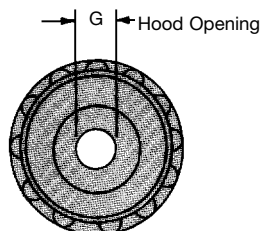


HOOD CODE	CONNECTOR SIZE	A	B	C	D	F	G	T THREAD
H14	GH-4	0.250 [6.35]	0.799 [20.29]	1.062 [26.97]	0.594 [15.09]	0.563 [14.30]	0.218 [5.54]	3/8-24 UNF-2B
H16	GH-5, 7, 9, 10	0.260 [6.60]	0.708 [17.98]	0.938 [23.82]	0.632 [16.05]	0.578 [14.68]	0.250 [6.35]	1/2-20 UNF-2B



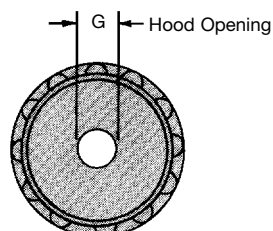
Circle Hex

GH SERIES

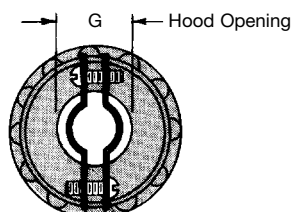


SHORT PLASTIC HOOD

CODE H10S and H19S

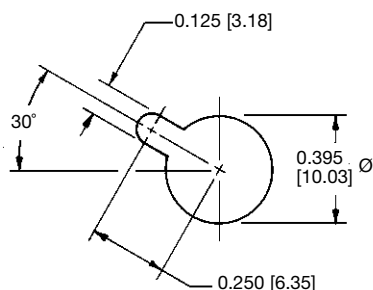


PLASTIC HOODS WITH CABLE CLAMPS

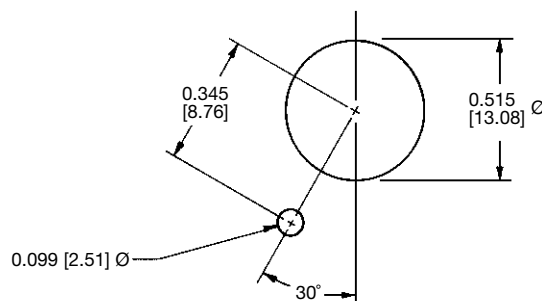


**6 DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

PANEL CUT-OUT DIMENSIONS



SIZE 4



SIZES 5, 7, 9, & 10





Positronic Industries
connectpositronic.com

GH SERIES

PROFESSIONAL QUALITY / FIXED CONTACTS

MINIATURE CIRCLE HEX CONNECTORS

Circle
Hex

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	GH	10	M	SC	LRN	0	CE	/AA	

STEP 1 - BASIC SERIES

GH Series

STEP 2 - CONNECTOR VARIANTS

4, 5, 7, 9, 10

STEP 3 - CONNECTOR GENDER

M - Male
F - Female

STEP 4 - CONTACT TERMINATION TYPE

SC - Solder Cup. For "Closed Entry" design, add "CE" in Step 7.
DS3 - Straight Solder, 0.093 [2.36].
DS4 - Straight Solder, 0.125 [3.18].
DS5 - Straight Solder, 0.156 [3.96].
DS6 - Straight Solder, 0.187 [4.75].
NOTE: DS contacts are not available on GH4 connector.

STEP 5 - MOUNTING AND LOCKING ACCESSORIES

LR - Lock Ring.
LS - Lock Spring.
N - Mounting Nut.
W - Lockwasher.
0 - If no mounting or locking accessories are required.
NOTE: When the Lock Ring (LR) or Lock Spring (LS) are ordered with the Mounting Nut (N), a Lockwasher (W) is furnished.

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: GH10MSCLRN0



STEP 7 - ADDITIONAL FEATURES

*1 B - For black anodized aluminum parts.
CE - "Closed Entry" contacts on female solder contact.

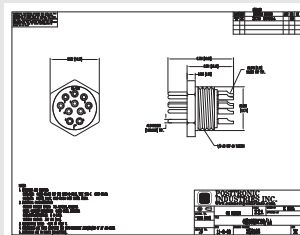
NOTE: Position "A" of GH4 connector is available as "Open Entry" only.

SKIP STEP 7 - IF NO ADDITIONAL FEATURES ARE REQUIRED

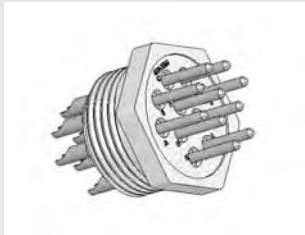
STEP 6 - CABLE ADAPTERS (HOODS)

H10 - Standard plastic hood offered on 4 variant.
H19 - Standard plastic hood offered on 5, 7, 9, and 10 variants.
H10S - Short plastic hood offered on 4 variant.
H19S - Short plastic hood offered on 5, 7, 9, and 10 variants.
H10C - Plastic hood with cable clamps offered on 4 variant.
H19C - Plastic hood with cable clamps offered on 5, 7, 9, and 10 variants.
*1 H14 - Aluminum hood offered on 4 variant.
*1 H16 - Aluminum hood offered on 5, 7, 9, and 10 variants.
0 - If no hoods are required.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-D IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

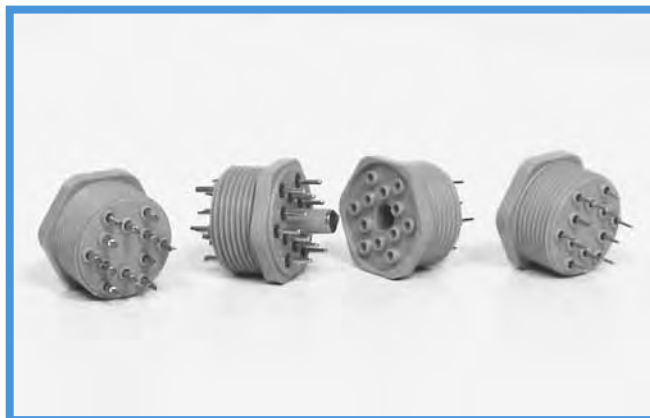
NOTE:

*1 Yellow anodize finish is standard for Aluminum parts.

Size 20 Contacts

High Performance
Construction

12 Contacts



LGH series connectors are high reliability hexagonal connectors offered with wire solder and straight printed board mount contact terminations. Contacts have 0.040 inch [1.02mm] diameters and are rated at 7.5 amperes each.

LGH series connectors have 12 contacts in a high performance connector package that includes a center post which serves to align and polarize the connectors during mating.

LGH series connectors are ideal for use in industrial and instrumentation applications.



For RoHS options
see page 11.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester per MIL-M-24519, UL 94V-0. Grey color.
Contacts:	Precision machined copper alloy.
Contact Plating:	Gold flash over nickel.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Size 20 contact, male - 0.040 inch [1.02 mm] diameter. Female contact - open entry or closed entry design available.
Contact Retention in Insulator:	9 lbs. [40 N]
Contact Termination:	Solder cup - 0.046 inch [1.17 mm] hole diameter for 20 AWG [0.5 mm] wire maximum. Straight printed board mount - 0.030 inch [0.76 mm] termination diameter.
Polarization:	Center post provides polarization of connector.
Mechanical Operations:	Open entry 250 operations Closed entry 500 operations

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amperes, maximum.
Initial Contact Resistance:	0.008 ohms, maximum.
Clearance and Creepage Distance:	0.039 inch [1.0 mm], minimum.
Working Voltage:	600 VAC (rms).

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55° to +125° C.
Damp Heat, Steady State:	10 days.



Positronic Industries
connectpositronic.com

LGH SERIES

PROFESSIONAL QUALITY / FIXED CONTACTS

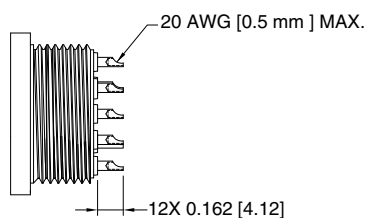
CIRCLE HEX CONNECTORS

Circle
Hex

SOLDER CUP TERMINATION CODE SC

NOTE:

Specify contact code "SC"
in Step 4 of the ordering
information, page 11.

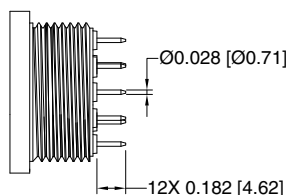


TYPICAL PART NUMBER: LGH12FSC00

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION CODE DS6

NOTE:

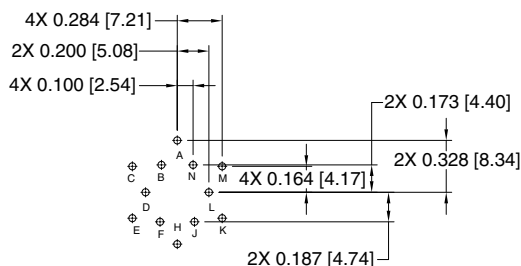
Specify contact code "DS6"
in Step 4 of the ordering
information, page 11.



TYPICAL PART NUMBER: LGH12FDS600

CONTACT HOLE POSITION DIMENSIONS AND PRINTED BOARD MOUNT CONTACT HOLE PATTERN

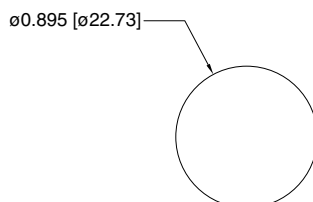
HOLE IDENTIFICATION SHOWN IS FOR MATING FACE OF FEMALE CONNECTOR.
USE MIRROR IMAGE FOR MALE CONNECTOR.



SUGGESTED PRINTED BOARD HOLE SIZES:

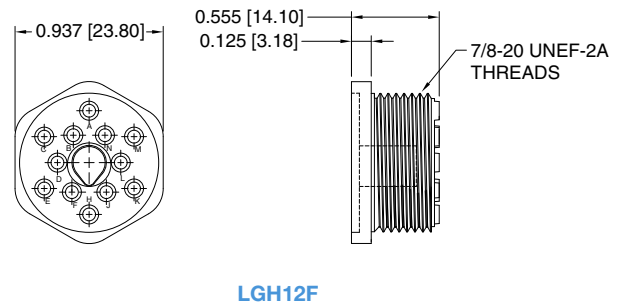
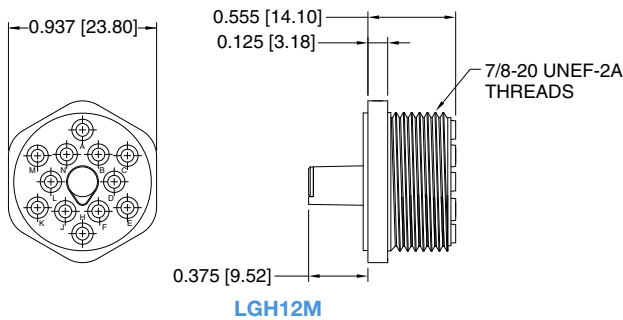
Suggest 0.045 [1.14] Ø holes in printed board for contact terminations.

PANEL CUT-OUT DIMENSIONS



INSULATOR DIMENSIONS

MATING FACE OF FEMALE CONNECTOR FOR SIZE LGH 12.



See LGH Series Printed Board Hole Patterns, page 10 of this catalog, for contact variant hole positions.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6

STEP	1	2	3	4	5	6	7	8
EXAMPLE	LGH	12	M	SC	0	0	/AA	

STEP 1 - BASIC SERIES

LGH Series

STEP 2 - CONNECTOR VARIANTS

12

STEP 3 - CONNECTOR GENDER

M - Male
F - Female - open entry contacts
FC - Female - closed entry contacts

STEP 4 - CONTACT TERMINATION TYPE

SC - Solder Cup.
DS6 - Straight Solder, 0.182 [4.62]

STEP 8 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 7 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: LGH12MSC00

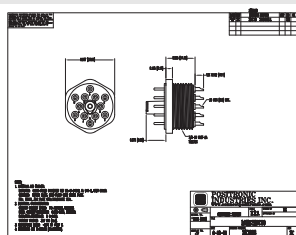
STEP 6 -

0 - This position is reserved for future use, insert "0".

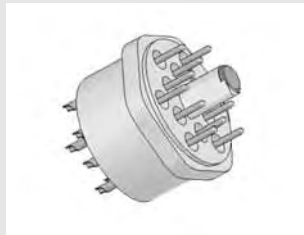
STEP 5 -

0 - This position is reserved for future use, insert "0".

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-D IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model



Positronic Industries
connectpositronic.com

MGH SERIES

PROFESSIONAL QUALITY / FIXED CONTACTS

MICROMINIATURE CIRCLE HEX CONNECTORS

Circle
Hex

**Size 22 Signal/Power
Contacts**

**High Performance
Construction**

**Polarization and
Locking Accessories**

UL Recognized
File #E49351



MGH series connectors are microminiature, high reliability connectors. They are available with three contacts for providing polarization: two contacts at 0.030 inch [0.76 mm] diameter, and one contact at 0.040 inch [1.02 mm] diameter. The MGH series is rated to 5 amperes per contact. Spacing between contacts is 0.102 inch [2.59 mm], and the face diameter of the connector is 0.312 inch [7.92 mm].

MGH series connectors are ideally applied where limited space is a concern. MGH series connectors

can be used as cable connectors, panel-mounted connectors, or probes. Constructed of high performance materials, MGH series connectors are widely used in medical, industrial, military, and automotive applications.



**For RoHS options
see page 14.**

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled DAP per ASTM-D-5948, Type SDG-F. Green color is standard.
Contacts:	Precision machined copper alloy.
Contact Plating:	Gold flash over nickel.
Hoods:	Aluminum with yellow or black anodize.
Lock Rings and Lock Springs:	Copper alloy with zinc plate and chromate seal.

MECHANICAL CHARACTERISTICS:

Fixed Contacts:	Two (2) size 22 contacts, male - 0.030 inch [0.76 mm] diameter, and one (1) size 20 contact, male - 0.040 inch [1.02mm] diameter. Female contact - open entry.
Contact Retention in Insulator:	6 lbs. [26.5 N], minimum.
Contact Termination:	Solder cup - 0.027 inch [0.69mm] hole diameter for 24 AWG [0.25mm ²] wire maximum.
Locking Systems:	Friction, lock spring with lock ring.
Polarization:	0.040 inch [1.02 mm] diameter male contact in position "A".
Mechanical Operations:	250 operations per IEC 60512-5.

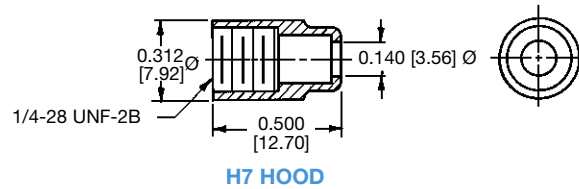
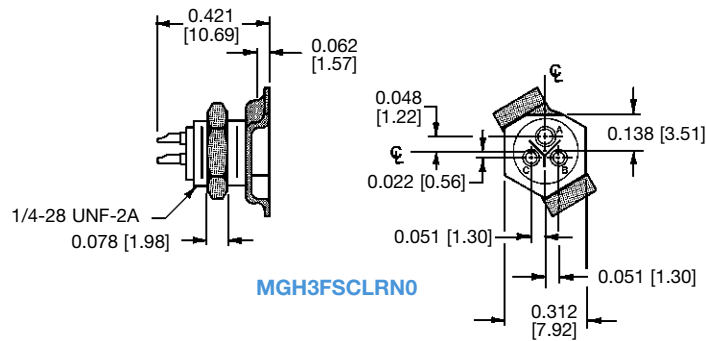
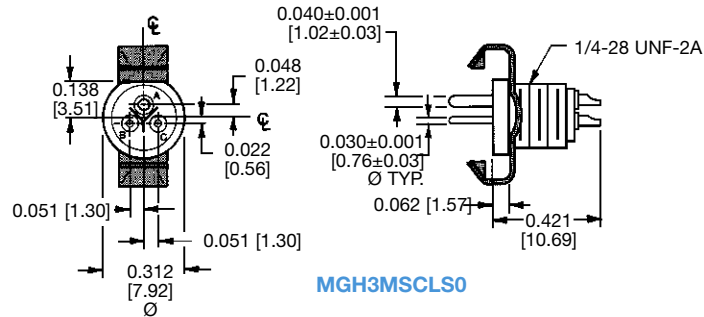
ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	5 amperes.
Initial Contact Resistance:	0.012 ohms, maximum.
Flash over Voltage:	1,500 VAC (rms).
Test Voltage:	1,000 VAC (rms).
Insulation Resistance:	5 G ohms, minimum.
Clearance and Creepage Distance:	0.021 inch [0.53 mm], minimum.
Working Voltage:	600 VAC (rms).

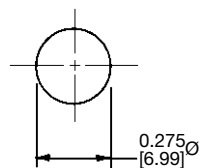
CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days.

TYPICAL ASSEMBLIES



PANEL CUT-OUT DIMENSIONS





Positronic Industries
connectpositronic.com

MGH SERIES

PROFESSIONAL QUALITY / FIXED CONTACTS

MICROMINIATURE CIRCLE HEX CONNECTORS

Circle
Hex

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6

STEP	1	2	3	4	5	6	7	8
EXAMPLE	MGH	3	M	SC	LRN	0	/AA	

STEP 1 - BASIC SERIES

MGH Series

STEP 2 - CONNECTOR VARIANTS

3 - Contact Connector Variant

STEP 3 - CONNECTOR GENDER

M - Male
F - Female

STEP 4 - CONTACT TERMINATION TYPE

SC - Solder Cup.

STEP 5 - MOUNTING AND LOCKING ACCESSORIES

LR - Lock Ring.
LS - Lock Spring.
LRN - Lock Ring and Nut.
0 - If no mounting or locking accessories are required.

STEP 8 - SPECIAL OPTIONS

**CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS**

STEP 7 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive
2002/95/EC (RoHS)

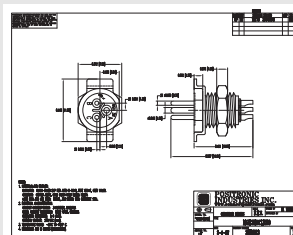
NOTE: If compliance to environmental
legislation is not required, this step will
not be used. Example: MGH3MSCLRNO



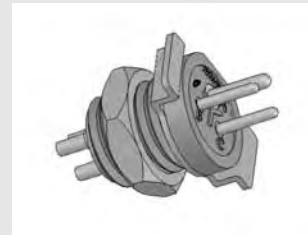
STEP 6 - CABLE ADAPTERS (HOODS)

H7 - Aluminum hood, yellow anodize.
H7B - Aluminum hood, black anodize.
0 - If no hoods are required.

NOTE: Once you have made a connector selection, contact
Technical Sales if you would like to receive a drawing in DXF, PDF
format or a 3-D IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
To 200 amperes per contact

Current Ratings: Crimp and panel mount, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Terminations: Multiple variants in a variety of package sizes
Configurations: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

Compliance:

D-SUBMINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven shell sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact variants and package sizes
- Connector keying options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cablizing" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cablized connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Leakage rate: 5 x 10⁻⁹ mbar.l/s @ vacuum 1.5 x 10⁻⁵ atm
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices 800 641 4054 info@connectpositronic.com

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices 800 641 4054 info@connectpositronic.com

MEXICO

Factory Sales and Engineering Offices 800 872 7674 info@connectpositronic.com

CANADA

Factory Sales and Engineering Offices 800 327 8272 info@connectpositronic.com

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices 65 6842 1419 singapore@connectpositronic.com

ASIA, Direct Sales Offices

China -Zhuhai Factory and Sales Office	86 756 3626 466	zhuhai@connectpositronic.com
China -Shenzhen Sales Office	86 755 2643 7578	shenzhen@connectpositronic.com
China -Shanghai Sales Office	86 158 2907 9779	shanghai@connectpositronic.com
China -Xian/Beijing Sales Office	86 29 8839 5306	xian@connectpositronic.com
Korea Sales Office	82 31 909 8047	korea@connectpositronic.com
Taiwan Sales Office	886 2 2937 8775	taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices 81 3 5619 8072 japan@connectpositronic.com

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices	91 20 2439 4810	india@connectpositronic.com
Bangalore Sales Office	91 94 4907 3251	bangalore@connectpositronic.com
New Delhi Sales Office	91 80 1071 1175	delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines, Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 5 6263 4491 contact@connectpositronic.com

EUROPE, Direct Sales Offices

Northern France Sales Office	33 1 4588 1388	jchalaux@connectpositronic.com
Southern France Sales Office	33 5 6263 4491	plafon@connectpositronic.com
Eire + Northern Ireland	33 5 6263 4557	tauvin@connectpositronic.com
Italy Sales Office	39 02 5411 6106	rmagni@connectpositronic.com
Germany Sales Office	49 23 5163 4739	cbouche@connectpositronic.com
UK Sales Office	44 1242 897493	lbridwell@connectpositronic.com

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Russia, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 5 62 63 44 91 • Fax 33 5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com

For most current sales office information, please visit http://www.connectpositronic.com/contact/sales_offices.html

LO+C+CATIONS

www.connectpositronic.com

POWER CONNECTION SYSTEMS

Power Connectors



Positronic®
global connector solutions



LOOK
FOR OUR
NEW PRODUCTS!

**VERSATILE, HIGH-CURRENT,
MIXED DENSITY**

Catalog C-014 Rev. G

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261[†] #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

[†]Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

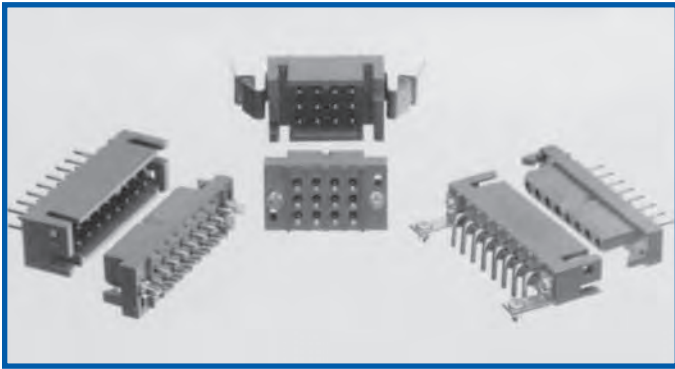
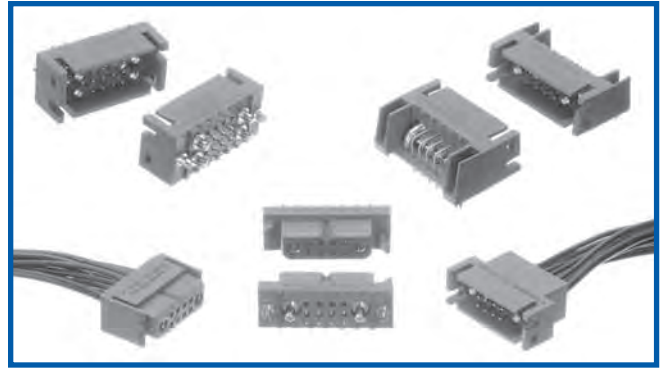
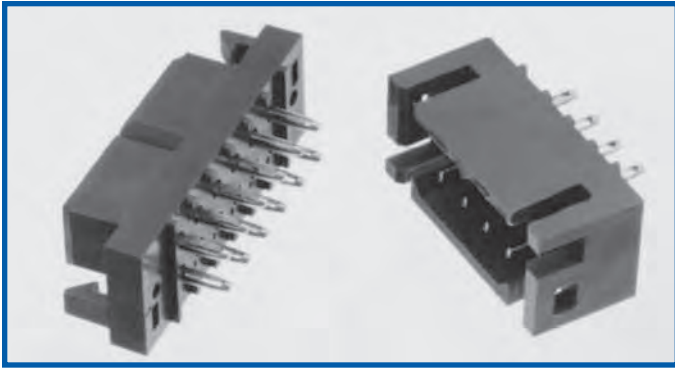
- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

Proven Performance



In 1989, Positronic Introduced the Power Connection Systems series. Since that time PCS has been the power connector of choice in a wide variety of applications. The popularity of PCS is due to a growing list of features, they include:

****Low Contact Resistance****

****Sequential Mating Options****

****Discriminating Locking System****

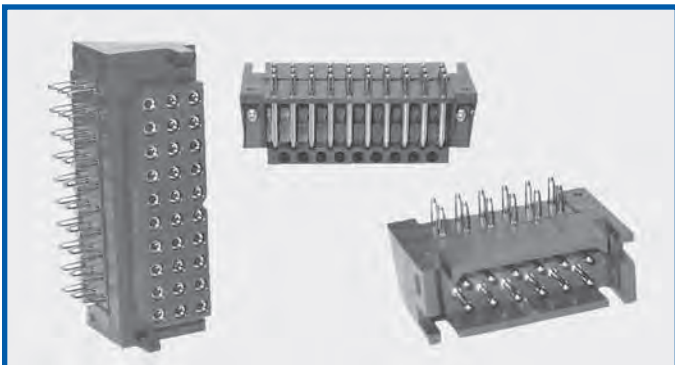
****Board to Board / Board - Cable / Cable - Cable****

****Size 12 Contacts with Screw Terminations****

****Safety Shrouded Options****

****Many Connector Variants Available From Stock****

****Mixed Density Variants****





Positronic
connectpositronic.com

TABLE OF CONTENTS

Power
Connection
Systems

GENERAL INFORMATION

Typical Connection Systems	1-3
Demystifying Current Ratings	4
Large Surface Area Contact Mating System	5
Compliant Terminations	6

PCS SERIES

Customer Specified Arrangements	7
Technical Information	8
Temperature Rise Curves	9
Mating Dimensions	10
Straight Solder Printed Board Connectors	11-12
Compliant Press-in Power Connectors	13
Straight Solder And Compliant Contact Hole Pattern	14-15
Right Angle (90°) Solder Printed Board Connectors	16-17
Right Angle (90°) Press-in Connectors	18
Right Angle (90°) Printed Board Contact Hole Pattern	19-20
Panel Mount Connectors with Solder Cup Contacts	20
Cable Connectors with Removable Contacts	21-22
Panel Mount Connectors with Removable Contacts	23-24
Sequential Mating System	25
Ordering Information	26

SAFETY SHROUD SERIES

Technical Information	27
Connector Systems and Cable Connector	28
Panel Mount Connector	29
Straight Solder and Right Angle (90°) Solder Printed Board Mount Connector	30
Ordering Information	31

POWER INPUT SERIES

Technical Information	32
Connection Systems and Temperature Rises Curves	33
Cable and Panel Mount Connector	34
Straight Solder Printed Board Mount, Compliant Press-in Connector, and Contact Hole Pattern	35
Right Angle (90°) Printed Board Mount Connector and Contact Hole Pattern	36
Screw Termination and Sequential Mating Contacts	37
Ordering Information	38



PCS MIXED DENSITY SERIES

Technical Information.....	39-40
Temperature Rises Curves.....	40
Cable Connector.....	41
Panel Mount Connector.....	42
Straight Printed Board Mount Connector and Contact Hole Pattern.....	43
Right Angle (90°) Printed Board Mount Connector and Contact Hole Pattern.....	44
Compliant Press-in Connector.....	45
Ordering Information.....	46

REMOVABLE CONTACT

Removable Contact Technical Information.....	47
Removable Contact Technical Information and Removable Crimp Signal Contact Size 20.....	48
Removable Crimp Contact and Solder Cup Contact Size 16.....	49
Removable Shielded Contact Size 16 and Removable Crimp Contact Size 12.....	50
Removable Solder Cup Contact Size 12 and Removable Crimp Contact Size 8.....	51
Removable Solder Cup and Removable High Voltage Contact Size 8.....	52
Removable Shielded Contact Size 8.....	53

APPLICATION TOOLS

Introduction.....	54
Contact Application Tools Cross Reference List.....	55
Press-in User Information and Connector Installation Tooling.....	56
Compliant Press-in Connectors Printed Board Hole Sizes.....	57

ACCESSORIES

Right Angle (90°) Metal and Plastic Mounting Brackets.....	58
Push-on Fasteners and Mounting Screws.....	59
Connector Hoods.....	60
Quick Release Mounting Clip and Panel Cutout.....	61
Fixed Style Mounting Clip and Panel Cutout.....	62
Panel Mount Cutout.....	63
Blind Mating System and Panel Cutout.....	64

Visit our website for the latest catalog updates and supplements at
<http://www.connectpositronic.com/pcs/catalog>



Cable & Harness Assemblies

Many Industries Served including:

- Aerospace
- Datacom / Telecom
- Medical
- Industrial
- Military / Defense
- Transit / Rail

Support Capabilities:

- Design, development, engineering support, and documentation
- Build to customer print
- Assist in expansion of qualified suppliers on BOM
- Select facilities certified to ISO 9001 and AS9100
- Adherence to IPC-620 standards
- Product prototyping and first articles
- Electrical and mechanical testing

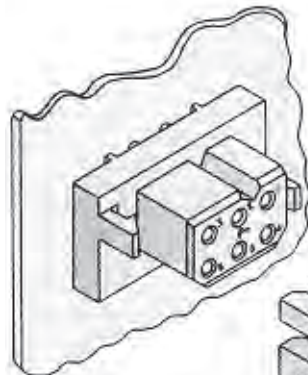
Products & Services

- Cable and harness assemblies
- Flex circuit assemblies
- Coaxial cable assemblies
- Kitting services
- EMI/RFI shielded assemblies
- Box builds
- Hermetic assemblies

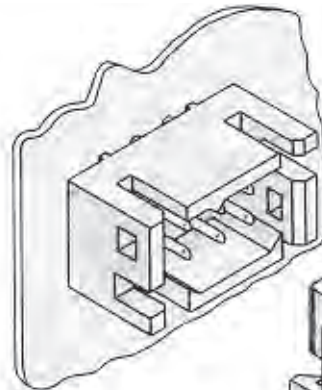
SAVE TIME AND MONEY! Let Positronic support you by cablizing your **PLA(H) / PLB(H) / PLC(H) / PLS(H)** connector selection.

For more details contact *Technical Sales* or visit our *web site* at: <http://www.connectpositronic.com/cable-assemblies>

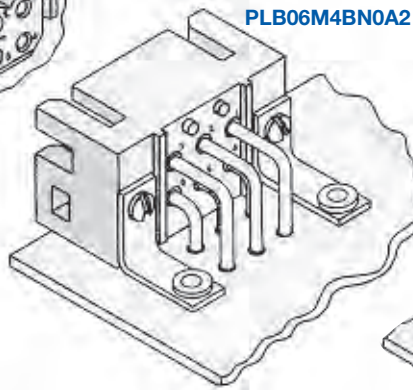
SYSTEM 1 MOTHER BOARD- DAUGHTER BOARD



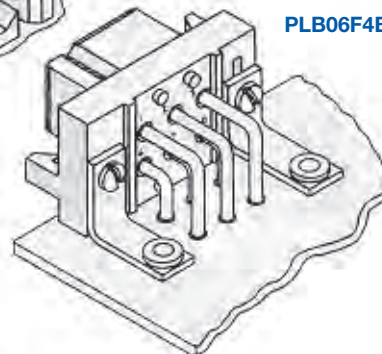
PLB06F300A1 Straight
solder or
PLB06F94ST40A1
Compliant termination
press-in



PLB06M300A1 Straight solder or
PLB06M92ST20A1 Compliant
termination press-in

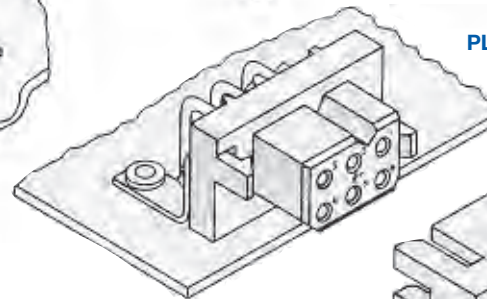


PLB06M4BN0A2

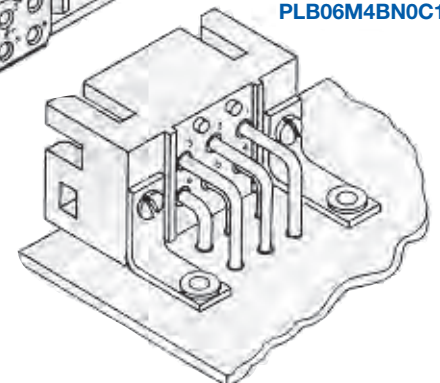


PLB06F4BN0A1

SYSTEM 2 SIDE TO SIDE BOARD MOUNTING

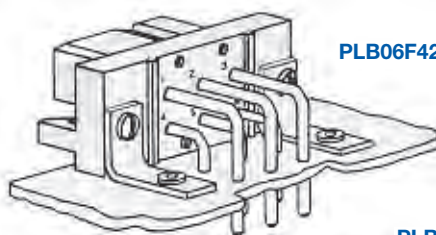


PLB06F4BN0C1

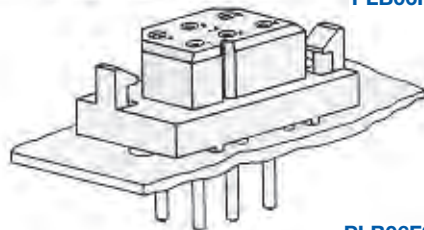


PLB06M4BN0C1

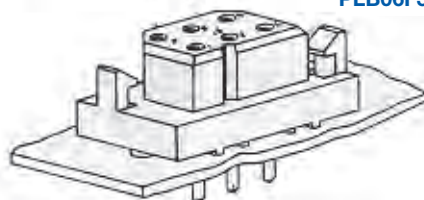
SYSTEM 3 STACKABLE BOARD MOUNTING



PLB06F42BN0C1

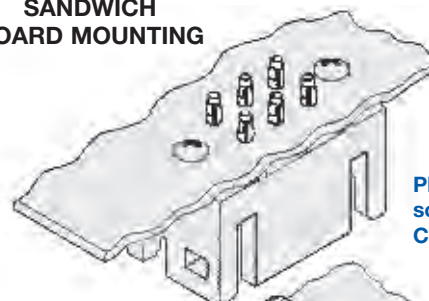


PLB06F32N0C1

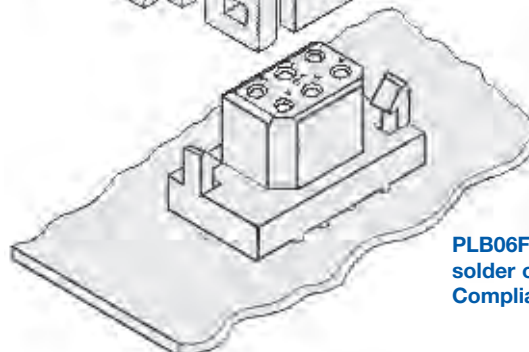


PLB06F3N0C1

SYSTEM 4 SANDWICH BOARD MOUNTING



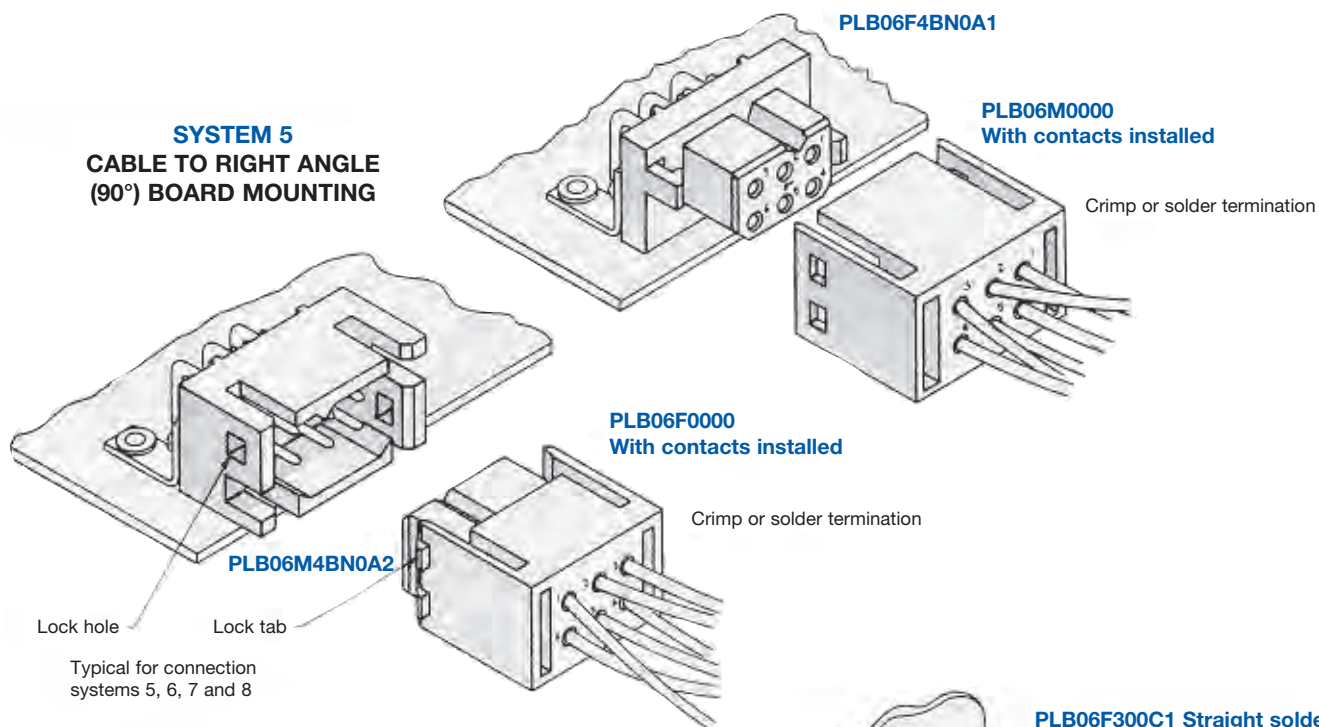
PLB06M300A1 Straight
solder or PLB06M93ST30A1
Compliant termination press-in



PLB06F300A1 Straight
solder or PLB06F93ST30A1
Compliant termination press-in

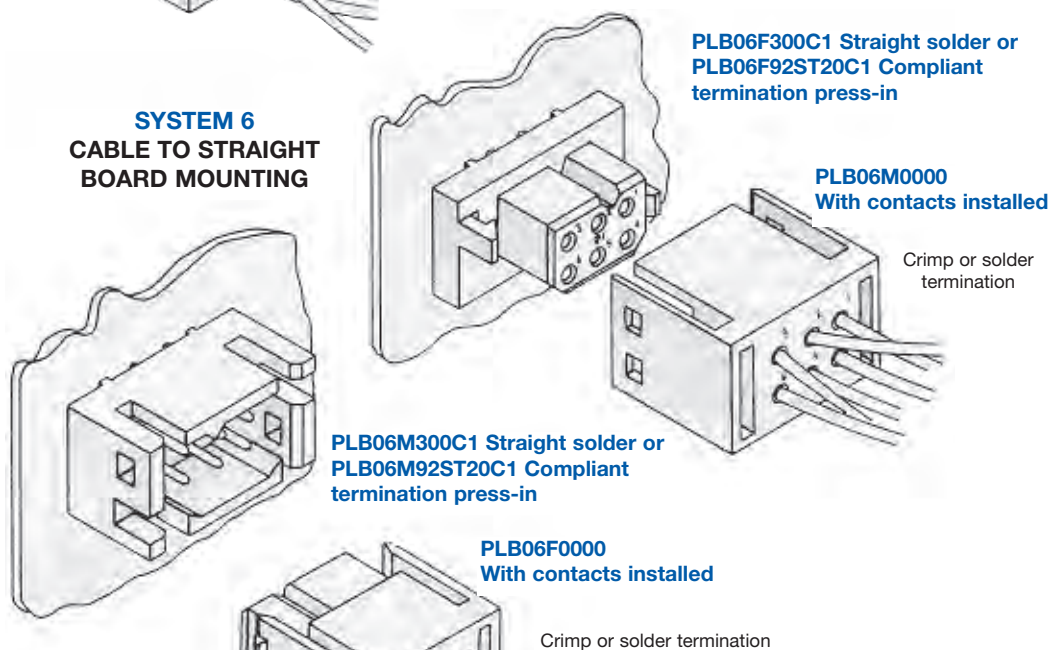
SYSTEM 5

CABLE TO RIGHT ANGLE (90°) BOARD MOUNTING



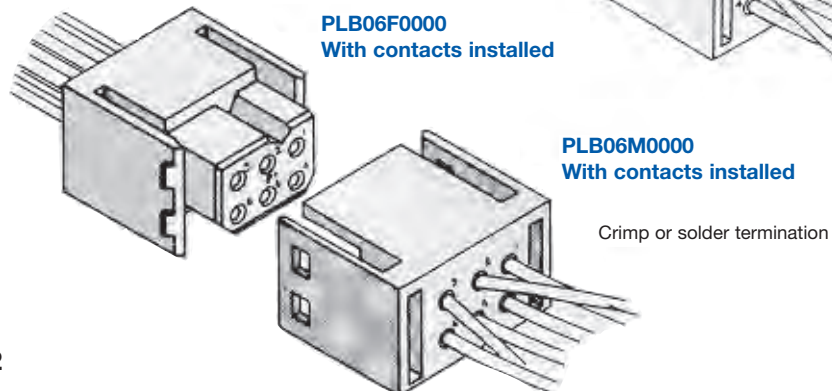
SYSTEM 6

CABLE TO STRAIGHT BOARD MOUNTING



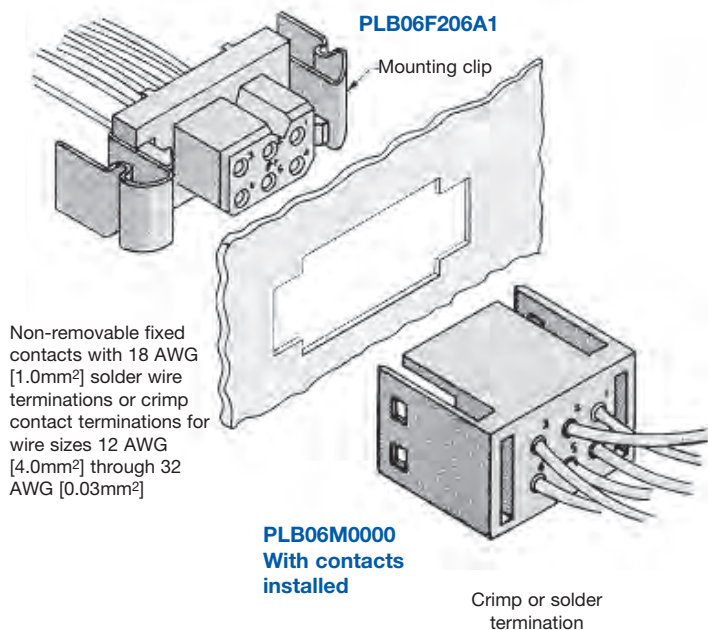
SYSTEM 7

CABLE TO CABLE

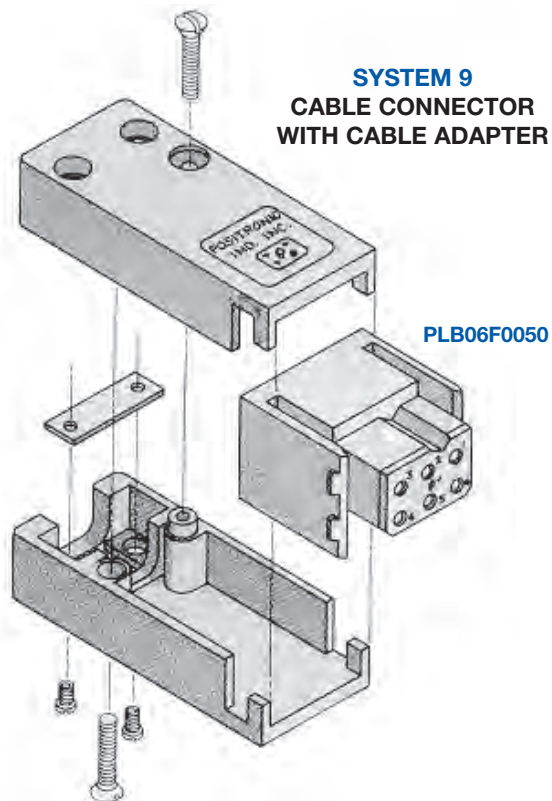


PANEL MOUNT AND CABLE ADAPTERS

SYSTEM 8 PANEL MOUNTED TO CABLE

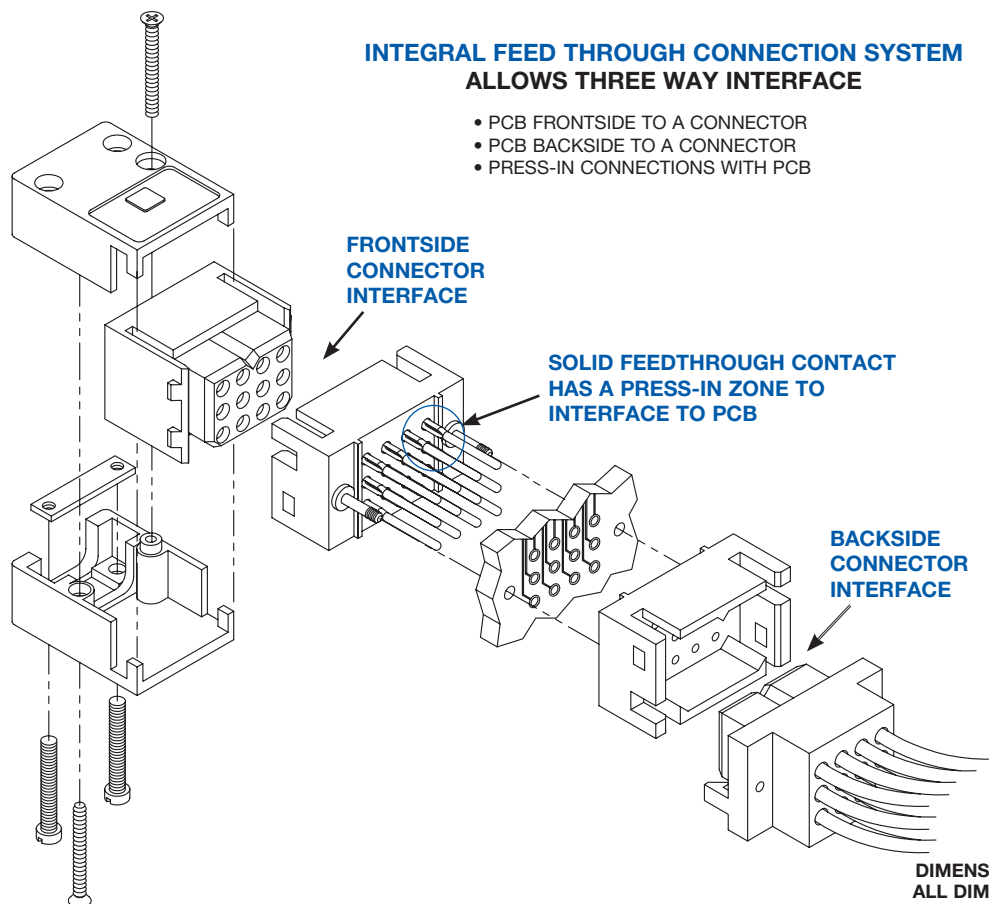


SYSTEM 9 CABLE CONNECTOR WITH CABLE ADAPTER



INTEGRAL FEED THROUGH CONNECTION SYSTEM ALLOWS THREE WAY INTERFACE

- PCB FRONTSIDE TO A CONNECTOR
- PCB BACKSIDE TO A CONNECTOR
- PRESS-IN CONNECTIONS WITH PCB



CONTACT TECHNICAL
SALES FOR MORE
INFORMATION.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



DEMISTIFYING CURRENT RATINGS

Connector current ratings seem to be shrouded in mystery at times. The user wonders how a listed current rating is relevant to a particular application. Perhaps more mysterious is how similar connectors from various manufacturers list different current rating values. While it is true that material choices and design can enhance a connector's current rating, the test method by which the rating was developed must be understood when evaluations are made.

Users of connectors for power applications are entitled to current rating test details in order to make an informed choice. Ideally, a connector's current rating should be developed within the application for which it is being considered. Although ideal, this approach is not always practical given the many differing applications. In order for connector manufacturers to give potential product users an idea of what can be expected, connectors are given current ratings based on a specific test method.

A wide variety of test methods are employed in order to develop current ratings for connectors. Some of these methods come from standards that are recognized industry-wide, while others are unique to the manufacturer or user. These various test methods can produce different results for the same product. It is no wonder confusion sometimes results.

There are key factors that, when understood, can help in choosing the right power connector. All test methods used to rate current have similarities; however, there are variables in applying the test methods which explain differing results.

Current ratings are usually established by first developing a temperature rise curve. This curve plots temperature rise against increasing current levels. The curve is a reliable tool in understanding heat generation of the connector at various currents. When a defined failure is reached, the test ends. The highest current level achieved is usually listed as the current rating.

The temperature rise curve, and therefore the current rating, will change when certain key factors are varied. These are:

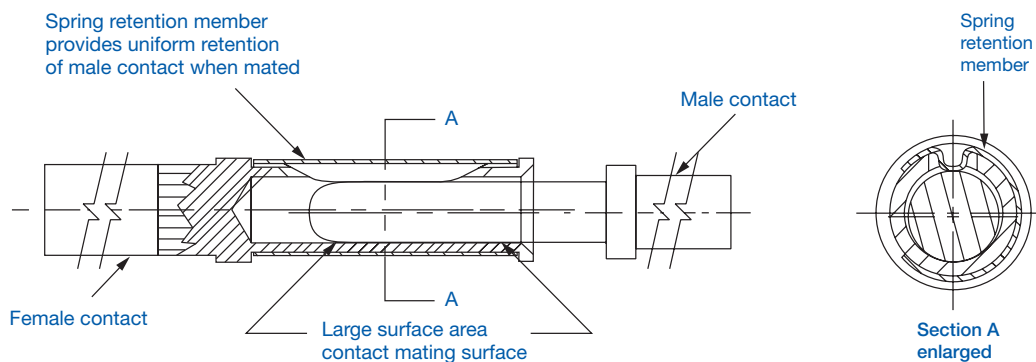
- Where is the temperature sensing probe placed? If placed on the contact in the mating area (the hottest spot), the results will be quite different than if placed on the outside of the connector body.
- Are the contacts being tested and rated in free air or are they contained within the connector housing? Contacts will obviously be cooler in free air.
- Are all of the contacts in the connector under load? If only part of the contacts are under load, the temperature rise could be less.
- What is the defined failure? Does the test end when the temperature rise reaches 30°C, 40°C, or some other number? Does it end when the temperature rise plus ambient temperature equal the operating limit of the connector housing? The current rating will be fixed by the defined failure point.
- How were the test samples prepared? Were the samples energized through a printed circuit board? How many layers? How large were the traces? What was the weight of the copper? Were the samples energized through wire? What size was the wire? How long was the wire? Was the sample tested in static or forced air conditions? All of these factors can affect cooling characteristics.

Clearly, a current rating value alone is not enough, and must be viewed in the context of the test used to develop the rating. When the test method is understood, evaluating and comparing power connectors for specific applications becomes much less of a mystery.

THE PCS SERIES utilizes Positronic

LARGE SURFACE AREA CONTACT MATING SYSTEM

- Separates mechanical and electrical functions for superior performance
- Low contact resistance provides minimized voltage drop across the contact
- True closed entry design prevents damage to female contacts and will not allow misaligned or bent contacts to enter
- Precision machined from solid copper alloy
- Stable insertion and withdrawal forces throughout repeated mating cycles



WHY IS THE L.S.A. SYSTEM SUPERIOR?

The primary function of connector contact is electrical conductivity. Also, a mechanical function is required to provide normal force between male and female contacts.

In order to provide for proper mechanical characteristics, material that has good memory or “elasticity” must be chosen. This will ensure contact normal force in a coupled condition and allow for repeated coupling and uncoupling.

Unfortunately, many materials that have good memory characteristics have low electrical conductivity. For instance, beryllium copper is a good choice for mechanical function; however, some beryllium copper alloys are poor conductors and have relatively low conductivity

rates.

The conductivity path of many contact designs goes directly through materials that have been chosen based on mechanical need. If these materials have a low conductivity rating, increased contact resistance will result.

Positronic Large Surface Area Contact System separates the mechanical and electrical functions. A spring retention member provides normal forces, while the electrical conductivity path is through highly conductive contact material. See above detail.



Positronic
connectpositronic.com

COMPLIANT TERMINATIONS

Power
Connection
Systems

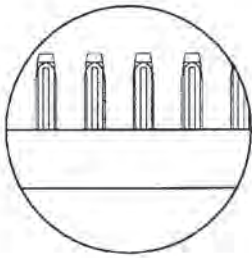
BI-SPRING POWER PRESS-IN TERMINATIONS

The Next Evolution In Compliant Technology. Fully Compliant, Fully Reliable.

Reliable, solderless connections from connectors to backplanes started with solid press-in technology. Although these are still used today, concerns about board damage led to the use of compliant press-in technology. This technology allows the connection to be made through compliance of the contact termination along with printed circuit board hole deformation. Although risk of damaged printed circuit boards and backplanes is lessened, damage can still occur due to

relatively high insertion and extraction forces.

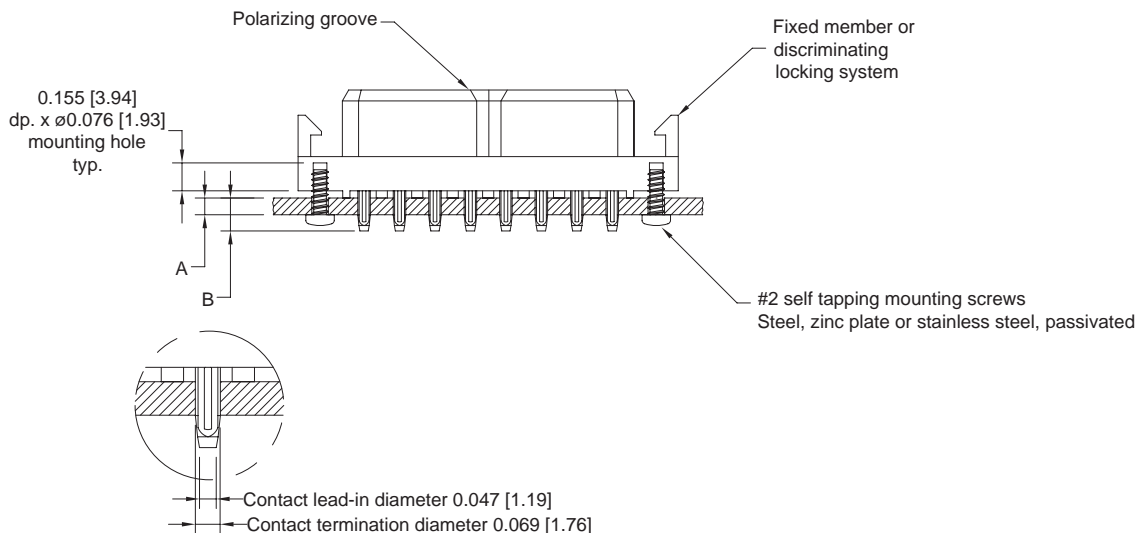
The next step in press-in technology is a highly reliable connection between the contact termination and backplane that is accomplished with reduced insertion and extraction forces. This eliminates risk of printed circuit, board and backplane damage. This technology exists today with Positronic Bi-Spring Power Press-in termination.



Bi-Spring Power Press-in Compliant Terminations

- Average insertion and extraction forces of size 16 contacts are 22N [5 lbs.] per contact and do not produce stresses in printed circuit boards and backplanes that can occur with higher insertion forces. These stresses can cause board warpage and hole damage.
- Connector systems utilizing Bi-Spring terminations use mounting screws to secure the connector to the printed circuit board or backplane. Stresses that occur during coupling, uncoupling or shock and vibration of systems are not transferred to the printed circuit boards or backplanes through the press-in connection. The electrical integrity of the connector to board interface is maintained; this is particularly important in power applications. Bellcore GR1217 details a preference for mounting hardware when using press-in terminations.
- Size 16 Bi-Spring terminations are designed to meet the performance requirements and hole diameters as listed in the internationally recognized specification IEC 60352-5.
- Lower insertion and extraction forces eliminate the need for expensive pressing equipment.

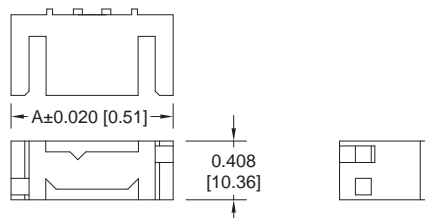
COMPLIANT TERMINATION PRESS-IN CONNECTOR



The design of Power Connection Systems Series connectors allows for the development of application specific contact arrangements in a timely manner and at a reasonable price. Thirteen connector housing sizes exist that may accommodate size 20, size 16, size 12, or size 8 contacts (see the Power Connection Systems catalog for connector housing dimensions). After reviewing the dimensions and the following basic information, contact Technical Sales with your current, voltage, and safety requirements. We look forward to working with you to develop a connector for your specific needs.

BASIC CONNECTOR DIMENSIONS

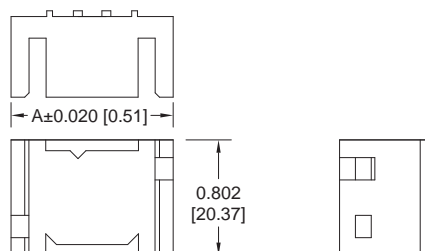
Male Connector Dimensions



PART NUMBER	A
PLA03**00A1	1.126 [28.60]
PLA04**00A1	1.324 [33.63]
PLA06**00A1	1.718 [43.64]
PLA08**00A1	2.112 [53.64]

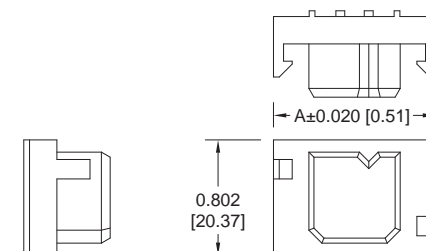
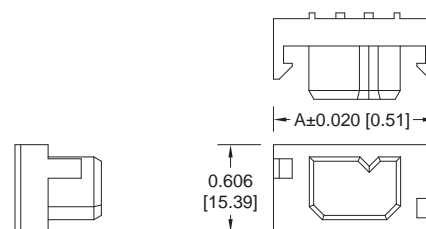
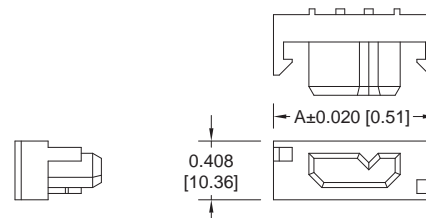


PART NUMBER	A
PLB06**00A1	1.126 [28.60]
PLB08**00A1	1.324 [33.63]
PLB12**00A1	1.718 [43.64]
PLB16**00A1	2.112 [53.64]
PLB20**00A1	2.506 [63.65]

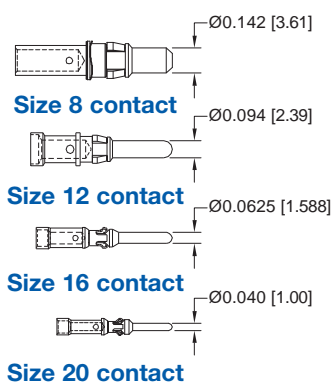


PART NUMBER	A
PLC09**00A1	1.126 [28.60]
PLC12**00A1	1.324 [33.63]
PLC18**00A1	1.718 [43.64]
PLC24**00A1	2.112 [53.64]
PLC30**00A1	2.506 [63.65]

Female Connector Dimensions



Four Contact Sizes to Choose From



Many Termination Types Can Be Supplied

Straight Solder or Press-in
Right Angle (90°) Solder
Crimp Removable
Removable Solder Cup

Popular Options

Sequential Mating
Selective Loading

Contact sizes and termination types may be mixed within a single connector.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0. Contact technical sales for availability of high temperature insulator material.
Contacts:	Precision machined copper alloy with gold flash over nickel, or 0.000030 inch [0.76μ] gold over nickel, or 0.000050 [1.27μ] gold over nickel. Solder coated terminations optional.
Mounting Clip:	Beryllium copper with nickel plate.
Hood:	Glass filled polyester, UL 94V-0.
Mounting Bracket:	Brass with tin plate.
Push-on Fastener:	Spring tempered copper alloy, tin plate

ELECTRICAL CHARACTERISTICS:

CONTACT CURRENT RATING:

Standard Contact Material:	See page 9 for detail information.
High Conductivity Contact Material:	See page 9 for detail information.

INITIAL CONTACT RESISTANCE:

Standard Contact Material:	0.0016 ohms max. per IEC 60512-2, test 2b.
High Conductivity Contact Material:	0.0007 ohms max. per IEC 60512-2, test 2b.
Insulation Resistance:	5 G ohms per IEC 60512-2, test 3a, method A.
Voltage Proof:	2000 V rms per IEC 60512-2, test 4a, method C.
Creepage Distance:	0.157 inch [4 mm] minimum.
Clearance Distance:	0.125 inch [3.2 mm] minimum.
Working Voltage:	Designed to meet UL 600 VAC and CSA 600 VAC.
Working Temperature:	-55°C to +125°C Contact technical sales for availability of high temperature insulator material.

ELECTRICAL CHARACTERISTICS OF COMPLIANT PRESS-IN CONNECTION TO PLATED-THROUGH-HOLE OF PRINTED BOARD:

	0.064 inch [1.63mm] diameter hole of a 0.125 inch [3.2mm] thick printed board
Initial Contact Resistance of Connection:	Less than 1.0 milliohms per IEC 60512-2, test 2a.
Change in Contact Resistance of Connection After Mechanical, Electrical or Climactic Conditioning:	Less than 0.5 milliohms increase per IEC 60512-2, test 2a.
Gas Tight Connections Test:	Less than 0.2 milliohms increase in contact resistance after 1 hour per EIA 364, TP36, Method One.

SHIELDED CONTACT TECHNICAL CHARACTERISTICS:

See page 47.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator, release from front face of insulator. Size 16, 0.0625 inch [1.588 mm] diameter male contact. Female contact "closed entry" design for highest reliability.
Removable Contact Retention in Insulator:	15 lbs. [67N] per IEC 60512-8, test 15a.
Fixed Contacts:	Solder cup and printed board terminations. Size 16, 0.0625 inch [1.588 mm] diameter male contact. Female contact has "closed entry" design for highest reliability.
Fixed Contact Retention in Insulator:	6 lbs. [26N].
Resistance to Solder Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6, test 12e, 25 watt soldering iron.
Contact Terminations:	Crimp or solder removable contacts from wire sizes 12 AWG [4.0 mm ²] through 24 AWG [0.25 mm ²]. Straight and Right Angle (90°) solder printed board mount, 0.0625 inch [1.588 mm] tail diameter. Compliant termination press-in. Fixed contact solder cup termination, 18 AWG [1.0 mm ²] maximum.
Contact Insertion and Withdrawal Forces:	8 oz. [2.2N] nominal per contact.
Connection Systems:	Connector provides cable to cable, cable to printed board, cable to panel mount and printed board to printed board application.
Sequential Mating System:	Cable and printed board mount connectors. Male contacts provide as many as three mating lengths.
Locking System:	Insulators provide locking between cable to cable, cable to printed board and cable to panel mount applications.
Polarizations:	Provided in insulator design. Further polarization in cable connectors can be provided by mixing male contacts in female insulators and female contacts in male insulators.
Mounting to Printed Board:	Rapid installation push-on fasteners. Self-tapping screws for compliant connectors.
Mechanical Operations:	500 operations per IEC 60512-5.

MECHANICAL CHARACTERISTICS OF COMPLIANT PRESS-IN CONNECTORS:

Press-in Contact Bi-Spring Construction, Compliant Termination:	0.0695 inch [1.77mm] diameter with 0.050 inch [1.27mm] lead-in diameter. Offered with two termination lengths.
Contact Retention in Insulator and 0.125 inch [3.2mm] thick printed board:	5 lbs. [22N] minimum combined retention forces per MIL-STD-2166, Type III compliant contact classification, after third repair-replacement of contact in insulator and plated-through-hole, 0.064 inch [1.63mm] diameter in a 0.125 inch [3.2mm] thick printed board.
Vibration:	No electrical discontinuity of 1μ second or greater when tested per MIL-STD-1344, Method 2005, Test conditioning.
Initial Press-In Force of Individual Contact into Plated-Through-Hole:	10 lbs. [44N] average when pushed into a 0.064 inch [1.63mm] Ø hole in a 0.125 inch [3.2mm] thick printed board.
Initial Push-Out Force of Individual Contact into Plated-Through-Hole:	8.5 lbs. [38N] average when pushed out of an 0.064 inch [1.63mm] Ø hole in a 0.125 inch [3.2mm] thick printed board.

CUL Recognized*
File # E49351

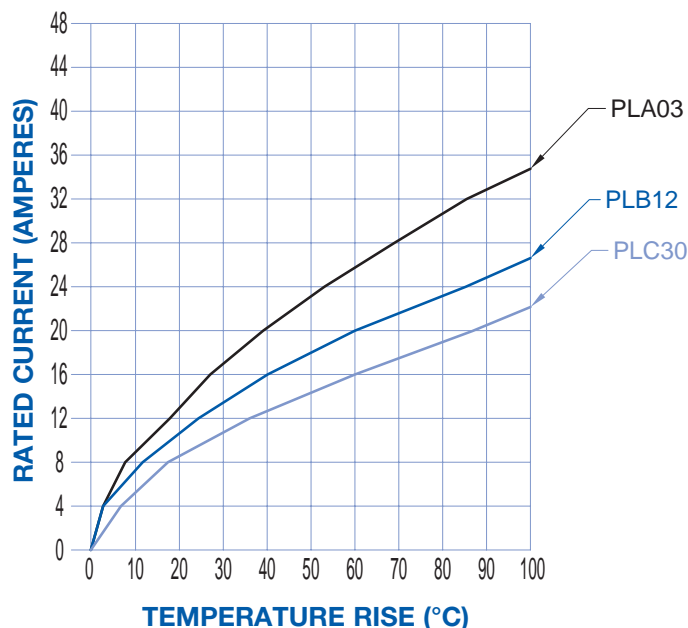
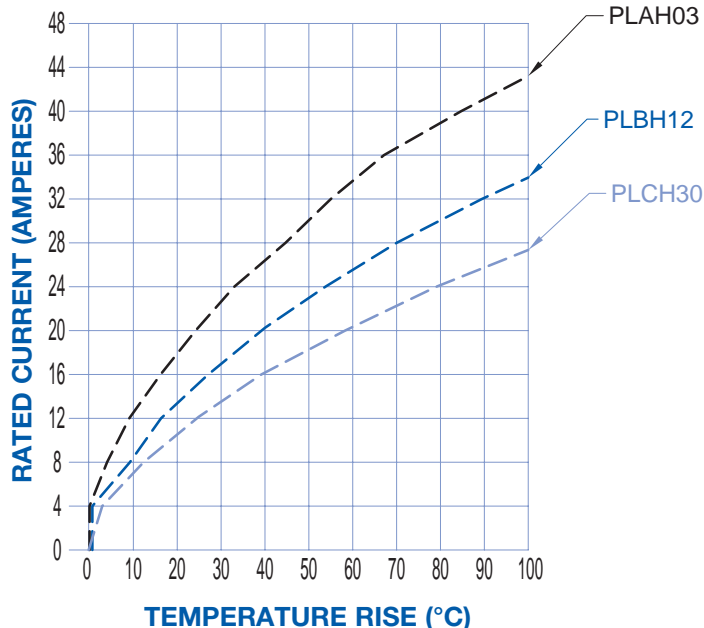
TÜV Recognized*
Certificate # B 02 07 47415 002

*Note: CUL and TÜV recognizes all sizes, except PLB20, consult Technical Sales for status.

TEMPERATURE RISE CURVE

STANDARD CONTACT MATERIALS

CONNECTORS WITH PL* PREFIX

**HIGH CONDUCTIVITY CONTACT MATERIALS**CONNECTORS WITH PL*H PREFIX
OR "S" SUFFIX ON CRIMP CONTACTS

TEST DETAIL: Each curve was developed using individual connector bodies fully loaded with contacts. All power contacts energized through 12 awg wire. Temperature rise was measured in the contact mating area. Test was conducted with connectors in static air. Terminations of test connectors were straight compliant press-in to right angle (90°) solder. See page 4 for more information.

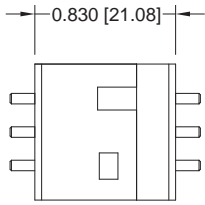
CONTACT CURRENT RATINGS			
CONNECTOR VARIANT	STANDARD CONTACTS	CONNECTOR VARIANT	HIGH CONDUCTIVITY CONTACTS
PLA03	32 amperes	PLAH03	42 amperes
PLB12	25 amperes	PLBH12	32 amperes
PLC30	18 amperes	PLCH30	24 amperes

Temperature rise curves and contact current ratings were developed for the specific connector variants shown when tested in accordance with UL1977.

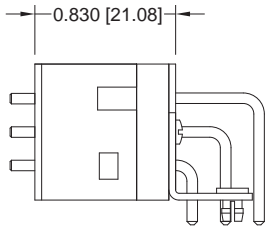
This information is provided so that the user can make comparisons between various connector sizes and contact materials.



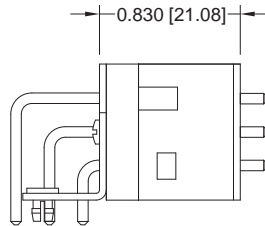
MATING DIMENSIONS (FULLY MATED)



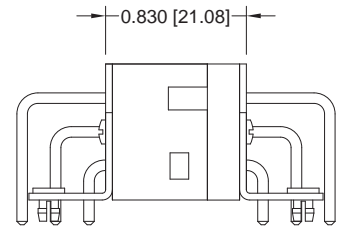
**Straight Board Mount Male
to Straight Board Mount
Female**



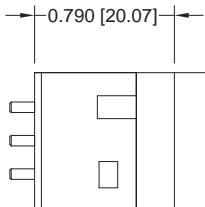
**Straight Board Mount Male
to Right Angle (90°) Board
Mount Female**



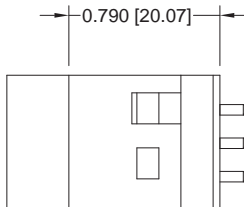
**Right Angle (90°) Board
Mount Male to Straight
Board Mount Female**



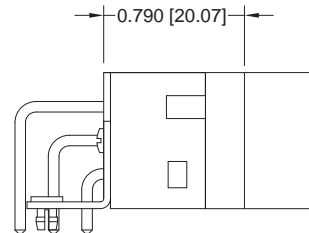
**Right Angle (90°) Board
Mount Male to Right Angle
(90°) Board Mount Female**



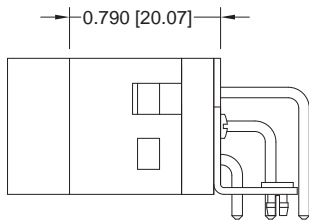
**Straight Board Mount Male
to Panel Mount
Female**



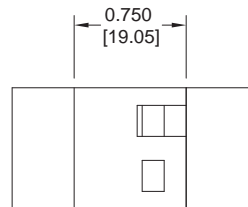
**Panel Mount Male
to Straight Board
Mount Female**



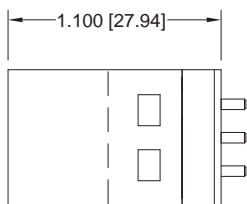
**Right Angle (90°) Board
Mount Male to Panel
Board Mount Female**



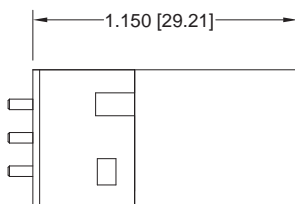
**Panel Mount Male
to Right Angle (90°) Board
Mount Female**



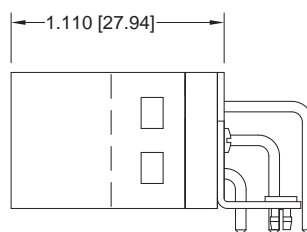
**Panel Mount Male
to Panel Mount
Female**



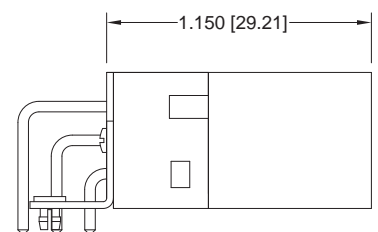
**Cable Mount Male
to Straight Board
Mount Female**



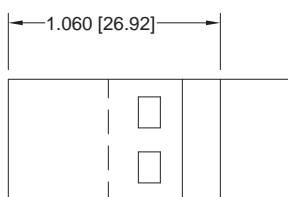
**Straight Board Mount
Male to Cable
Mount Female**



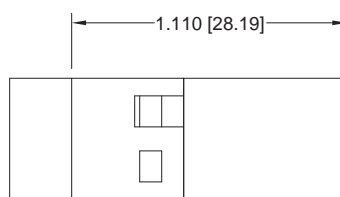
**Cable Mount Male
to Right Angle (90°)
Board Mount Female**



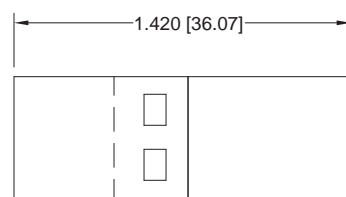
**Right Angle (90°) Board Mount
Male to Cable Mount
Female**



**Cable Mount Male
to
Panel Mount Female**



**Panel Mount Male
to Cable Mount
Female**

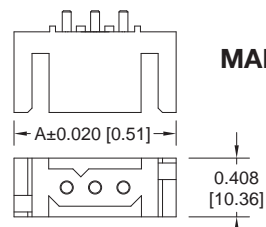


**Cable Mount Male
to
Cable Mount Female**

PLA STRAIGHT PRINTED BOARD MOUNT CONNECTORS

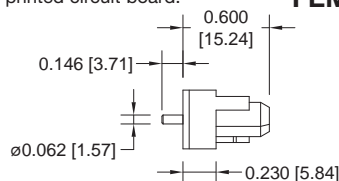
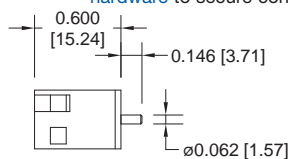
CODE 3, 0.146 [3.71] CONTACT EXTENSION

Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board.

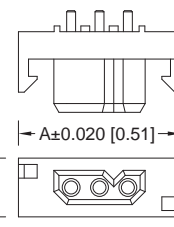


MALE

Typical part number:
PLA03M300A1
PLAH03M300A1



FEMALE



Typical part number:
PLA03F300A1
PLAH03F300A1

PART NUMBER	A	PART NUMBER	A
PLA03*300A1	1.126 [28.60]	PLA06*300A1	1.718 [43.64]
PLAH03*300A1		PLAH06*300A1	
PLA04*300A1	1.324 [33.63]	PLA08*300A1	2.112 [53.64]
PLAH04*300A1		PLAH08*300A1	

*Asterisk determines gender of connector,
M for male, F for female.

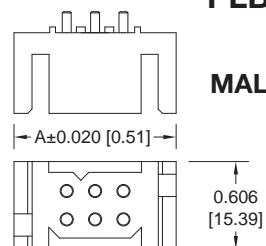
Plating- See ordering information
for contact plating options.

For connection systems 1, 4 and 6.

NOTE: MOUNTING SCREWS CAN
BE SUPPLIED WITH CONNECTORS
USING STEP 5 IN ORDERING
INFORMATION ON PAGE 26.
MOUNTING SCREWS CAN ALSO BE
ORDERED SEPARATELY BY PART
NUMBER. SEE PAGE 59.

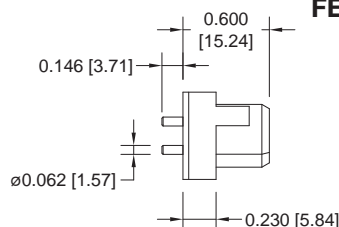
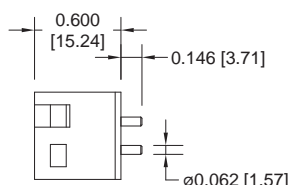
PLB STRAIGHT PRINTED BOARD MOUNT CONNECTORS

CODE 3, 0.146 [3.71] CONTACT EXTENSION

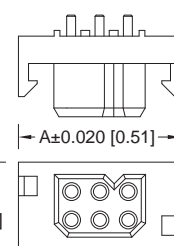


MALE

Typical part number:
PLB06M300A1
PLBH06M300A1



FEMALE



Typical part number:
PLB06F300A1
PLAH06F300A1

PART NUMBER	A	PART NUMBER	A
PLB06*300A1	1.126 [28.60]	PLB16*300A1	2.112 [53.64]
PLBH06*300A1		PLBH16*300A1	
PLB08*300A1	1.324 [33.63]	PLB20*300A1	2.506 [63.65]
PLBH08*300A1		PLBH20*300A1	
PLB12*300A1	1.718 [43.64]		
PLBH12*300A1			

*Asterisk determines gender of connector,
M for male, F for female.

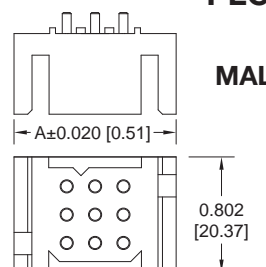
Plating- See ordering information
for contact plating options.

For connection systems 1, 4 and 6.

NOTE: MOUNTING SCREWS CAN
BE SUPPLIED WITH CONNECTORS
USING STEP 5 IN ORDERING
INFORMATION ON PAGE 26.
MOUNTING SCREWS CAN ALSO BE
ORDERED SEPARATELY BY PART
NUMBER. SEE PAGE 59.

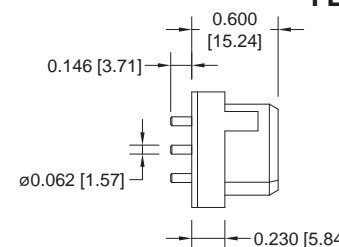
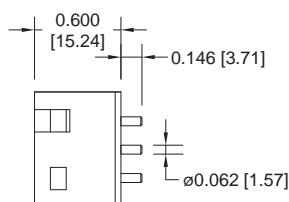
PLC STRAIGHT PRINTED BOARD MOUNT CONNECTORS

CODE 3, 0.146 [3.71] CONTACT EXTENSION

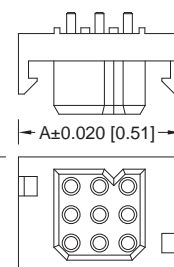


MALE

Typical part number:
PLC09M300A1
PLCH09M300A1



FEMALE



Typical part number:
PLC09F300A1
PLCH09F300A1

PART NUMBER	A	PART NUMBER	A
PLC09*300A1	1.126 [28.60]	PLC24*300A1	2.112 [53.64]
PLCH09*300A1		PLCH24*300A1	
PLC12*300A1	1.324 [33.63]	PLC30*300A1	2.506 [63.65]
PLCH12*300A1		PLCH30*300A1	
PLC18*300A1	1.718 [43.64]		
PLCH18*300A1			

*Asterisk determines gender of connector,
M for male, F for female.

Plating- See ordering information
for contact plating options.

For connection systems 1, 4 and 6.

NOTE: MOUNTING SCREWS CAN
BE SUPPLIED WITH CONNECTORS
USING STEP 5 IN ORDERING
INFORMATION ON PAGE 26.
MOUNTING SCREWS CAN ALSO BE
ORDERED SEPARATELY BY PART
NUMBER. SEE PAGE 59.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

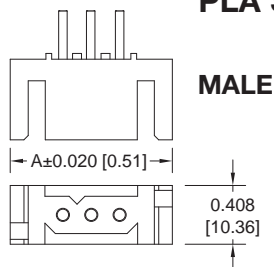


Positronic
connectpositronic.com

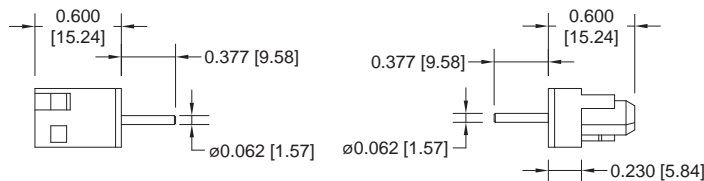
STRAIGHT SOLDER PRINTED BOARD CONNECTOR

Power
Connection
Systems

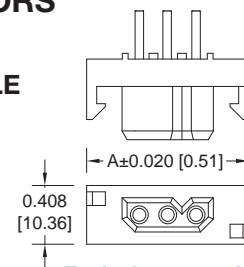
PLA STRAIGHT PRINTED BOARD MOUNT CONNECTORS CODE 32, 0.377 [9.58] CONTACT EXTENSION



MALE



FEMALE



Typical part number:
PLA03M3200A1
PLAH03M3200A1

Typical part number:
PLA03F3200A1
PLAH03F3200A1

NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 26. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

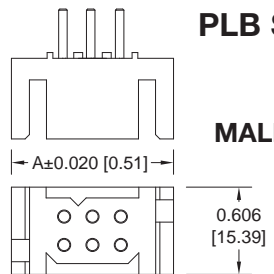
PART NUMBER	A	PART NUMBER	A
PLA03*3200A1 PLAH03*3200A1	1.126 [28.60]	PLA06*3200A1 PLAH06*3200A1	1.718 [43.64]
PLA04*3200A1 PLAH04*3200A1	1.324 [33.63]	PLA08*3200A1 PLAH08*3200A1	2.112 [53.64]

*Asterisk determines gender of connector,
M for male, F for female.

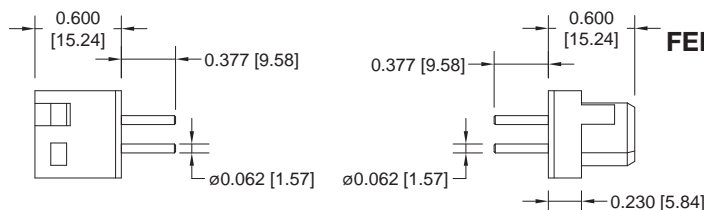
Plating- See ordering information
for contact plating options.

For connection systems 1, 3, 4 and 6.

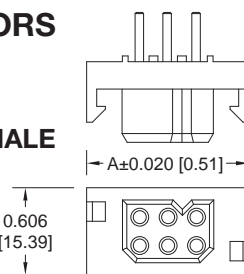
PLB STRAIGHT PRINTED BOARD MOUNT CONNECTORS CODE 32, 0.377 [9.58] CONTACT EXTENSION



MALE



FEMALE



Typical part number:
PLB06M3200A1
PLBH06M3200A1

Typical part number:
PLB06F3200A1
PLBH06F3200A1

NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 26. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

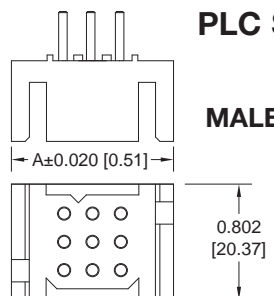
PART NUMBER	A	PART NUMBER	A
PLB06*3200A1 PLBH06*3200A1	1.126 [28.60]	PLB16*3200A1 PLBH16*3200A1	2.112 [53.64]
PLB08*3200A1 PLBH08*3200A1	1.324 [33.63]	PLB20*3200A1 PLBH20*3200A1	2.506 [63.65]
PLB12*3200A1 PLBH12*3200A1	1.718 [43.64]		

*Asterisk determines gender of connector,
M for male, F for female.

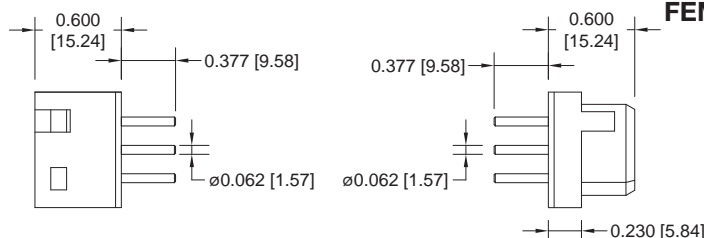
Plating- See ordering information
for contact plating options.

For connection systems 1, 3, 4 and 6.

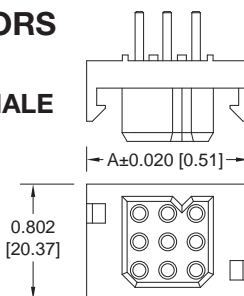
PLC STRAIGHT PRINTED BOARD MOUNT CONNECTORS CODE 32, 0.377 [9.58] CONTACT EXTENSION



MALE



FEMALE



Typical part number:
PLC09M3200A1
PLCH09M3200A1

Typical part number:
PLC09F3200A1
PLCH09F3200A1

NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 26. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

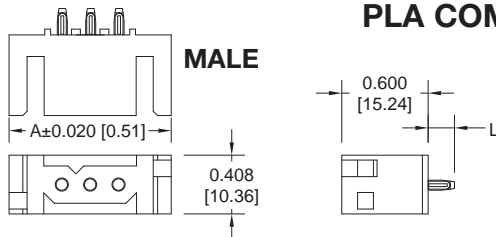
PART NUMBER	A	PART NUMBER	A
PLC09*3200A1 PLCH09*3200A1	1.126 [28.60]	PLC24*3200A1 PLCH24*3200A1	2.112 [53.64]
PLC12*3200A1 PLCH12*3200A1	1.324 [33.63]	PLC30*3200A1 PLCH30*3200A1	2.506 [63.65]
PLC18*3200A1 PLCH18*3200A1	1.718 [43.64]		

*Asterisk determines gender of connector,
M for male, F for female.

Plating- See ordering information
for contact plating options.

For connection systems 1, 3, 4 and 6.

PLA COMPLIANT PRESS-IN CONNECTORS CODE 92 OR CODE 93



Typical part number:
PLA03M93ST30A1
PLAH03M93ST30A1

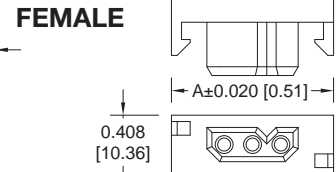
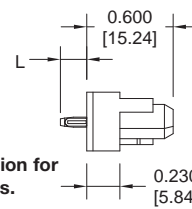
**Asterisks determine
gender of connector,
M for male,
F for female and
contact code 92 or 93.

PART NUMBER	A
PLA03**00A1 PLAH03**00A1	1.126 [28.60]
PLA04**00A1 PLAH04**00A1	1.324 [33.63]
PLA06**00A1 PLAH06**00A1	1.718 [43.64]
PLA08**00A1 PLAH08**00A1	2.112 [53.64]

See page 56
for Installation Tooling.

Plating- See ordering information for
contact plating options.
For connection systems 1, 4 and 6.

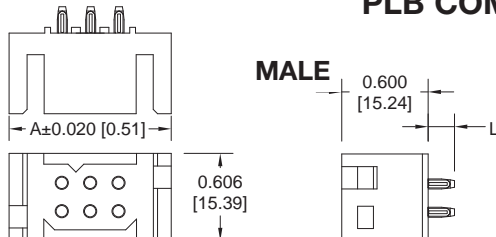
NOTE: Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board. Mounting screws can be supplied with connectors using step 5 in ordering information on page 26. Mounting screws can also be ordered separately by part number. See page 59.



Typical part number:
PLA03F93ST30A1
PLAH03F93ST30A1

CONTACT CODE	L	PCB THICKNESS
92	0.183 [4.65]	0.093 [2.36]
93	0.218 [5.54]	0.125 [3.18]

PLB COMPLIANT PRESS-IN CONNECTORS CODE 92 OR CODE 93



Typical part number:
PLB06M93ST30A1
PLBH06M93ST30A1

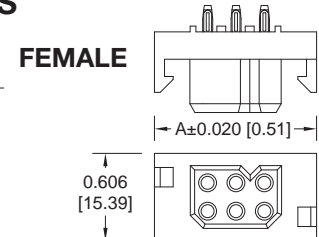
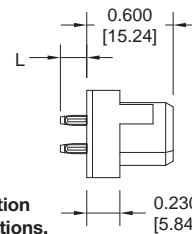
**Asterisks determine
gender of connector,
M for male,
F for female and
contact code 92 or 93.

PART NUMBER	A
PLB06**00A1 PLBH06**00A1	1.126 [28.60]
PLB08**00A1 PLBH08**00A1	1.324 [33.63]
PLB12**00A1 PLBH12**00A1	1.718 [43.64]
PLB16**00A1 PLBH16**00A1	2.112 [53.64]
PLB20**00A1 PLBH20**00A1	2.506 [63.65]

See page 56
for Installation Tooling.

Plating- See ordering information for
contact plating options.
For connection systems 1, 4 and 6.

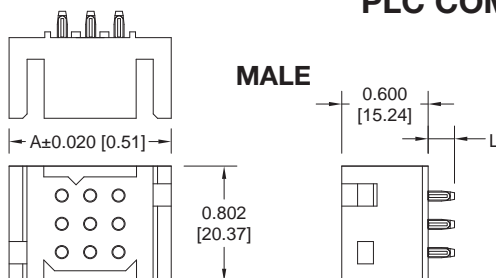
NOTE: Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board. Mounting screws can be supplied with connectors using step 5 in ordering information on page 26. Mounting screws can also be ordered separately by part number. See page 59.



Typical part number:
PLB06F93ST30A1
PLBH06F93ST30A1

CONTACT CODE	L	PCB THICKNESS
92	0.183 [4.65]	0.093 [2.36]
93	0.218 [5.54]	0.125 [3.18]

PLC COMPLIANT PRESS-IN CONNECTORS CODE 92 OR CODE 93



Typical part number:
PLC09M93ST30A1
PLCH09M93ST30A1

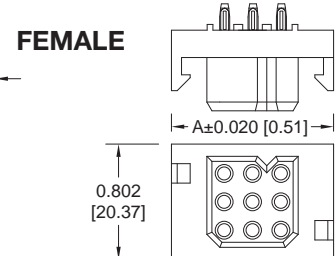
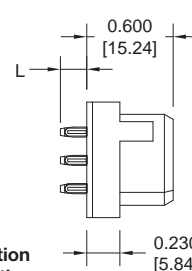
**Asterisks determine
gender of connector,
M for male,
F for female and
contact code 92 or 93.

PART NUMBER	A
PLC09**00A1 PLCH09**00A1	1.126 [28.60]
PLC12**00A1 PLCH12**00A1	1.324 [33.63]
PLC18**00A1 PLCH18**00A1	1.718 [43.64]
PLC24**00A1 PLCH24**00A1	2.112 [53.64]
PLC30**00A1 PLCH30**00A1	2.506 [63.65]

See page 56
for Installation Tooling.

Plating- See ordering information for
contact plating options.
For connection systems 1, 4 and 6.

NOTE: Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board. Mounting screws can be supplied with connectors using step 5 in ordering information on page 26. Mounting screws can also be ordered separately by part number. See page 59.

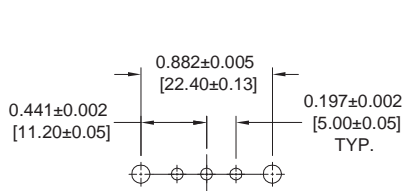


Typical part number:
PLC09F93ST30A1
PLCH09F93ST30A1

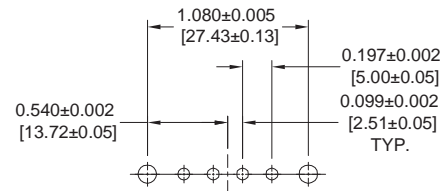
CONTACT CODE	L	PCB THICKNESS
92	0.183 [4.65]	0.093 [2.36]
93	0.218 [5.54]	0.125 [3.18]



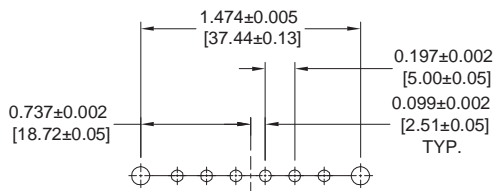
STRAIGHT SOLDER AND COMPLIANT CONTACT HOLE PATTERN



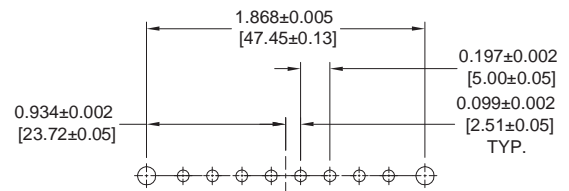
PLA 03



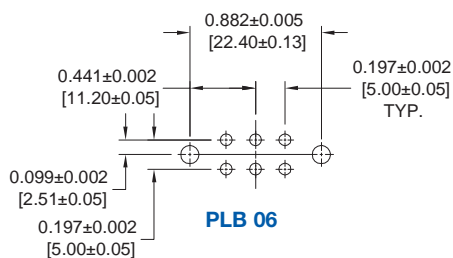
PLA 04



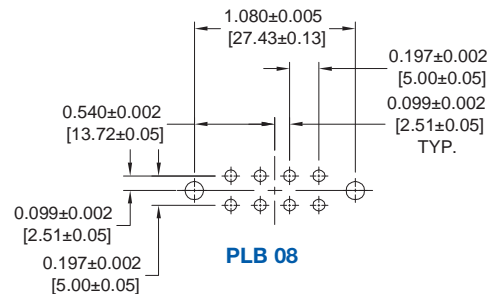
PLA 06



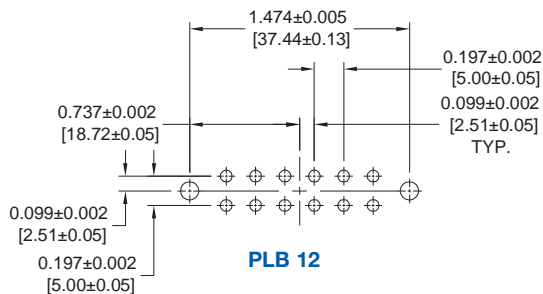
PLA 08



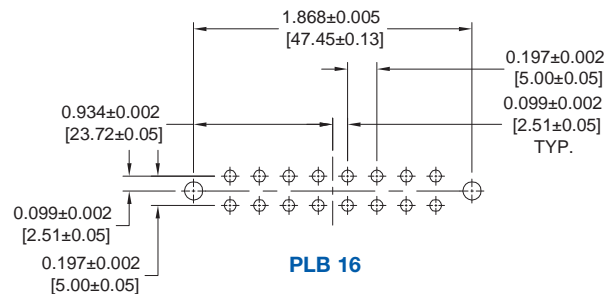
PLB 06



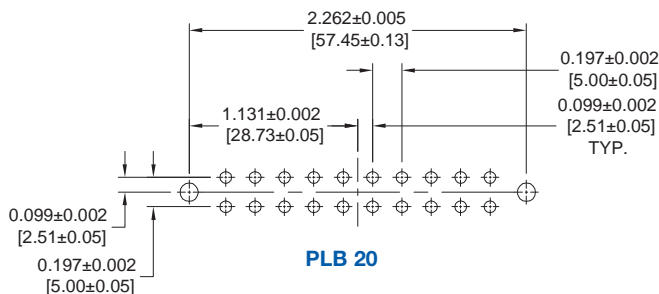
PLB 08



PLB 12



PLB 16



PLB 20

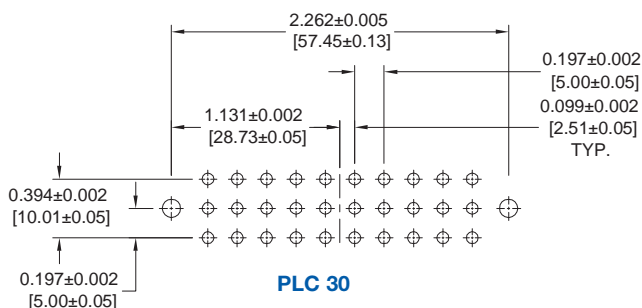
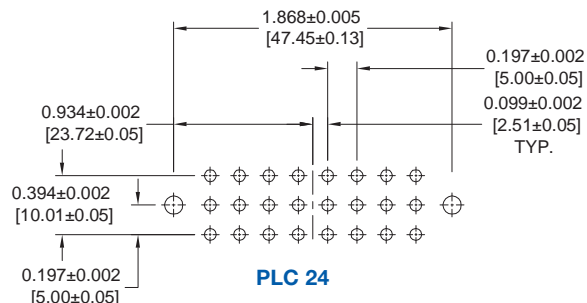
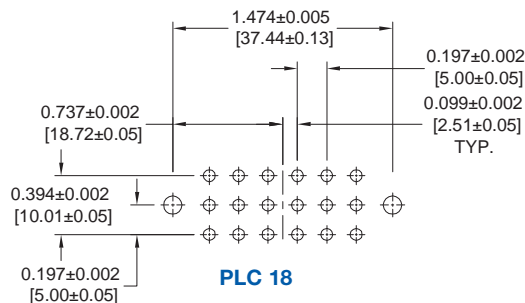
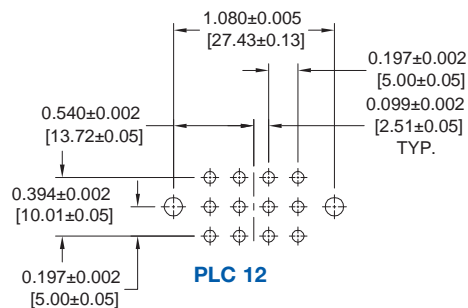
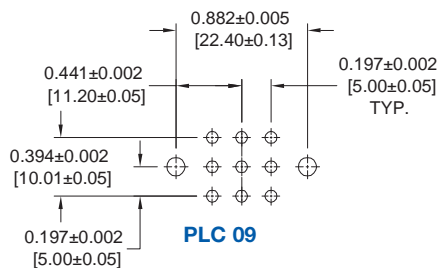
SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.080 [2.03] Ø holes in printed board for solder contact termination positions.

Suggest 0.100 [2.54] Ø holes in printed board when mounting connectors with # 2 thread forming screws.

Suggest 0.123±0.003 [3.15±0.08] Ø holes in printed board when mounting connector with push-on fasteners.

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.080 [2.03] Ø holes in printed board for solder contact termination positions.

Suggest 0.100 [2.54] Ø holes in printed board when mounting connectors with # 2 thread forming screws.

Suggest 0.123±0.003 [3.15±0.08] Ø holes in printed board when mounting connector with push-on fasteners.

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

Connectors Designed To Customer Specifications

Positronic's PLA(H), PLB(H), PLC(H) and PLS(H) series connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware.

Positronic can develop and tool new connector designs with reasonable price and delivery.

Contact Technical Sales with your particular requirements.

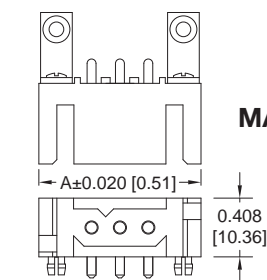


Positronic
connectpositronic.com

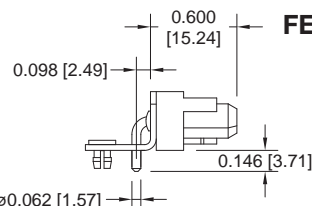
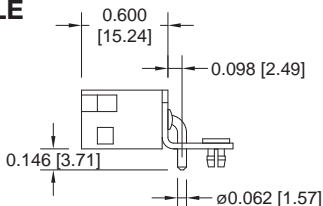
RIGHT ANGLE (90°) SOLDER PRINTED BOARD CONNECTOR

Power
Connection
Systems

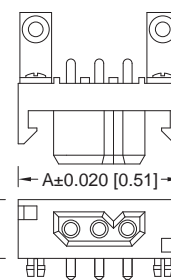
PLA RIGHT ANGLE (90°) PRINTED BOARD MOUNT CODE 4, 0.146 [3.71] CONTACT EXTENSION



MALE



FEMALE



Typical part number:
PLA03M4BN0A1
PLAH03M4BN0A1

Typical part number:
PLA03F4BN0A1
PLAH03F4BN0A1

NOTE: MOUNTING SCREWS
CAN BE ORDERED
SEPARATELY BY PART
NUMBER WHEN CHOOSING
B3 BRACKETS. SEE PAGE 59.

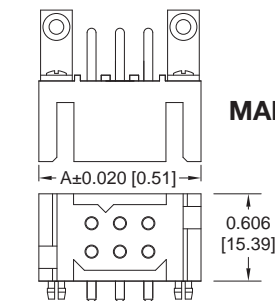
Plating- See ordering information for
contact plating options.

For connection systems 1, 2 and 5.

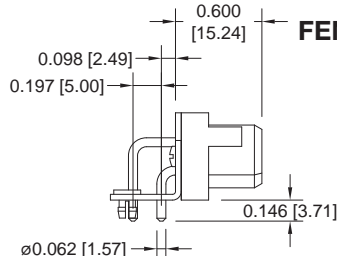
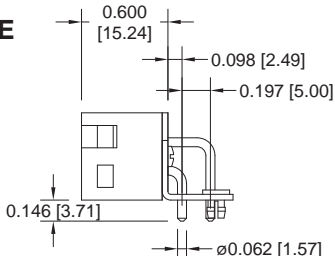
PART NUMBER	A	PART NUMBER	A
PLA03*400A1	1.126 [28.60]	PLA06*400A1	1.718 [43.64]
PLAH03*400A1	1.324 [33.63]	PLAH06*400A1	2.112 [53.64]
PLA04*400A1	1.324 [33.63]	PLA08*400A1	2.112 [53.64]
PLAH04*400A1	1.324 [33.63]	PLAH08*400A1	2.112 [53.64]

*Asterisk determines gender of connector,
M for male, F for female.

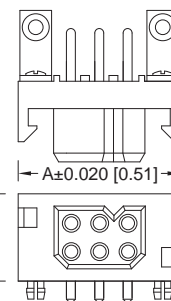
PLB RIGHT ANGLE (90°) PRINTED BOARD MOUNT CODE 4, 0.146 [3.71] CONTACT EXTENSION



MALE



FEMALE



Typical part number:
PLB06M4BN0A1
PLBH06B4BN0A1

Typical part number:
PLB06F4BN0A1
PLBH06F4BN0A1

NOTE: MOUNTING SCREWS
CAN BE ORDERED
SEPARATELY BY PART
NUMBER WHEN CHOOSING
B3 BRACKETS. SEE PAGE 59.

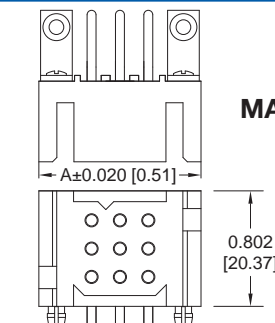
Plating- See ordering information for
contact plating options.

For connection systems 1, 2 and 5.

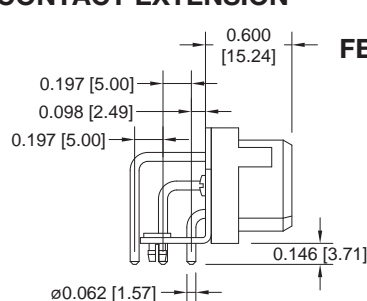
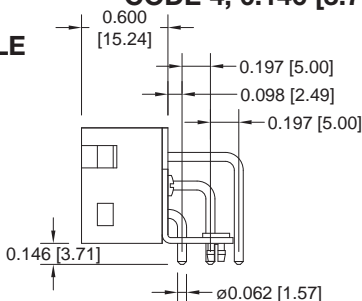
PART NUMBER	A	PART NUMBER	A
PLB06*400A1	1.126 [28.60]	PLB16*400A1	2.112 [53.64]
PLBH06*400A1	1.324 [33.63]	PLBH16*400A1	2.506 [63.65]
PLB08*400A1	1.324 [33.63]	PLB20*400A1	2.506 [63.65]
PLBH08*400A1	1.324 [33.63]	PLBH20*400A1	2.506 [63.65]
PLB12*400A1	1.718 [43.64]		
PLBH12*400A1	1.718 [43.64]		

*Asterisk determines gender of connector,
M for male, F for female.

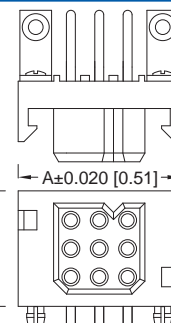
PLC RIGHT ANGLE (90°) PRINTED BOARD MOUNT CODE 4, 0.146 [3.71] CONTACT EXTENSION



MALE



FEMALE



Typical part number:
PLC09M4BN0A1
PLCH09M4BN0A1

Typical part number:
PLC09F4BN0A1
PLCH09F4BN0A1

NOTE: MOUNTING SCREWS
CAN BE ORDERED
SEPARATELY BY PART
NUMBER WHEN CHOOSING
B3 BRACKETS. SEE PAGE 59.

Plating- See ordering information for
contact plating options.

For connection systems 1, 2 and 5.

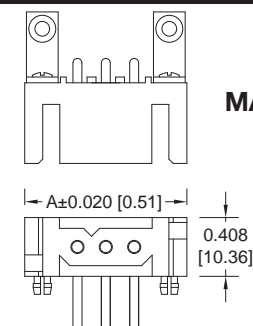
PART NUMBER	A	PART NUMBER	A
PLC09*400A1	1.126 [28.60]	PLC24*400A1	2.112 [53.64]
PLCH09*400A1	1.324 [33.63]	PLCH24*400A1	2.506 [63.65]
PLC12*400A1	1.324 [33.63]	PLC30*400A1	2.506 [63.65]
PLCH12*400A1	1.324 [33.63]	PLCH30*400A1	2.506 [63.65]
PLC18*400A1	1.718 [43.64]		
PLCH18*400A1	1.718 [43.64]		

*Asterisk determines gender of connector,
M for male, F for female.

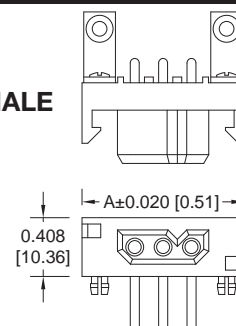
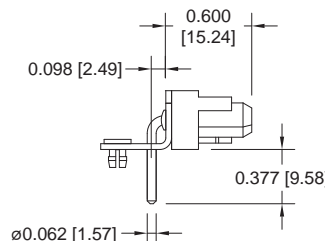
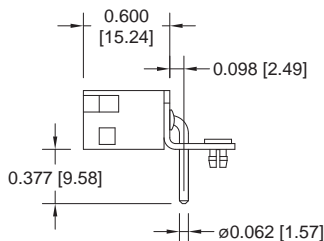
PLA RIGHT ANGLE (90°) PRINTED BOARD MOUNT CODE 42, 0.377 [9.58] CONTACT EXTENSION

MALE

FEMALE



Typical part number:
PLA03M42BN0A1
PLAH03M42BN0A1



Typical part number:
PLA03F42BN0A1
PLAH03F42BN0A1

NOTE: MOUNTING SCREWS
CAN BE ORDERED
SEPARATELY BY PART
NUMBER WHEN CHOOSING
B3 BRACKETS. SEE PAGE 59.

PART NUMBER	A	PART NUMBER	A
PLA03*4200A1 PLAH03*4200A1	1.126 [28.60]	PLA06*4200A1 PLAH06*4200A1	1.718 [43.64]
PLA04*4200A1 PLAH04*4200A1	1.324 [33.63]	PLA08*4200A1 PLAH08*4200A1	2.112 [53.64]

Plating- See ordering information for
contact plating options.

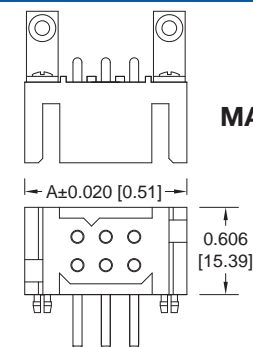
For connection systems 1, 2, 3 and 5.

*Asterisk determines gender of
connector, M for male, F for female.

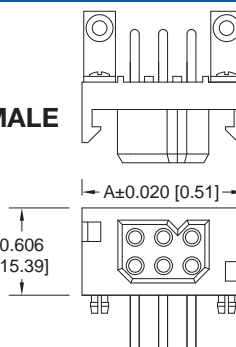
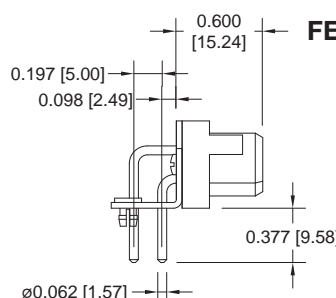
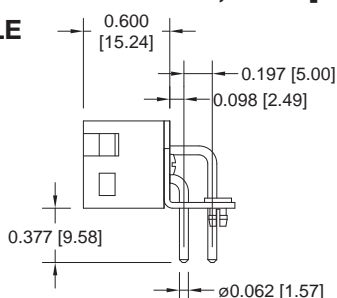
PLB RIGHT ANGLE (90°) PRINTED BOARD MOUNT CODE 42, 0.377 [9.58] CONTACT EXTENSION

MALE

FEMALE



Typical part number:
PLB06M42BN0A1
PLBH06M42BN0A1



Typical part number:
PLB06F42BN0A1
PLBH06F42BN0A1

Plating- See ordering information for
contact plating options.

For connection systems 1, 2, 3 and 5.

*Asterisk determines gender of
connector, M for male, F for female.

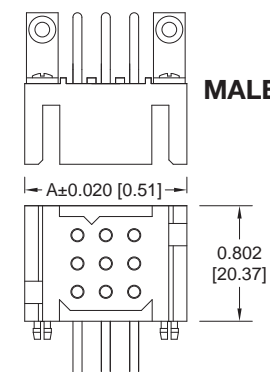
PART NUMBER	A	PART NUMBER	A
PLB06*4200A1 PLBH06*4200A1	1.126 [28.60]	PLB16*4200A1 PLBH16*4200A1	2.112 [53.64]
PLB08*4200A1 PLBH08*4200A1	1.324 [33.63]	PLB20*4200A1 PLBH20*4200A1	2.506 [63.65]
PLB12*4200A1 PLBH12*4200A1	1.718 [43.64]		

NOTE: MOUNTING SCREWS
CAN BE ORDERED
SEPARATELY BY PART
NUMBER WHEN CHOOSING
B3 BRACKETS. SEE PAGE 59.

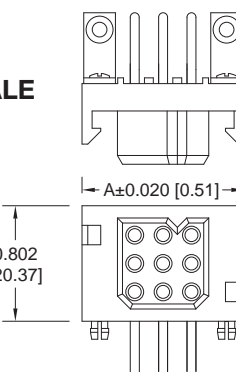
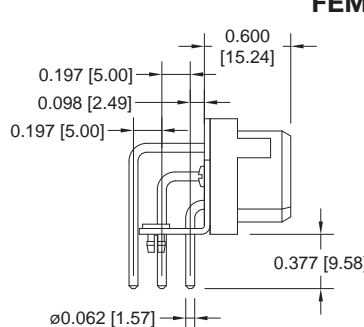
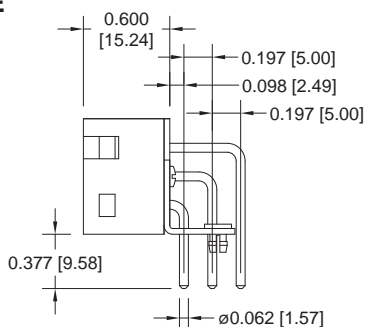
PLC RIGHT ANGLE (90°) PRINTED BOARD MOUNT CODE 42, 0.377 [9.58] CONTACT EXTENSION

MALE

FEMALE



Typical part number:
PLC09M42BN0A1
PLCH09M42BN0A1



Typical part number:
PLC09F42BN0A1
PLCH09F42BN0A1

Plating- See ordering information for
contact plating options.

For connection systems 1, 2, 3 and 5.

PART NUMBER	A	PART NUMBER	A
PLC09*4200A1 PLCH09*4200A1	1.126 [28.60]	PLC24*4200A1 PLCH24*4200A1	2.112 [53.64]
PLC12*4200A1 PLCH12*4200A1	1.324 [33.63]	PLC30*4200A1 PLCH30*4200A1	2.506 [63.65]
PLC18*4200A1 PLCH18*4200A1	1.718 [43.64]		

*Asterisk determines gender of connector,
M for male, F for female.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

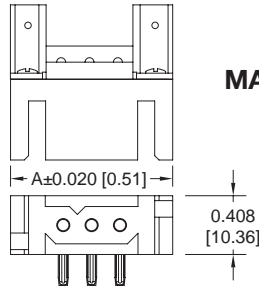
RIGHT ANGLE (90°) PRESS-IN CONNECTOR FOR USE WITH "FLAT ROCK" TOOLING

Power
Connection
Systems

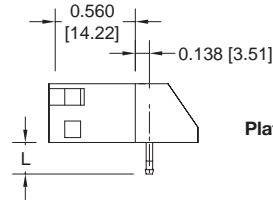
PLA RIGHT ANGLE (90°) PRESS-IN CONNECTOR

CODE 62 OR CODE 63

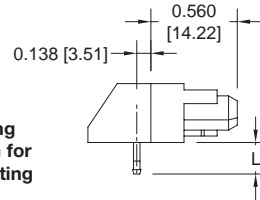
For connection systems 1, 2 and 5.



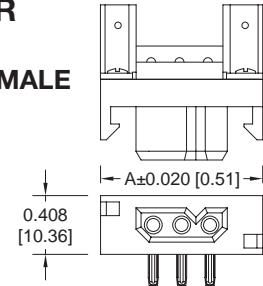
MALE



Plating- See ordering
information for
contact plating
options.



FEMALE



Typical part number:
PLA03M63B30A1
PLAH03M63B30A1

Typical part number:
PLA03F63B30A1
PLAH03F63B30A1

NOTE: Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board. Mounting screws are ordered separately by part number. See page 59.

PART NUMBER	A	PART NUMBER	A
PLA03**B30A1	1.126 [28.60]	PLA06**B30A1	1.718 [43.64]
PLAH03**B30A1	1.324 [33.63]	PLAH06**B30A1	2.112 [53.64]
PLA04**B30A1	1.324 [33.63]	PLA08**B30A1	2.112 [53.64]
PLAH04**B30A1	1.324 [33.63]	PLAH08**B30A1	2.112 [53.64]

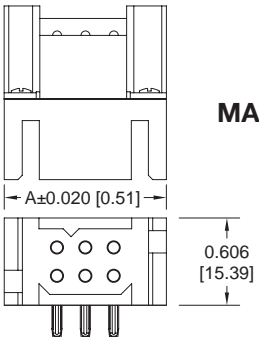
**Asterisk determines gender of connector, M for male, F for female, and contact code 62 or 63.

CONTACT CODE	L	PCB THICKNESS
62	0.183 [4.65]	0.093 [2.36]
63	0.219 [5.56]	0.125 [3.18]

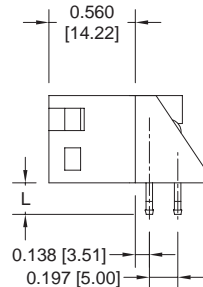
PLB RIGHT ANGLE (90°) PRESS-IN CONNECTOR

CODE 62 OR CODE 63

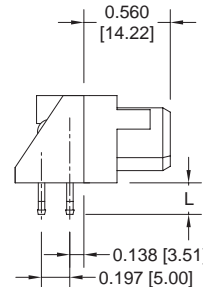
For connection systems 1, 2 and 5.



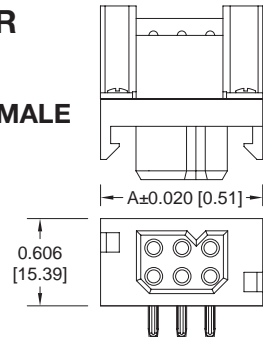
MALE



Plating- See ordering
information for
contact plating
options.



FEMALE



Typical part number:
PLB06M63B30A1
PLBH06M63B30A1

Typical part number:
PLB06F63B30A1
PLBH06F63B30A1

NOTE: Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board. Mounting screws are ordered separately by part number. See page 59.

PART NUMBER	A	PART NUMBER	A
PLB06**B30A1	1.126 [28.60]	PLB12**B30A1	1.718 [43.64]
PLBH06**B30A1	1.324 [33.63]	PLBH12**B30A1	2.112 [53.64]
PLB08**B30A1	1.324 [33.63]	PLB16**B30A1	2.112 [53.64]
PLBH08**B30A1	1.324 [33.63]	PLBH16**B30A1	2.112 [53.64]

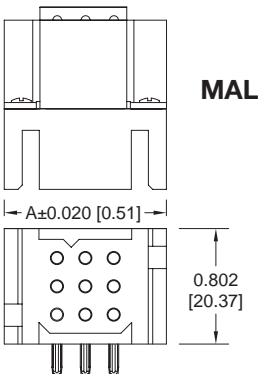
**Asterisk determines gender of connector, M for male, F for female, and contact code 62 or 63.

CONTACT CODE	L	PCB THICKNESS
62	0.183 [4.65]	0.093 [2.36]
63	0.219 [5.56]	0.125 [3.18]

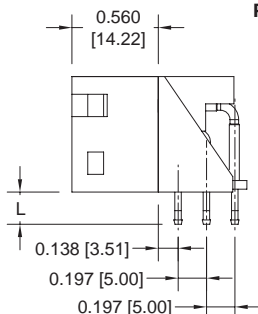
PLC RIGHT ANGLE (90°) PRESS-IN CONNECTOR

CODE 62 OR CODE 63

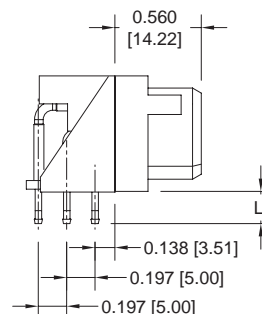
For connection systems 1, 2 and 5.



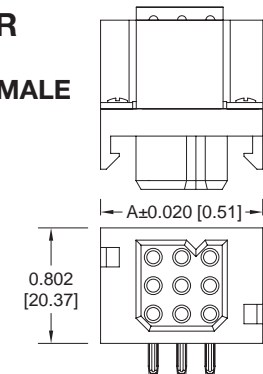
MALE



Plating- See ordering
information for
contact plating
options.



FEMALE



Typical part number:
PLC09M63B30A1
PLCH09M63B30A1

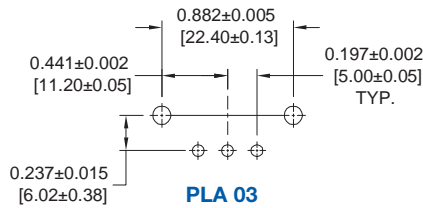
Typical part number:
PLC09F63B30A1
PLCH09F63B30A1

NOTE: Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board. Mounting screws are ordered separately by part number. See page 59.

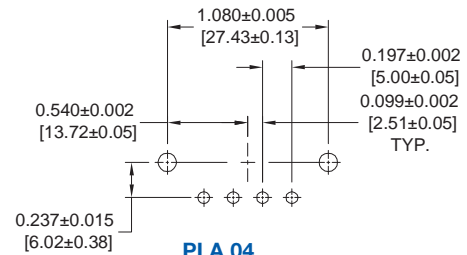
PART NUMBER	A	PART NUMBER	A
PLC09**B30A1	1.126 [28.60]	PLC24**B30A1	2.112 [53.64]
PLCH09**B30A1	1.324 [33.63]	PLCH24**B30A1	2.506 [63.65]
PLC12**B30A1	1.324 [33.63]	PLC30**B30A1	2.506 [63.65]
PLCH12**B30A1	1.324 [33.63]	PLCH30**B30A1	2.506 [63.65]
PLC18**B30A1	1.718 [43.64]		
PLCH18**B30A1	1.718 [43.64]		

**Asterisk determines gender of connector, M for male, F for female, and contact code 62 or 63.

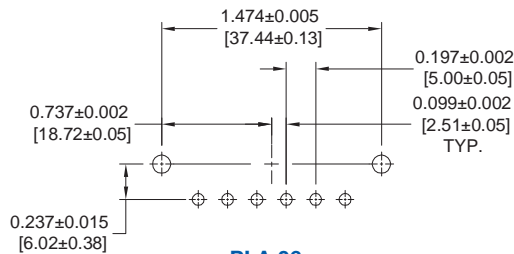
CONTACT CODE	L	PCB THICKNESS
62	0.183 [4.65]	0.093 [2.36]
63	0.219 [5.56]	0.125 [3.18]



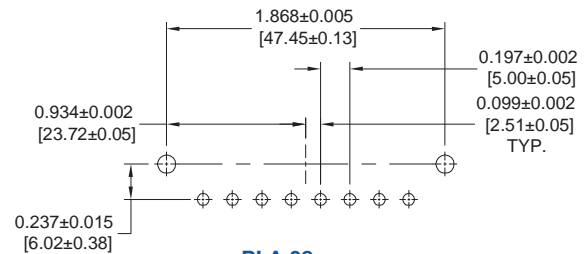
PLA 03



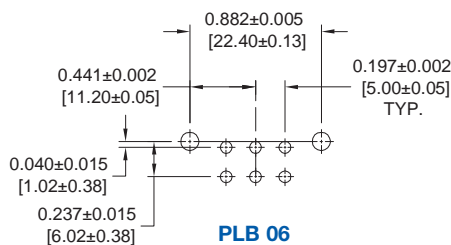
PLA 04



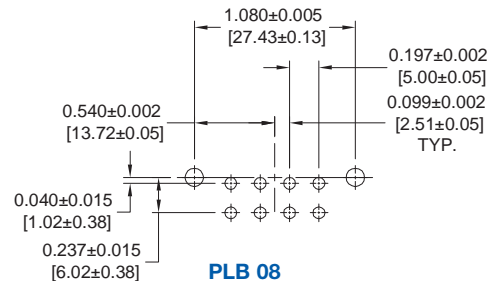
PLA 06



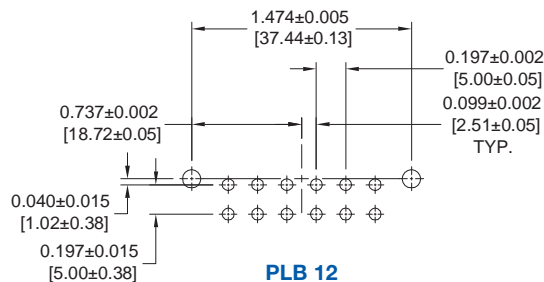
PLA 08



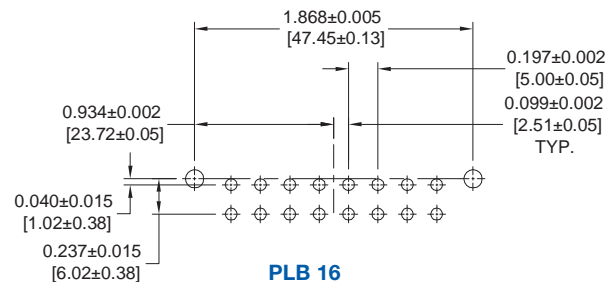
PLB 06



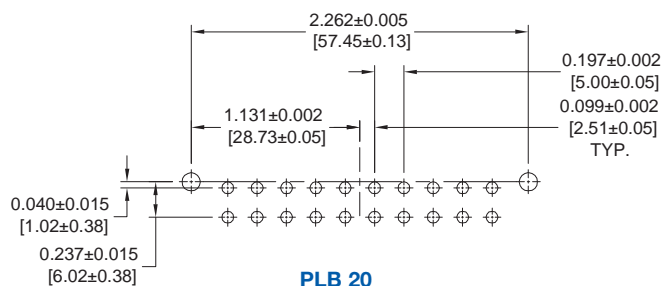
PLB 08



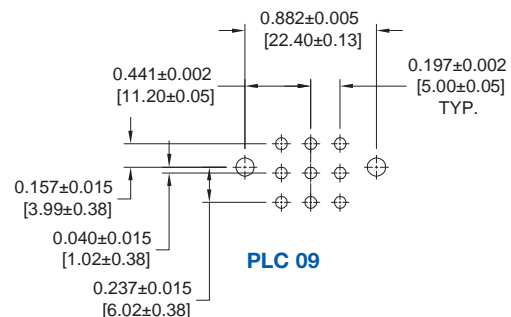
PLB 12



PLB 16



PLB 20



PLC 09

See page 20 for suggested printed board hole sizes.

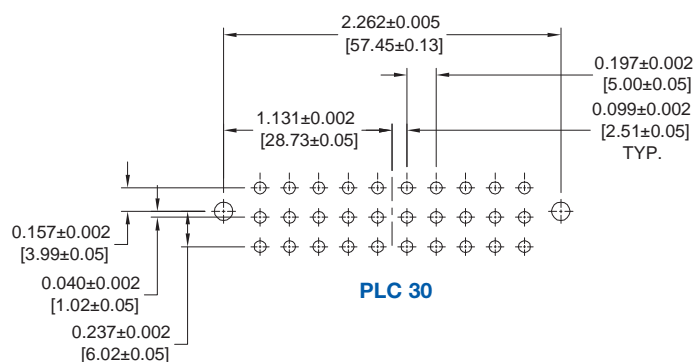
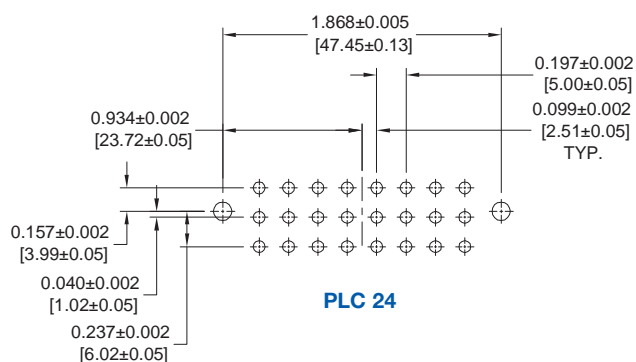
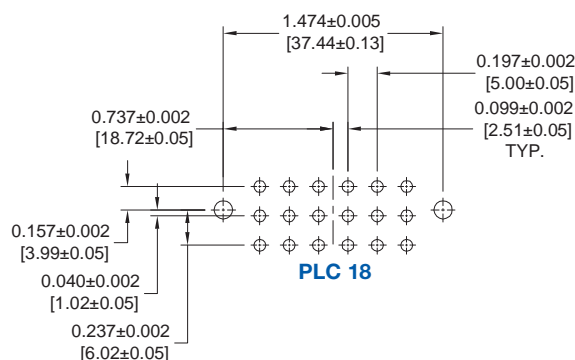
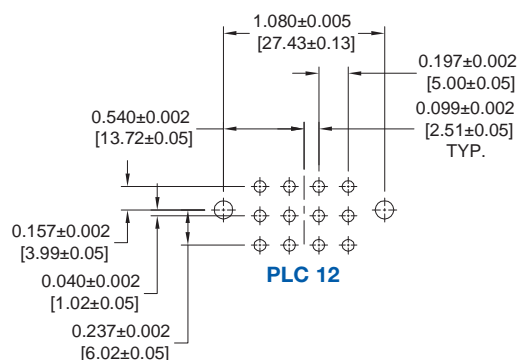
DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN AND PANEL MOUNT CONNECTOR WITH SOLDER CUP CONTACTS

Power
Connection
Systems



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.080 [2.03] Ø holes in printed board for solder contact termination positions.

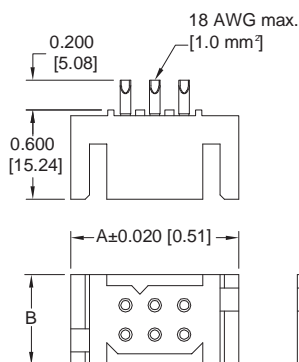
Suggest 0.123±0.003 [3.15±0.08] Ø holes in printed board when mounting connector with push-on fasteners.

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

PANEL MOUNT CONNECTORS WITH SOLDER CUP CONTACTS

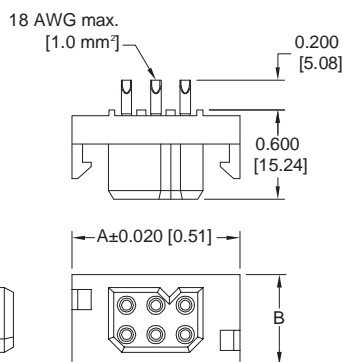
CODE 2, 18 AWG [1.00mm²] MAX.

MALE



For connection system 8.

FEMALE



TYPICAL PART NUMBER:
PLB06M200A1

TYPICAL PART NUMBER:
PLB06F200A1

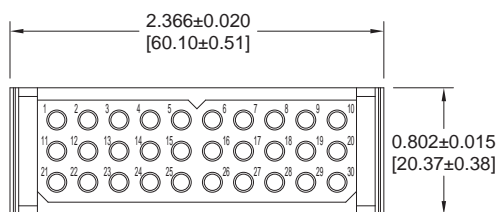
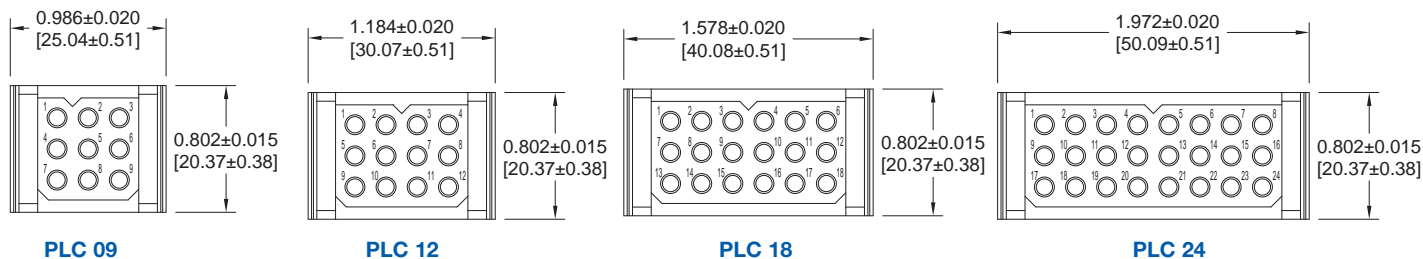
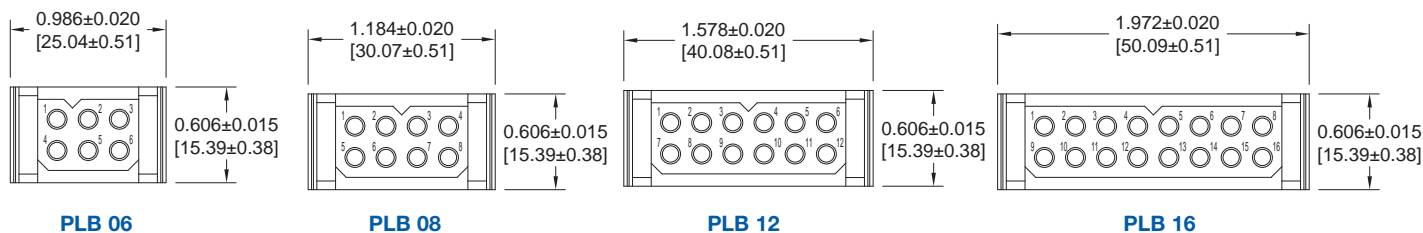
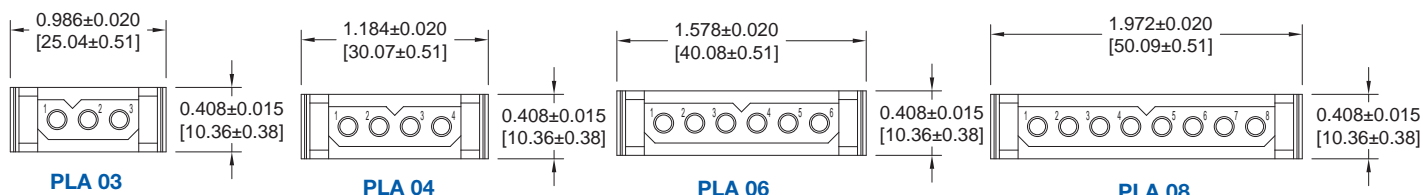
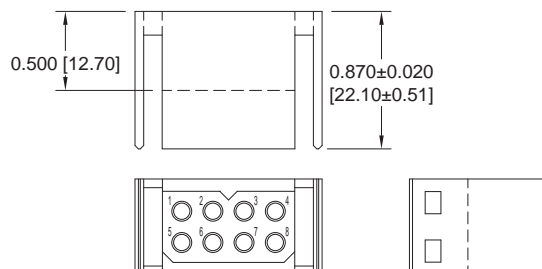
NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 26. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

CONNECTOR VARIANTS	A	B
PLA03	1.126 [28.60]	0.408 [10.36]
PLA04	1.324 [33.63]	0.408 [10.36]
PLA06	1.718 [43.64]	0.408 [10.36]
PLA08	2.112 [53.64]	0.408 [10.36]
PLB06	1.126 [28.60]	0.606 [15.39]
PLB08	1.324 [33.63]	0.606 [15.39]
PLB12	1.718 [43.64]	0.606 [15.39]
PLB16	2.112 [53.64]	0.606 [15.39]
PLB20	2.506 [63.65]	0.606 [15.39]
PLC09	1.126 [28.60]	0.802 [30.37]
PLC12	1.324 [33.63]	0.802 [30.37]
PLC18	1.718 [43.64]	0.802 [30.37]
PLC24	2.112 [53.64]	0.802 [30.37]
PLC30	2.506 [63.65]	0.802 [30.37]

MALE INSULATOR DIMENSIONS FOR CABLE CONNECTORS WITH SIZE 16 REMOVABLE CONTACTS

CODE 0 OR CODE 7

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



PLC 30

*For information regarding
size 16 removable contacts,
see Removable Contact section,
pages 47-53.*



Positronic
connectpositronic.com

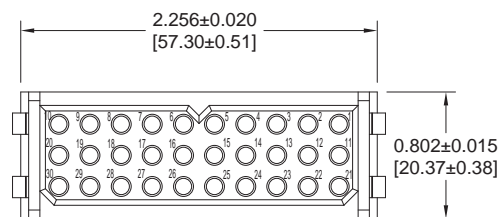
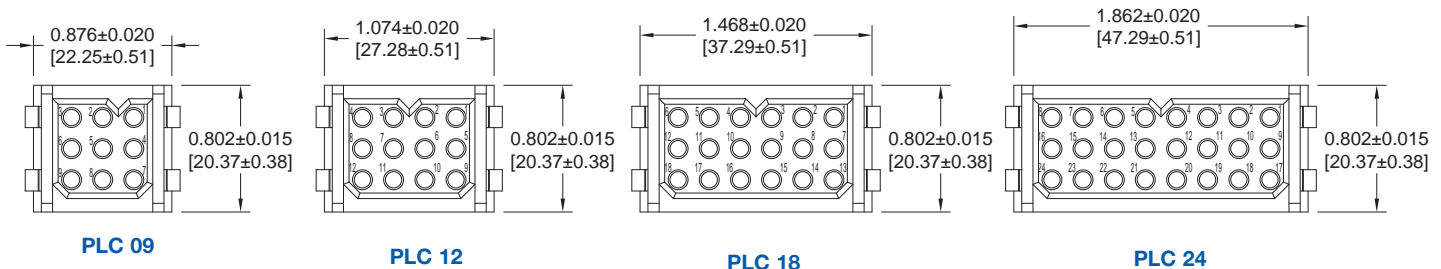
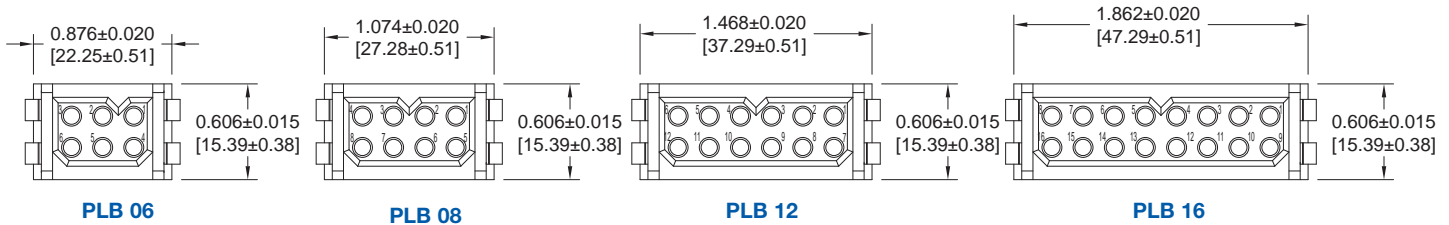
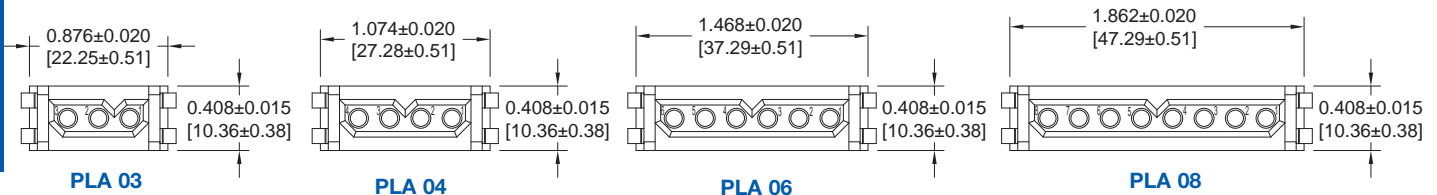
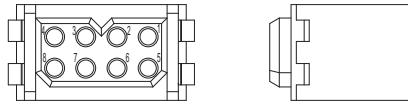
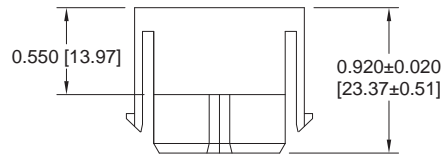
FEMALE INSULATOR DIMENSIONS FOR CABLE CONNECTORS

Power
Connection
Systems

FEMALE INSULATOR DIMENSIONS FOR CABLE CONNECTORS WITH SIZE 16 REMOVABLE CONTACTS

CODE 0 OR CODE 7

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



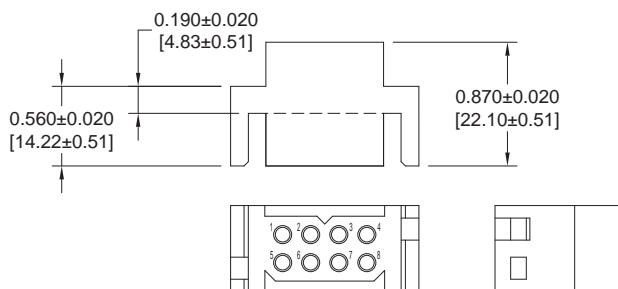
PLC 30

*For information regarding
size 16 removable contacts,
see Removable Contact section,
pages 47-53.*

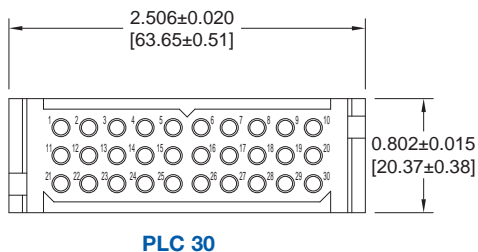
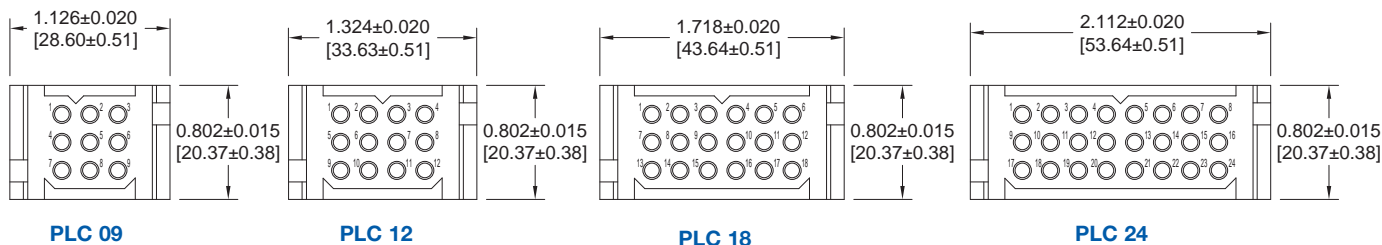
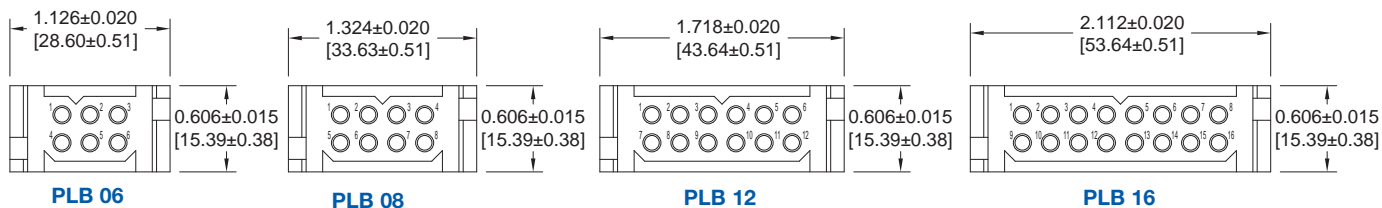
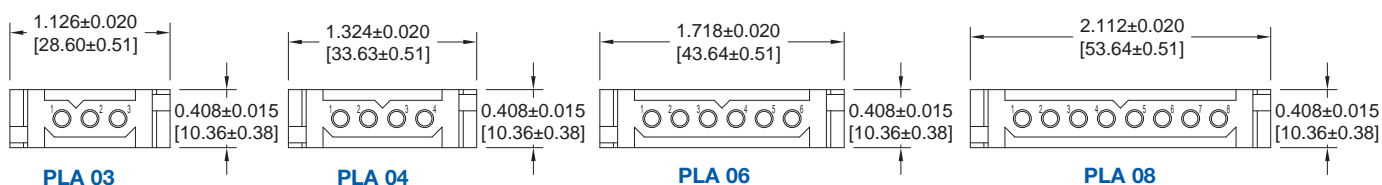
MALE INSULATOR DIMENSIONS FOR PANEL MOUNT CONNECTORS WITH SIZE 16 REMOVABLE CONTACTS

CODE 1 OR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 26. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.



For information
regarding panel
cutouts, see
page 63.

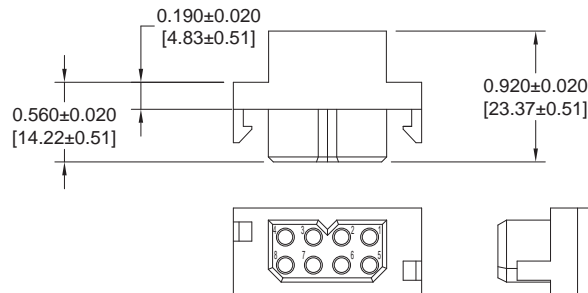
*For information regarding
size 16 removable contacts,
see Removable Contact section,
pages 47-53.*



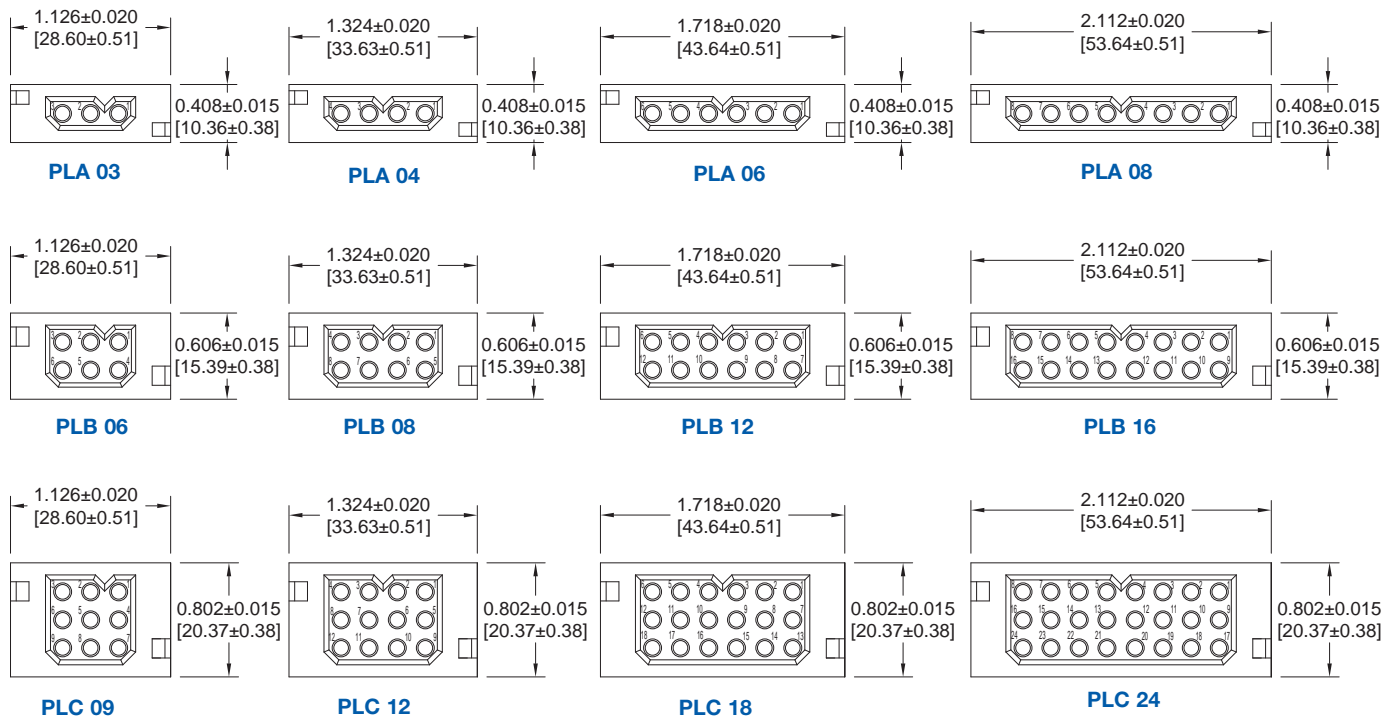
FEMALE INSULATOR DIMENSIONS FOR PANEL MOUNT CONNECTORS WITH SIZE 16 REMOVABLE CONTACTS

CODE 1 OR CODE 8

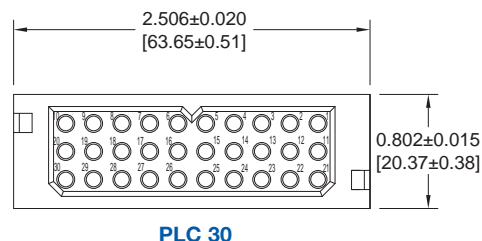
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 26. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.



For information regarding panel cutouts, see page 63.

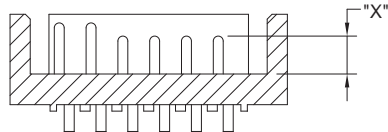
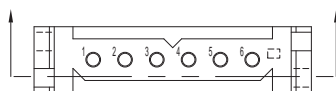


For information regarding size 16 removable contacts, see Removable Contact section, pages 47-53.

SEQUENTIAL MATING SYSTEM

*REMOVABLE CONTACTS FOR CABLE CONNECTORS MUST BE ORDERED SEPARATELY
FOR CONTACT SELECTION, SEE SIZE 16 CONTACTS ON PAGE 49

EXAMPLE 1

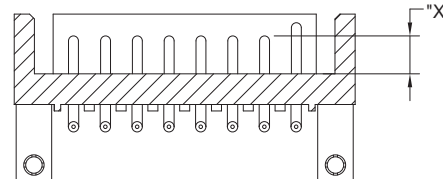
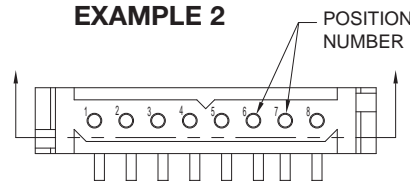


Typical Part Number:
PLA06M300A1-E1B2B

LENGTH CODE	"X" CONTACT LENGTH
A	0.370 [9.40]
B	0.330 [8.38]
C	0.310 [7.87]
D	0.290 [7.37]
E	0.250 [6.35]

MATING CONNECTOR TYPE	CONTACT OPTIONS
Board to Board	B, D, E
Board to Cable*	A, C, E
Cable to Cable*	A, D

EXAMPLE 2



Typical Part Number:
PLA08M4B0C1-D8B

SEQUENTIAL MATING SYSTEM

CRIMP REMOVABLE CONTACT PART NUMBERS

WIRE SIZE AWG/[mm ²]	LENGTH CODE "A"	LENGTH CODE "C"	LENGTH CODE "D"	LENGTH CODE "E"
12 - 14 [4.0 - 2.5]	MC112N-133.3	MC112N-133.2	MC112N-133.1	MC112N-133.0
16 - 18 - 20 [1.5 - 1.0 - 0.5]	MC116N-133.3	MC116N-133.2	MC116N-133.1	MC116N-133.0

*For information regarding
size 16 removable contacts,
see Removable Contact section,
pages 47-53.*

SELECTION GUIDE FOR ORDERING DIFFERENT CONTACT LENGTHS

STEP 9 OF ORDERING INFORMATION

SELECT CONNECTOR USING ORDERING INFORMATION ON PAGE 26
THEN CHOOSE STEPS BELOW FOR SEQUENTIAL MATING SYSTEM CONTACTS

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	E	1	B	2	B	3	D	4	D

STEP 1

Specify code for most frequently used contact mating length. This length is used for all contacts not specified in steps 2 through 9.

STEP 2

Position number for first special length contact.

STEP 3

Length of contact specified in step 2. (Choose from length code chart)

STEP 4

Position number for second special length contact.

STEP 9

Length of contact specified in step 8 (Choose from length code chart).

STEP 8

Position number for fourth special length contact.

STEP 7

Length of contact specified in step 6 (Choose from length code chart).

STEP 6

Position number for third special length contact.

STEP 5

Length of contact specified in step 4 (Choose from length code chart).



Positronic
connectpositronic.com

PCS SERIES CONNECTOR ORDERING INFORMATION

Power
Connection
Systems

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PLB	06	F	3	0	0	A1	/AA	—

STEP 1 - BASIC SERIES

PLA - 1 Row
PLAH - 1 Row High conductivity contacts
PLB - 2 Row
PLBH - 2 Row High conductivity contacts
PLC - 3 Row
PLCH - 3 Row High conductivity contacts

STEP 2 - CONNECTOR VARIANTS

1 Row - 03, 04, 06, 08
2 Row - 06, 08, 12, 16, *20
3 Row - 09, 12, 18, 24, 30

STEP 3 - CONNECTOR GENDER

M - Male
F - Female

STEP 4 - CONTACT TERMINATION TYPE

- *10 - Order contacts separately for cable connectors for connection systems 5, 6, 7, 8 and 9, see pages 47-53.
- *11 - Removable contact, panel mounted connector for connection system 8. Order contacts separately, see pages 47-53.
- 2 - Solder cup, 18 AWG [1.0mm²] max. for panel mount connector, for connection system 8. Not available as PL*H.
- 3 - Solder, Straight Printed Board Mount with 0.146 [3.71] tail extension for connection systems 1, 4 and 6.
- 32 - Solder, Straight Printed Board Mount with 0.377 [9.58] tail extension for connection system 3 and systems 1, 4 and 6.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 0.146 [3.71] tail extension for connection systems 1, 2 and 5.
- 42 - Solder, Right Angle (90°) Printed Board Mount with 0.377 [9.58] tail extension for connection system 3 and systems 1, 2 and 5.
- 62 - Press-in, compliant termination Right Angle (90°) Printed Board Mount, termination length 0.183 [4.65]. Must select "B3" in step 5.
- 63 - Press-in, compliant termination Right angle (90°) Printed Board Mount, termination length 0.219 [5.56]. Must select "B3" in step 5.
- *17 - Order contacts separately for cable connectors for connection systems 5, 6, 7, 8 and 9, see pages 47-53. Terminating side of insulator has 0.165 [4.19] ø c'bore for large wire sizes.
- *18 - Removable contact, panel mounted connector for connection system 8. Order contacts separately, see pages 47-53. Terminating side of insulator has 0.165 [4.19] ø c'bore for large wire sizes.
- 92 - Straight printed board mount, press-in, length 0.183 [4.65] for 0.093 inch [2.36] thick board.
- 93 - Straight printed board mount, press-in, length 0.218 [5.54] for 0.125 inch [3.18] thick board.

STEP 5 - MOUNTING STYLE

- 0 - None.
- B - Metal Right Angle (90°) Mounting Bracket.
- BN - Metal Right Angle (90°) Mounting Bracket with Push-on Fastener.
- B3 - Plastic Right Angle (90°) Mounting Bracket with Cross Bar.
- B3N - Plastic Right Angle (90°) Mounting Bracket with Cross Bar and Push-on Fastener.
- N - Push-On Fastener For Straight Printed Board Mount Connectors
- *ST2 - Self-tapping steel screws 2-28 x 0.250±0.030 [6.35±0.76] length for 0.093 [2.36] thick board.
- *ST3 - Self-tapping steel screws 2-28 x 0.312±0.030 [7.92±0.76] length for 0.125 [3.18] thick board.
- *ST4 - Self-tapping steel screws 2-28 x 0.375±0.030 [9.53±0.76] length for 0.175 [4.45] thick board.
- *SS2 - Self-tapping stainless steel screws 2-28 x 0.250±0.030 [6.35±0.76] length for 0.093 [2.36] thick board.
- *SS3 - Self-tapping stainless steel screws 2-28 x 0.312±0.030 [7.92±0.76] length for 0.125 [3.18] thick board.
- *SS4 - Self-tapping stainless steel screws 2-28 x 0.375±0.030 [9.53±0.76] length for 0.175 [4.45] thick board.

STEP 9 - SPECIAL OPTIONS

Sequential Mating Systems refer to page 25.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: PLB06F300A1

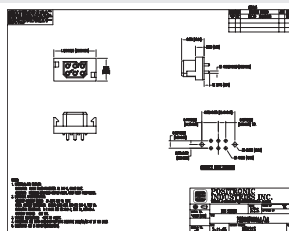
STEP 7 - CONTACT PLATING FOR PRINTED BOARD CONNECTORS

- 0 - Crimp Contacts ordered separately, see pages 47-53.
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 0.00020 inch [5.00µ] tin-lead solder coat on termination end. Not available with code 62, 63, 92 or 93 in step 4.
- C1 - 0.000030 inch [0.76µ] gold over nickel on mating end and termination end.
- C2 - 0.000030 inch [0.76µ] gold over nickel on mating end and 0.00020 inch [5.00µ] tin-lead solder coated termination end. Not available with code 62, 63, 92 or 93 in step 4.
- D1 - 0.000050 inch [1.27µ] gold over nickel on mating end and termination end.
- D2 - 0.000050 inch [1.27µ] gold over nickel on mating end and 0.00020 inch [5.00µ] tin-lead solder coated termination end. Not available with code 62, 63, 92 or 93 in step 4.

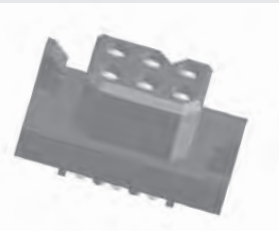
STEP 6 - HOODS AND PANEL MOUNT

- 0 - None.
- 5 - Top Opening Hood.
- 6 - Panel Mount, quick release.
- 81 - Panel Mount, fixed for 0.040 [1.02] thick panel.
- 82 - Panel Mount, fixed for 0.060 [1.52] thick panel.
- 83 - Panel Mount, fixed for 0.090 [2.29] thick panel.
- 11 - Blind Mating System for 0.040 [1.02] thick panel.
- 12 - Blind Mating System for 0.060 [1.52] thick panel.
- 13 - Blind Mating System for 0.090 [2.29] thick panel.
- 14 - Blind Mating System for 0.120 [3.05] thick panel.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-D IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

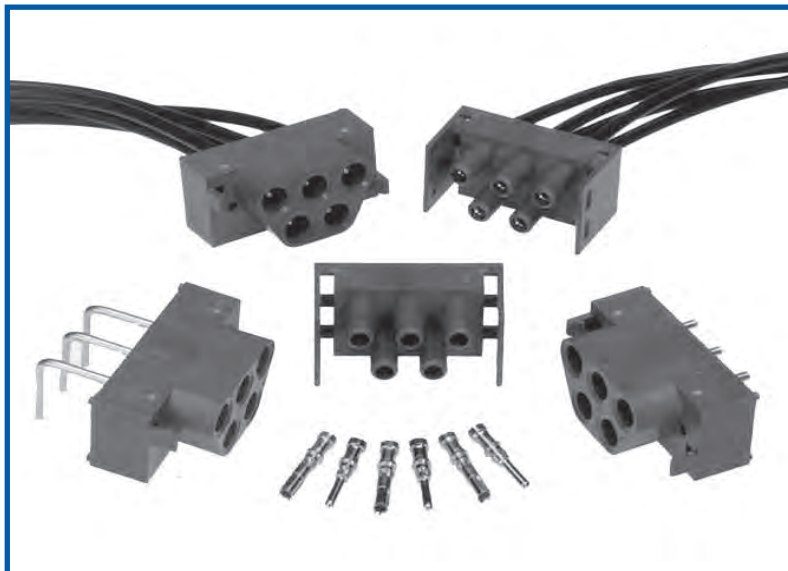
*1 For high conductivity removable contact connectors, order PLA, PLB, or PLC connectors (in Step 1) and *C112N(2)S contacts found on pages 49-51.

*2 PLB20 variant available with code 2, 3, 32, 4, 42, 92, and 93 only in Step 4.

*3 Mounting screws are available with code 1, 2, 3, 32, 8, 92 and 93. To order mounting screws separately, see page 59 for part numbers.

Safety Shrouded Connector to Prevent Unsafe Exposure to High Energy Circuits

- * Size 12 Power Contacts
- * Large Surface Area Mating System
- * Discriminating Locking System
- * Contact Current Rating to 40 Amperes
- * Board - Cable / Cable - Cable



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0. Contact technical sales for availability of high temperature insulator material.
Contacts:	Precision machined copper alloy with gold flash over nickel, or 0.000030 inch [0.76μ] gold over nickel, or 0.000050 [1.27μ] gold over nickel. Solder coated terminations optional.
Push-on Fastener:	Spring tempered copper alloy, tin plate.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	40 amperes continuous, derated per IEC 60512-3, test 5b. Higher currents available with high conductivity contacts, contact Technical Sales
Initial Contact Resistance:	0.001 ohms max. per IEC 60512-2, test 2b.
Insulation Resistance:	5 G ohms per IEC 60512-2, test 3a.
Voltage Proof:	3,000 minimum V r.m.s. per IEC 60512-2, test 4a, method A.
Clearance and Creepage Distance:	0.220 [5.60] minimum
Working Voltage:	600 minimum V. r.m.s.
Hot Pluggable [50 couplings per UL 1977 paragraph 15]:	250 VAC at 20 amperes
Working Temperature:	-55°C to +125°C Contact technical sales for availability of high temperature insulator material.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Rear insertion/ front release. Female contact features "Closed Entry" design for highest reliability. 0.094 [2.39] diameter male contact.
Removable Contact Retention in Insulator:	15 lbs. [67N] per IEC 60512-8, test 15a.
Fixed Contacts:	Printed board terminations, both straight and 90°. Female contact features "Closed Entry" design for highest reliability. 0.094 [2.39] diameter male contact.
Fixed Contact Retention in Insulator:	15 lbs. [67N], minimum.
Resistance to Soldering Iron Heat:	500°F [260°C] for 10 seconds duration per IEC 60512-6, test 12e, 25 watt soldering iron.
Contact Terminations:	Crimp removable contacts for wire size 12 AWG [4.0 mm ²]. Straight and right angle (90°) solder printed board mount, 0.090 [2.29] tail diameter.
Connection Systems:	Cable to cable, cable to printed board and cable to panel mount.
Locking System:	Insulators provide locking between cable to cable, cable to printed board and cable to panel mount applications.
Polarization:	Provided in insulator design.
Mounting to P.C. Board:	Rapid installation push-on fasteners.
Mechanical Operations:	500 operations

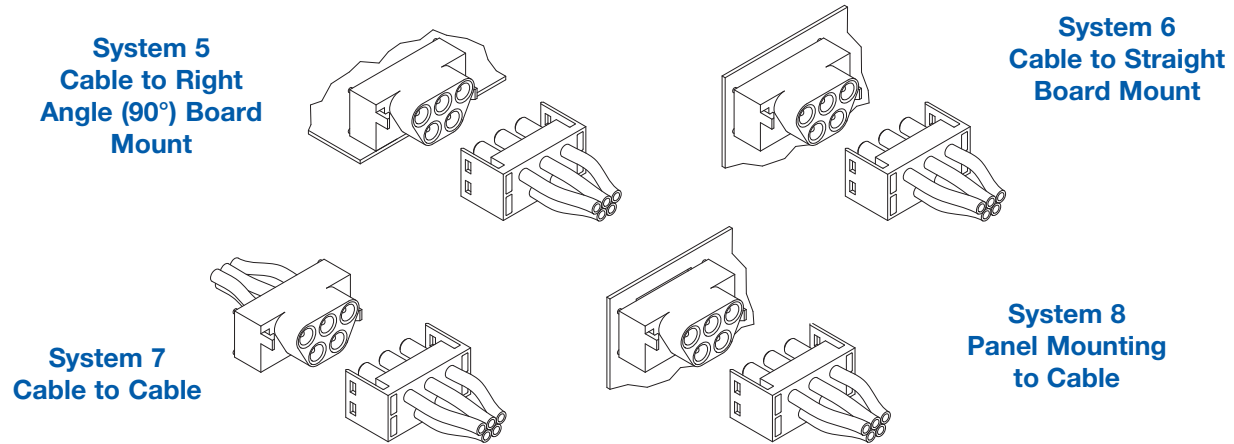


Positronic
connectpositronic.com

CONNECTION SYSTEMS AND CABLE CONNECTOR

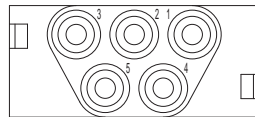
Power
Connection
Systems

CONNECTION SYSTEMS

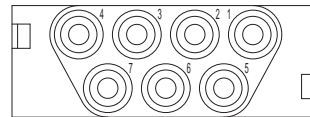


CONNECTOR VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE CONNECTOR



PLS5W5



PLS7W7

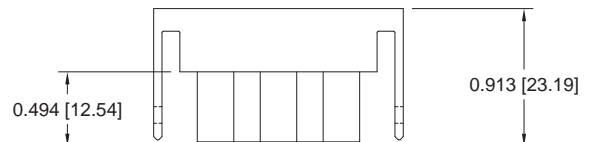
FEMALE CABLE CONNECTOR

FOR CABLE CONNECTORS WITH SIZE 12 REMOVABLE CONTACTS

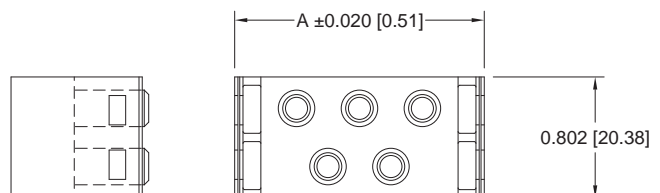
CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

PART NUMBER	A
PLS5W5F0000	1.655 [42.04]
PLS7W7F0000	2.072 [52.64]



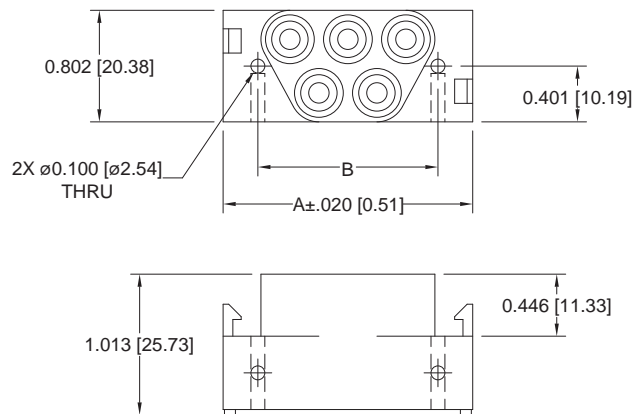
Typical part number:
PLS5W5F00000



For information regarding size 12 removable contacts, see Removable Contact section, pages 47-53.

MALE PANEL MOUNT CONNECTOR FOR PANEL MOUNT CONNECTORS WITH SIZE 12 REMOVABLE CONTACTS CODE 1

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



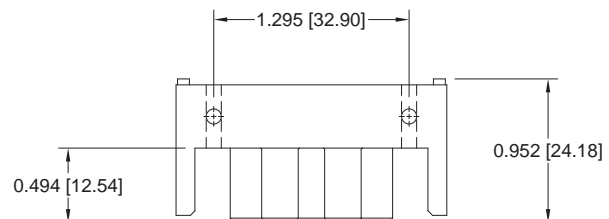
Typical part number:
PLS5W5M10000

PART NUMBER	A	B
PLS5W5M10000	1.795 [45.60]	1.295 [32.90]
PLS7W7M10000	2.213 [56.20]	1.713 [43.50]

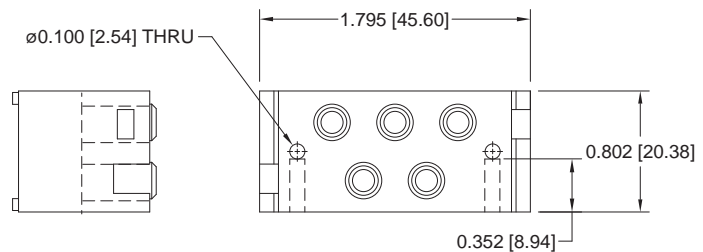
FEMALE PANEL MOUNT CONNECTOR FOR PANEL MOUNT CONNECTORS WITH SIZE 12 REMOVABLE CONTACTS CODE 1

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

Typical part number:
PLS5W5F10000



*CONTACT TECHNICAL SALES
FOR AVAILABILITY OF 7W7 VARIANT.



For information regarding size 12 removable contacts, see Removable Contact section, pages 47-53.

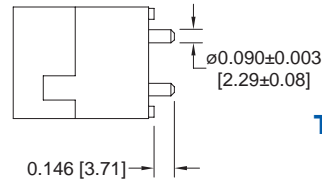
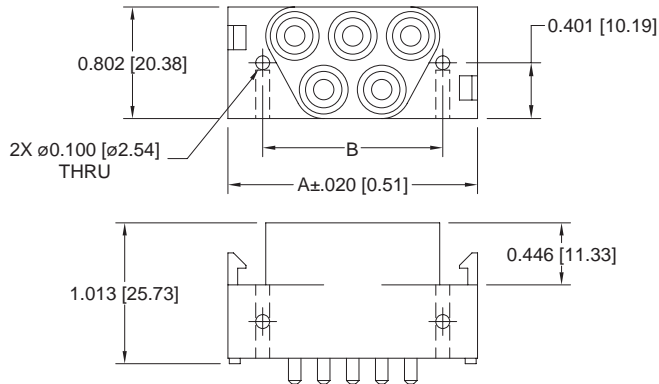


Positronic
connectpositronic.com

STRAIGHT SOLDER AND RIGHT ANGLE (90°) SOLDER PRINTED BOARD CONNECTOR

Power
Connection
Systems

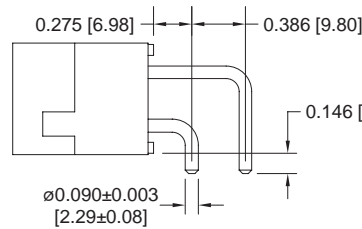
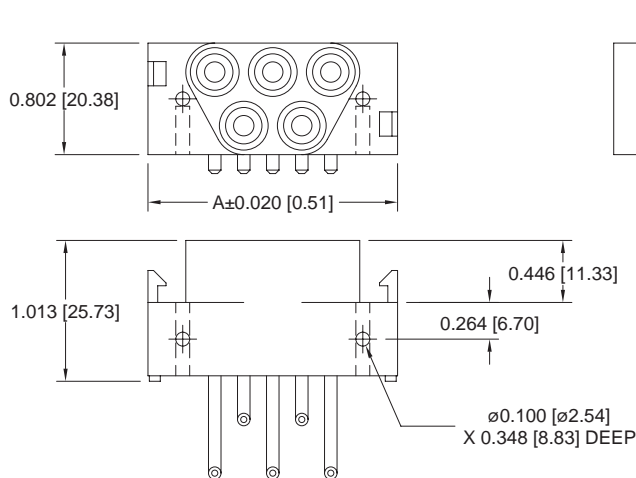
MALE STRAIGHT PRINTED BOARD MOUNT CONNECTOR CODE 3, 0.146 [3.71] CONTACT EXTENSION



Typical part number:
PLS5W5M300A1

PART NUMBER	A	B
PLS5W5M300A1	1.795 [45.60]	1.295 [32.90]
PLS7W7M300A1	2.213 [56.20]	1.713 [43.50]

MALE RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR CODE 4, 0.146 [3.71] CONTACT EXTENSION

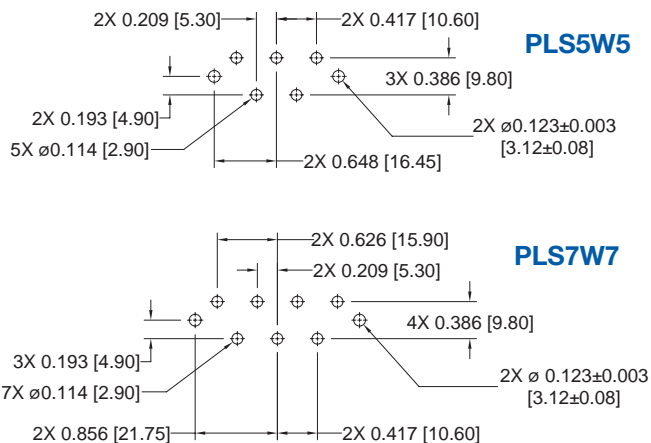


Typical part number:
PLS5W5M400A1

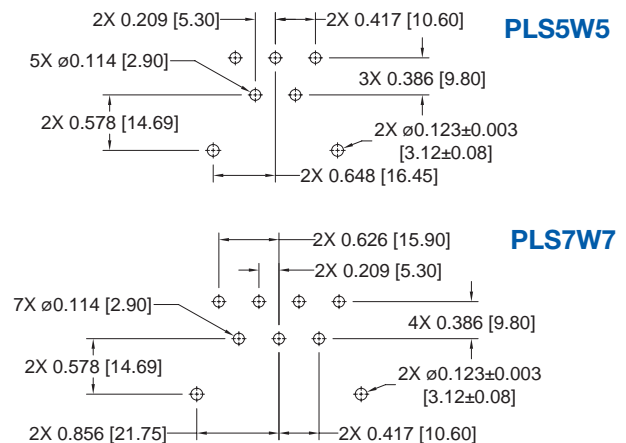
PART NUMBER	A	B
PLS5W5M400A1	1.795 [45.60]	1.295 [32.90]
PLS7W7M400A1	2.213 [56.20]	1.713 [43.50]

PRINTED BOARD CONTACT HOLE PATTERNS

STRAIGHT SOLDER



RIGHT ANGLE (90°)



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PLS	5W5	M	4	0	0	A1	/AA	—

STEP 1 - BASIC SERIES

PLS - PLS Series
PLSH - High conductivity contacts

STEP 2 - CONNECTOR VARIANTS

5W5 - Five size 12 contacts
7W7 - Seven size 12 contacts

STEP 3 - CONNECTOR GENDER

M - Male
F - Female

STEP 4 - CONTACT TERMINATION TYPE

- 0 - Order contacts separately for cable connectors for connection systems 5, 6, 7 and 8, see pages 47-53. Female connectors only. **
- 1 - Order contacts separately for Panel Mount connectors for connection system 7, see pages 47-53. For 7W7 female variant consult technical sales.
- 3 - Solder, Straight Printed Board Mount with 0.146 [3.71] tail extension for connection system 6. Male connectors only. ***
- 4 - Solder, Right Angle (90°) Printed Board Mount with 0.146 [3.71] tail extension for connection system 5. Male connectors only. ***

STEP 5 - MOUNTING STYLE

0 - None.

N - Push-on Fastener for Straight Printed Board Mount Connectors

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: PLS5W5M400A1

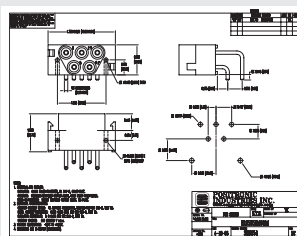
STEP 7 - CONTACT PLATING FOR PRINTED BOARD CONNECTORS

- 0 - Crimp Contacts ordered separately, see pages 47-53.
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coat on termination end.
- C1 - 0.000030 inch [0.76μ] gold over nickel on mating end and termination end.
- C2 - 0.000030 inch [0.76μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end.
- D1 - 0.000050 inch [1.27μ] gold over nickel on mating end and termination end.
- D2 - 0.000050 inch [1.27μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end.

STEP 6 - CABLE ADAPTER

- 0 - None
- 5 - Top Opening Hood, see accessories section page 60.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-D IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

** Consult technical sales for availability of male version of contact type 0.

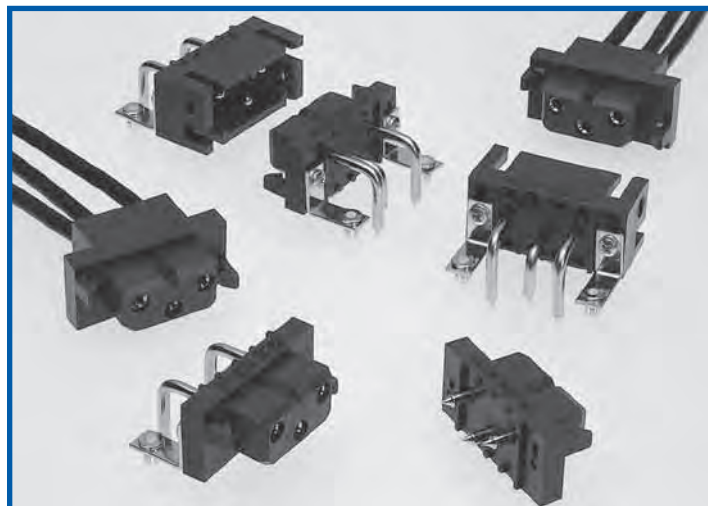
*** Consult technical sales for availability of female version of contact type 3 and 4.



Positronic
connectpositronic.com

POWER CONNECTION SYSTEMS FOR A.C. / D.C. INPUT

Power
Connection
Systems



A.C. / D.C. INPUT CONNECTOR

- * Hot Plug Capability
- * Screw Termination Contacts
- * Size 12 Power Contacts
- * Large Surface Area Mating System
- * Contact Current Rating to 40 Amperes
- * Sequential Mating Options
- * Discriminating Locking System

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0. Contact technical sales for availability of high temperature insulator material.
Contacts:	Precision machined copper alloy with gold flash over nickel, or 0.000030 inch [0.76 μ] gold over nickel, or 0.000050 [1.27 μ] gold over nickel. Solder coated terminations optional.
Hood:	Glass-filled polyester, UL 94V-0.
Mounting Bracket:	Brass, tin plate.
Push-on Fastener:	Spring tempered copper alloy, tin plate.
Mounting Screw:	Steel, zinc plate, or stainless steel passivated.

ELECTRICAL CHARACTERISTICS:

CONTACT CURRENT RATING:

Standard Contact Material: 40 amperes. See page 33 for details.

High Conductivity

Contact Material: 55 amperes. See page 33 for details.

INITIAL CONTACT RESISTANCE:

Standard Contact Material: 0.001 ohms max. per IEC 60512-2, test 2b.

High Conductivity

Contact Material: 0.00037 ohms max. per IEC 60512-2, test 2b.

Insulation Resistance: 5 G ohms per IEC 60512-2, test 3a.

Voltage Proof: 3,750 V r.m.s. per IEC 60512-2, test 4a, method A.

Clearance and

Creepage Distance: 0.125 [3.18] minimum

Working Voltage: 1,250 V. r.m.s.

Hot Pluggable [50 couplings per UL 1977 paragraph 15]:

Working Temperature: Contact technical sales
-55°C to +125°C
Contact technical sales for availability of high temperature insulator material.

MECHANICAL CHARACTERISTICS:

Removable Contacts:

Rear insertion/ front release. Female contact features "Closed Entry" design for highest reliability. 0.094 [2.39]

Removable Contact

Retention in Insulator:

Fixed Contacts:

20 lbs. [89N] per IEC 60512-8, test 15a. Printed board terminations, both straight and right angle (90°). Female contact features "Closed Entry" design for highest reliability. 0.094 [2.39] diameter male contact.

Fixed Contact

Retention in Insulator:

Resistance to Soldering Iron Heat:

10 lbs. [44N], minimum.

260°C [500°F] for 10 seconds duration per IEC 60512-6, test 12e, 25 watt soldering iron.

Contact Terminations:

Crimp removable contacts and solder cup removable contacts for wire size 12 AWG [4.0 mm²]. Straight and right angle (90°) solder printed board mount, 0.090 [2.29] tail diameter. Compliant termination press-in.

Connection Systems:

Cable to cable, cable to printed board, cable to panel mount, and printed board to printed board.

Sequential Mating

Systems:

Male contacts can provide two mating lengths.

Locking System:

Insulators provide locking between cable to cable, cable to printed board, and cable to panel mount applications. Provided in insulator design.

Polarization:

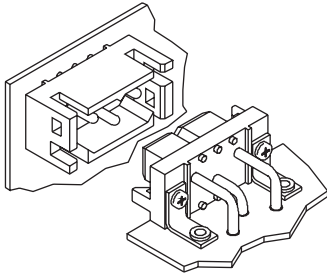
Mounting to P.C. Board:

Mechanical Operations:

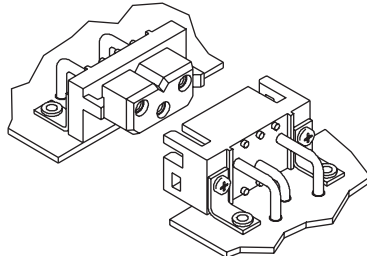
Rapid installation push-on fasteners. 500 operations

CONNECTION SYSTEMS

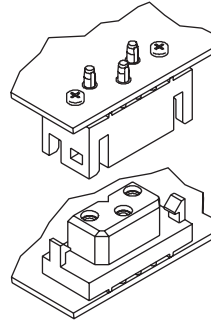
System 1
Mother Board -
Daughter Board



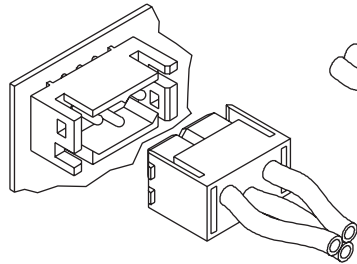
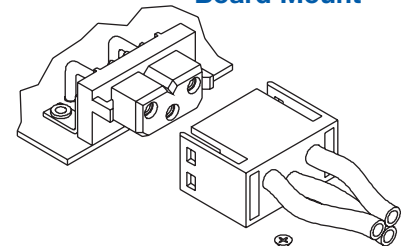
System 2
Side to Side
Board Mounting



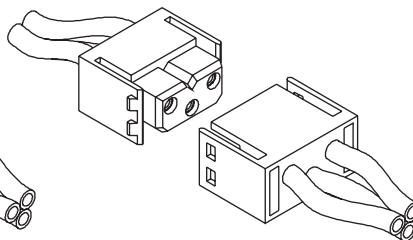
System 4
Sandwich Board
Mounting



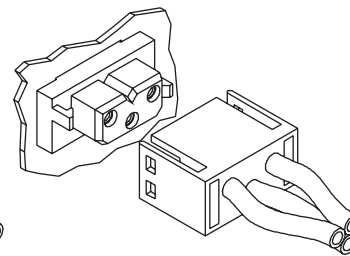
System 5
Cable to Right
Angle (90°)
Board Mount



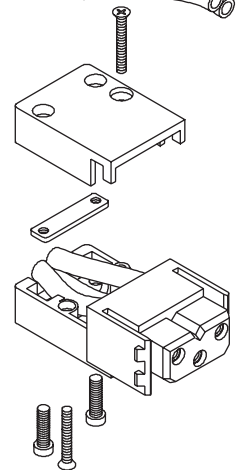
System 6
Cable to Straight
Board Mount



System 7
Cable to Cable



System 8
Panel Mounting
to Cable

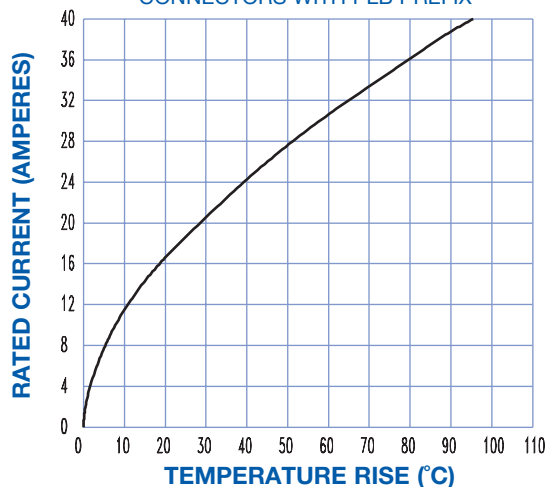


System 9
Cable Connector with
Cable Adapter

TEMPERATURE RISE CURVE

STANDARD CONTACT MATERIALS

CONNECTORS WITH PLB PREFIX



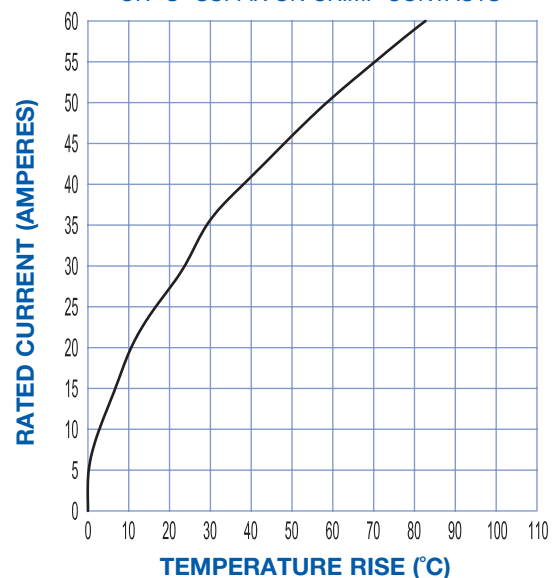
Test conducted per IEC Publication 60512-3, Test 5a.
All power contacts under load.

Standard Density: Curve developed using PLB3W3M4BN0A1 and PLB3W3F300A1 mated connector terminated to 12 AWG wire.

High Conductivity: Curve developed using PLBH3W3M9300A1 and PLBH3W3F9300A1 mated connector terminated to 12 AWG wire

HIGH CONDUCTIVITY CONTACT MATERIALS

CONNECTORS WITH PLBH PREFIX
OR "S" SUFFIX ON CRIMP CONTACTS

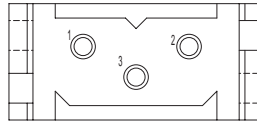


DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



CABLE AND PANEL MOUNT CONNECTOR

CONNECTOR VARIANT FACE VIEW OF MALE CONNECTOR

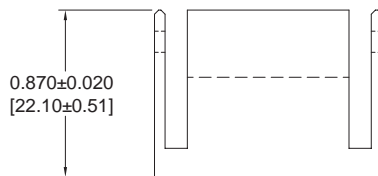
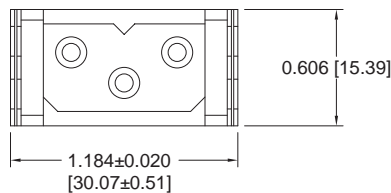


PLB3W3

CABLE CONNECTOR FOR USE WITH SIZE 12 REMOVABLE CONTACTS CODE 0

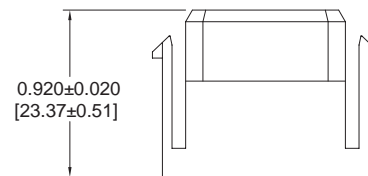
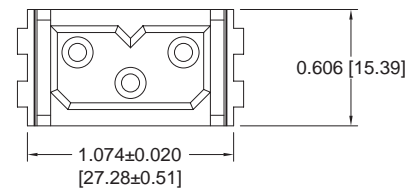
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

MALE



Part Number: PLB3W3M0000

FEMALE

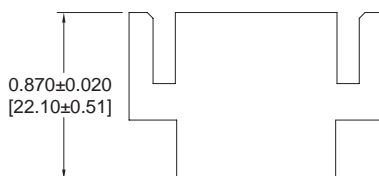
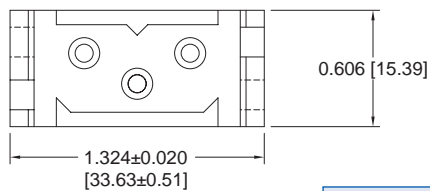


Part Number: PLB3W3F0000

PANEL MOUNT CONNECTOR FOR USE WITH SIZE 12 REMOVABLE CONTACTS CODE 1

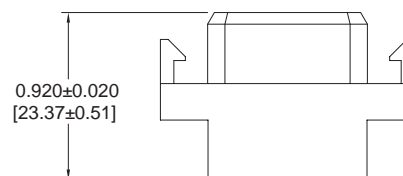
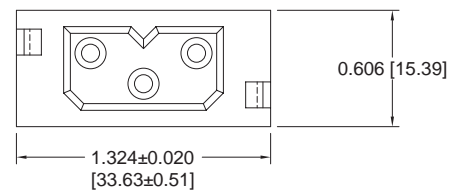
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

MALE



Part Number: PLB3W3M1000

FEMALE



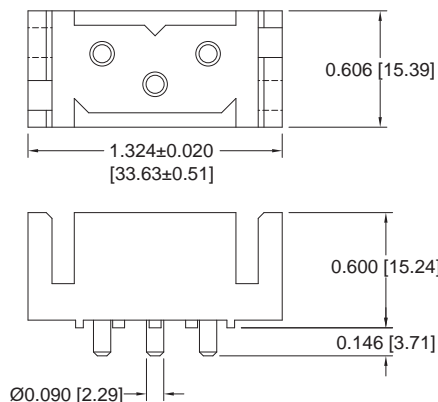
Part Number: PLB3W3F1000

NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 38. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

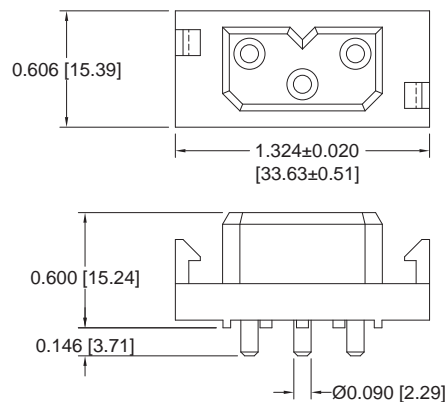
For information regarding size 12 removable contacts, see Removable Contact section, pages 47-53.

**STRAIGHT PRINTED BOARD MOUNT CONNECTOR
CODE 3, 0.146 [3.71] CONTACT EXTENSION**

NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 38. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.



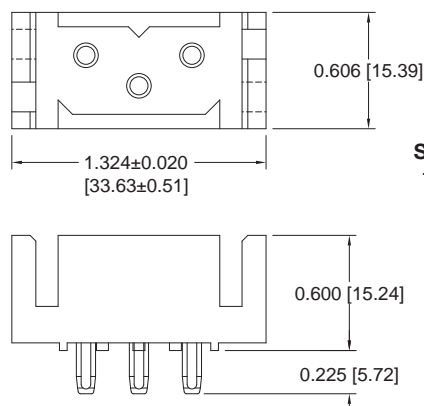
Part Number: PLB3W3M300A1



Part Number: PLB3W3F300A1

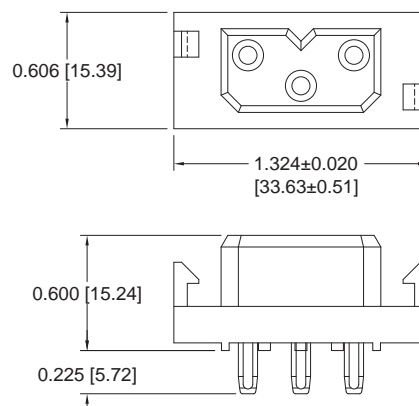
**COMPLIANT PRESS-IN CONNECTOR
CODE 93, 0.225 [5.72] CONTACT EXTENSION**

NOTE: Positronic recommends the practice of using mounting hardware to secure connector to printed circuit board. Mounting screws can be supplied with connectors using step 5 in ordering information on page 38. Mounting screws can also be ordered separately by part number. See page 59.



Part Number: PLB3W3M93ST30A1

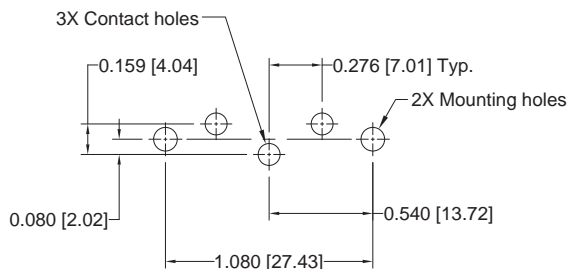
See page 56-57
for Compliant
Press-in
information.



Part Number: PLB3W3F93ST30A1

CONTACT HOLE PATTERN

FOR STRAIGHT PRINTED BOARD MOUNT AND COMPLIANT PRESS-IN CONNECTORS



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø 0.114 [2.90] finished holes in printed board for straight solder printed board mount contacts.

Suggest Ø 0.123±0.003 [3.15±0.08] holes in printed board for mounting connector with push-on fasteners or 0.100 [2.54] for mounting connector with #2 screws.

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.



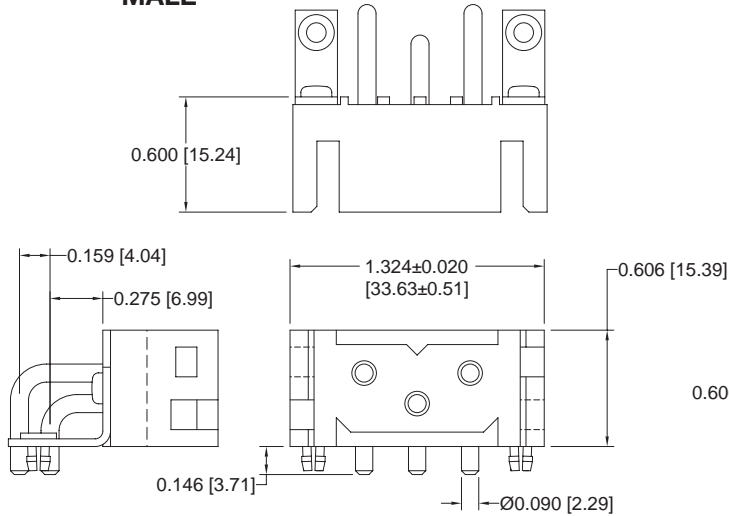
Positronic
connectpositronic.com

RIGHT ANGLE (90°) SOLDER PRINTED BOARD CONNECTOR AND CONTACT HOLE PATTERN

Power
Connection
Systems

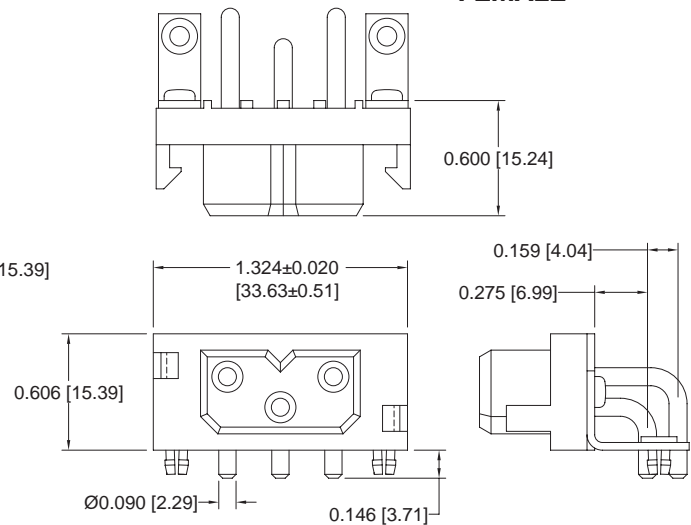
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR CODE 4, 0.146 [3.71] CONTACT EXTENSION

MALE



Part Number:
PLB3W3M4BN0A1

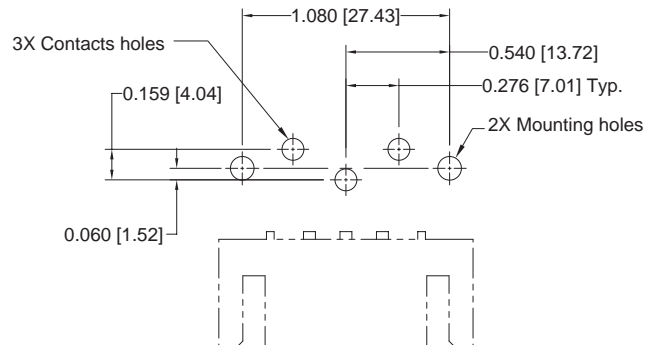
FEMALE



Part Number:
PLB3W3F4BN0A1

CONTACT HOLE PATTERN

RIGHT ANGLE (90°) ANGLE PRINTED BOARD MOUNT CONNECTORS



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø 0.114 [2.90] finished holes in printed board for right angle (90°) solder printed board mount contacts.

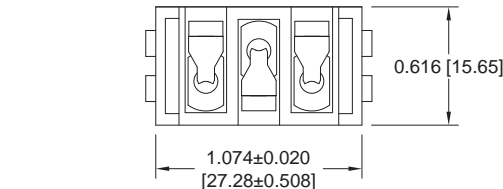
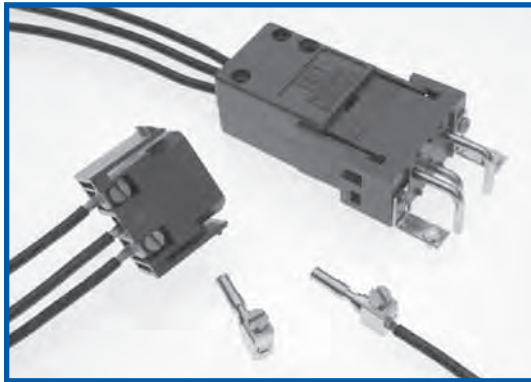
Suggest Ø 0.123±0.003 [3.15±0.08] holes in printed board for mounting connector with push-on fasteners.

SCREW TERMINATION CONNECTOR

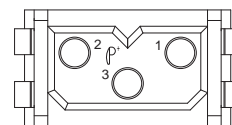
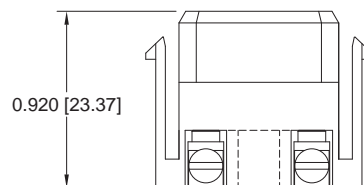
SCREW TERMINATIONS ALLOWS FOR CONVENIENT FIELD INSTALLATION WHEN REQUIRED

CODE 71

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY

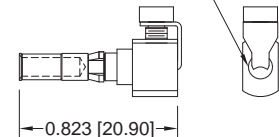


Typical Part Number:
PLB3W3F7100A1
supplied with 3 contacts



REPLACEMENT CONTACT

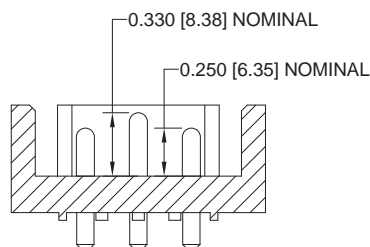
For use with wire
size 12 awg [4.0mm²]
or smaller



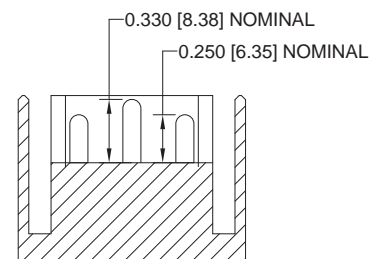
Typical Part Number:
FST612N2

SEQUENTIAL MATING CONTACTS

BOARD MOUNT CONNECTORS



CRIMP AND PANEL MOUNT CONNECTORS



Modification number -338.0 (see step 8 of the ordering information) allows for board mount connector to have position 3 loaded with a 0.330 [8.38] nominal mating length contact and positions 1 and 2 loaded with 0.250 [6.35] nominal mating length contacts. **Contact technical sales for additional sequencing options.**

MC610NS and **MC612N** crimp contacts and **MC610NS** and **MC612N** solder cup contacts to be used for 0.330 [8.38] nominal mating length. **MC610NS-228.2** and **MC612N-228.2** crimp contacts and **MS610NS-228.2** and **MS612N-228.2** solder cup contacts to be used for 0.250 [6.35] nominal mating length.



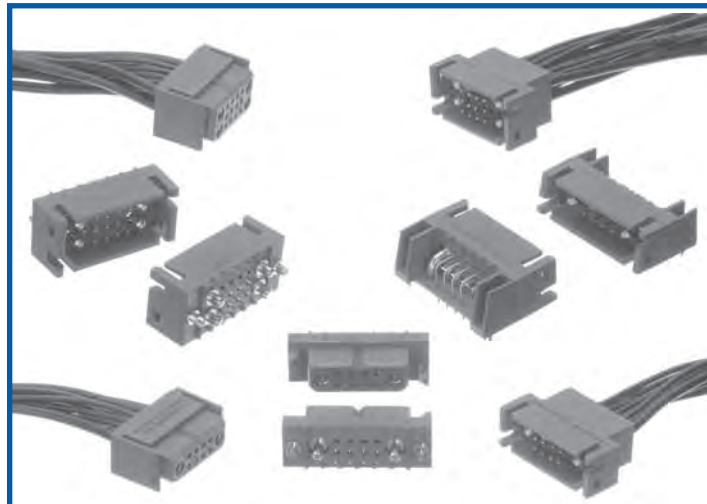
POWER INPUT CONNECTOR ORDERING INFORMATION

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8		9
EXAMPLE	PLB	3W3	F	3	0	0	A1	/AA	—	
<div><div><div><div>STEP 1 - BASIC SERIES</div><div>PLB - PLB Series</div><div>PLBH - High conductivity contacts.</div></div><div>STEP 2 - CONNECTOR VARIANTS</div><div>3W3 - Three size 12 contacts</div><div>STEP 3 - CONNECTOR GENDER</div><div>M - Male</div><div>F - Female</div><div>STEP 4 - CONTACT TERMINATION TYPE</div><div>0 - Order contacts separately for cable connectors for connection systems 5, 6, 7, 8 and 9, see pages 47-53.</div><div>*1 - Removable contact, panel mount connector for connection system 8. Order contacts separately, see pages 47-53.</div><div>*13 - Solder, Straight Printed Board Mount with 0.146 [3.71] tail extension for connection systems 1, 4, and 6.</div><div>4 - Solder, Right Angle (90°) Printed Board Mount with 0.146 [3.71] tail extension for connection systems 1, 2 and 5.</div><div>71 - Screw termination cable connector. Supplied with 3 contacts.</div><div>*93 - Press-in, Compliant Termination for 0.090 [2.29] to 0.175 [4.45] thick P.C. board, for connector systems 1, 4, and 6.</div><div>STEP 5 - MOUNTING STYLE</div><div>0 - None</div><div>B - Metal Right Angle (90°) Mounting Bracket.</div><div>BN - Metal Right Angle (90°) Mounting Bracket with Push-on Fastener.</div><div>N - Push-On Fastener For Straight Printed Board Mount Connectors</div><div>ST2 - Self-tapping steel screws 2-28 x 0.250±0.030 [6.35±0.76] length for 0.093 [2.36] thick board.</div><div>ST3 - Self-tapping steel screws 2-28 x 0.312±0.030 [7.92±0.76] length for 0.125 [3.18] thick board.</div><div>ST4 - Self-tapping steel screws 2-28 x 0.375±0.030 [9.53±0.76] length for 0.175 [4.45] thick board.</div><div>SS2 - Self-tapping stainless steel screws 2-28 x 0.250±0.030 [6.35±0.76] length for 0.093 [2.36] thick board.</div><div>SS3 - Self-tapping stainless steel screws 2-28 x 0.312±0.030 [7.92±0.76] length for 0.125 [3.18] thick board.</div><div>SS4 - Self-tapping stainless steel screws 2-28 x 0.375±0.030 [9.53±0.76] length for 0.175 [4.45] thick board.</div></div><div><div>STEP 9 - SPECIAL OPTIONS</div><div>-338.0 - Sequential mating. Position 3 first mate, last break. Available on 3, 4, and 93 only.</div><div>CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS</div><div>STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS</div><div>/AA - RoHS Compliant)</div><div>NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: PLB3W3F300A1</div><div>STEP 7 - CONTACT PLATING FOR PRINTED BOARD CONNECTORS</div><div>0 - Crimp Contacts ordered separately, see pages 47-53.</div><div>A1 - Gold flash over nickel on mating end and termination end.</div><div>A2 - Gold flash over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coat on termination end. Not available with contact code 71 or 93.</div><div>C1 - 0.000030 inch [0.76μ] gold over nickel on mating end and termination end.</div><div>C2 - 0.000030 inch [0.76μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end. Not available with contact code 71 or 93.</div><div>D1 - 0.000050 inch [1.27μ] gold over nickel on mating end and termination end.</div><div>D2 - 0.000050 inch [1.27μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end. Not available with contact code 71 or 93.</div><div>STEP 6 - CABLE ADAPTER AND BLIND MATE SYSTEM</div><div>0 - None.</div><div>5 - Top Opening Hood.</div><div>11 - Blind Mating System for 0.040 [1.02] thick panel.</div><div>12 - Blind Mating System for 0.060 [1.52] thick panel.</div><div>13 - Blind Mating System for 0.090 [2.29] thick panel.</div><div>14 - Blind Mating System for 0.120 [3.05] thick panel.</div></div></div> </										

*1 Mounting screws are available with code 1, 3 and 93. To order mounting screws separately, see page 59 for part numbers.



PCS SERIES POWER CONNECTORS WITH MIXED DENSITY CONTACTS

* Mixed density contacts

- Power contacts have a resistance as low as 0.0003 ohms and carry up to 85 amperes per UL 1977
- Available with two power contacts and eight signal; or four power contacts and twelve signal
- Solder, press-in or cable terminations
- Integral locking on cable connectors

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0. Contact technical sales for availability of high temperature insulator material.
Contacts:	Precision machined copper alloy with gold flash over nickel, or 0.000030 inch [0.76 μ] gold over nickel, or 0.000050 [1.27 μ] gold over nickel. Solder coated terminations optional.
Mounting Clip:	Beryllium copper with tin plate.
Hood:	Glass filled polyester, UL 94V-0.
Mounting Bracket:	Brass with tin plate.
Push-on Fastener:	Spring tempered copper alloy, tin plate

ELECTRICAL CHARACTERISTICS:

SIGNAL CONTACTS

Contact Current Rating:	7.5 amperes nominal.
Initial Contact Resistance:	0.007 ohms max. per IEC 60512-2, test 2b

POWER CONTACTS

Contact Current Rating:	See temperature rise curves on page 40. For additional information see pages 47-53.
Initial Contact Resistance:	0.0005 ohms max. per IEC 60512-2, test 2b.
Standard Conductivity:	0.0003 ohms max. per IEC 60512-2, test 2b.
High Conductivity:	0.0003 ohms max. per IEC 60512-2, test 2b.

SHIELDED CONTACTS

Initial Contact Resistance:	0.008 ohms maximum.
Nominal Impedance:	50 ohms.
Insertion Loss:	-0.46 dB at 1 GHz -1.5 dB at 2 GHz
VSWR:	1.15 average at 1 GHz 1.56 average at 2 GHz
Above values measured using frequency domain techniques.	
Proof Voltage:	1000 V r.m.s.

ELECTRICAL CHARACTERISTICS, CONTINUED:

HIGH VOLTAGE CONTACTS

Flash over Voltage:	3600 V r.m.s.
Proof Voltage:	2700 V r.m.s.
Initial Contact Resistance:	0.008 ohms maximum.

CONNECTOR

Insulation Resistance:	5 G ohms per IEC 60512-2, test 3a, method A.
Working Voltage:	600 V rms.
Voltage Proof:	2200 V rms per IEC 60512-2, test 4a, method C.
Clearance and Creepage Distance:	0.080 inch [2.03 mm]
Working Temperature:	-55°C to +125°C.

MECHANICAL CHARACTERISTICS:

SIGNAL CONTACTS

Removable:	Insert contact to rear face of insulator, release from front face of insulator. Size 20 contacts, 0.040 inch [1.02 mm] diameter male contacts, closed entry design female contacts.
Fixed:	Straight solder, right angle (90°) solder and straight compliant press-in printed board mount terminations. Size 20 contacts, 0.040 inch [1.02 mm] diameter male contacts, open entry design female contacts.

... continued on next page

CUL Recognized
File # E49351



Positronic
connectpositronic.com

TECHNICAL INFORMATION AND TEMPERATURE RISE CURVES

Power
Connection
Systems

continued from previous page . . .

MECHANICAL CHARACTERISTICS, CONTINUED:

POWER CONTACTS:

Removable:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts, 0.142 inch [3.61 mm] diameter male contacts, closed entry design female contacts.

Printed Board Mount:

Straight solder, right angle (90°) solder and straight compliant press-in printed board mount terminations. Size 8 contacts, 0.142 inch [3.61 mm] male contacts, closed entry design female contacts.

SHIELDED CONTACTS:

Removable:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. See page 53 table of cable sizes for contact termination dimensions.

HIGH VOLTAGE CONTACTS:

Removable:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. Straight and right angle (90°) terminations. 0.041 inch [1.04 mm] minimum hole diameter.

Contact Terminations:

20-24 AWG [0.5-0.25mm²] removable crimp signal, 0.028 inch [0.71 mm] diameter straight and right angle (90°) solder printed board mount,

8-16 AWG [10.0-1.0mm²] removable solder and crimp power, 0.125 inch [3.18 mm] diameter straight and right angle (90°) solder printed board mount, power, shielded, high voltage cable, and straight compliant press-in terminations.

Contact Retention in Insulator:

Fixed signal - 9 lbs. [40 N].
Removable Signal - 10 lbs. [44N].
Power, shielded and high voltage - 22 lbs. [98 N].

Resistance to Solder Iron Heat:

500° F [260° C] for 10 second duration per IEC 60512-6, test 12e, 25 watt soldering iron.

Connection Systems:

Connector provides cable to cable, cable to printed board, cable to panel mount and printed board to printed board application.

Locking System:

Insulators provide locking between cable to cable, cable to printed board and cable to panel mount applications.

Polarizations:

Provided in insulator design.

Mounting to Printed Board:

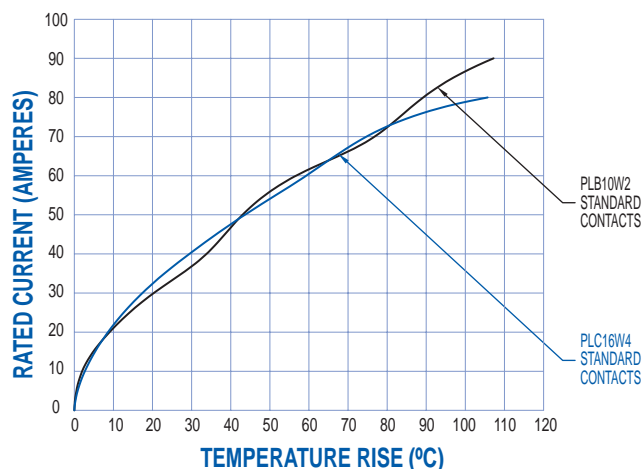
Rapid installation push-on fasteners. Self-tapping screws for compliant connectors.

Mechanical Operations:

500 operations per IEC 60512-5.

TEMPERATURE RISE CURVES

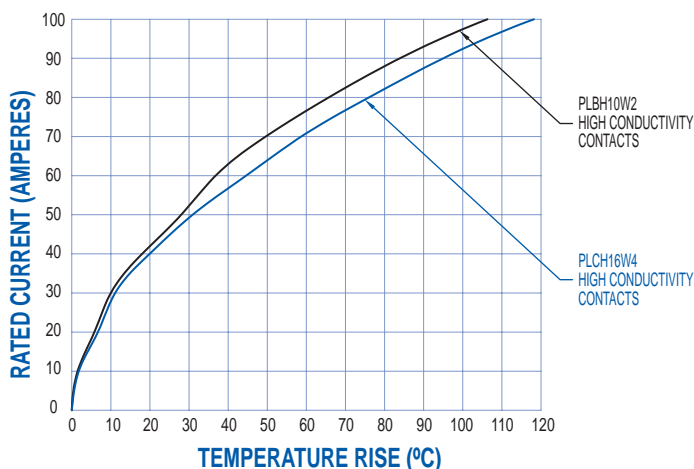
STANDARD CONTACT MATERIAL



Test conducted in accordance with UL1977.
All power contacts under load.

- 10W2:** Curve developed using PLB10W2F9300A1 and PLB10W2M0000 connectors with MC4008D contacts terminated to 8 AWG wire .
- 16W4:** Curve developed using PLC16W4F9300A1 and PLC16W4M0000 connectors with MC4008D contacts terminated to 8 AWG wire.

HIGH CONDUCTIVITY CONTACT MATERIAL

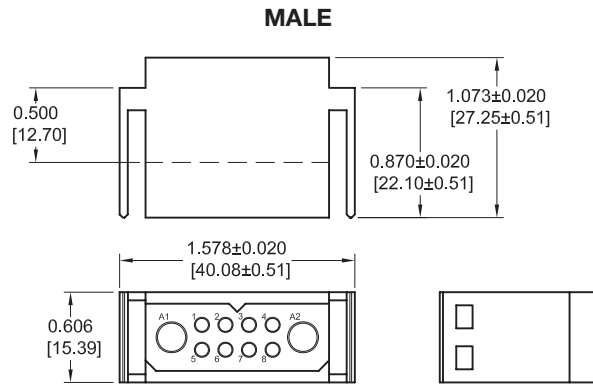


Test conducted in accordance with UL1977.
All power contacts under load.

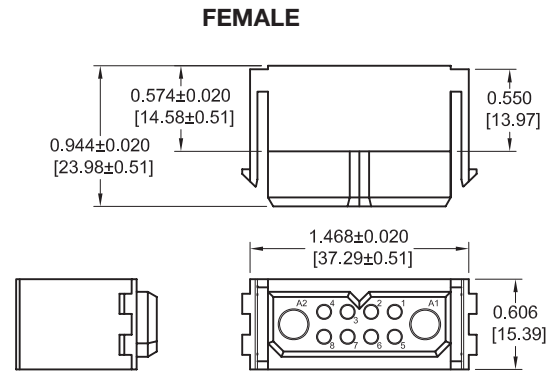
- 10W2:** Curve developed using PLBH10W2F9300A1 and PLB10W2M0000 connectors with MC4008DS contacts terminated to 8 AWG wire .
- 16W4:** Curve developed using PLCH16W4F9300A1 and PLC16W4M0000 connectors with MC4008DS contacts terminated to 8 AWG wire.

PLB10W2 CABLE CONNECTOR
FOR USE WITH SIZE 20 AND SIZE 8 REMOVABLE CONTACTS
CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



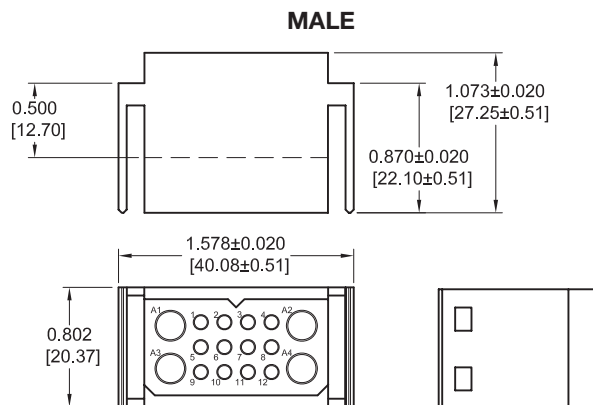
Part Number:
PLB10W2M0000



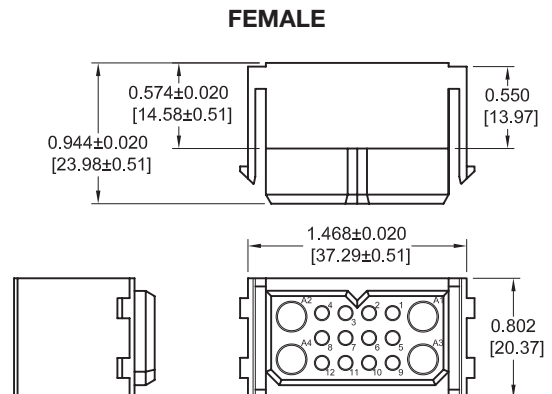
Part Number:
PLB10W2F0000

PLC16W4 CABLE CONNECTOR
FOR USE WITH SIZE 20 AND SIZE 8 REMOVABLE CONTACTS
CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



Part Number:
PLC16W4M0000



Part Number:
PLC16W4F0000

For information regarding size 20 and size 8 removable contacts, see Removable Contact section, pages 47-53.



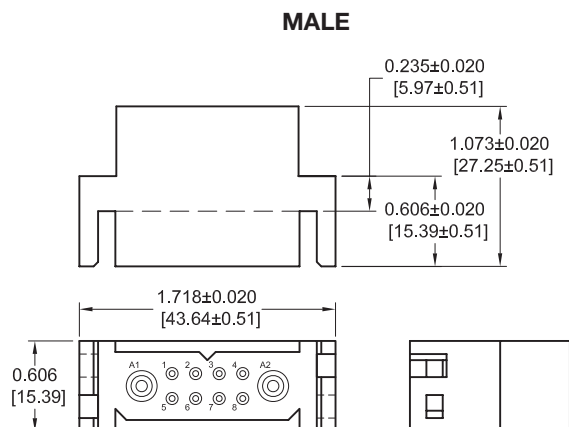
Positronic
connectpositronic.com

PANEL MOUNT CONNECTOR

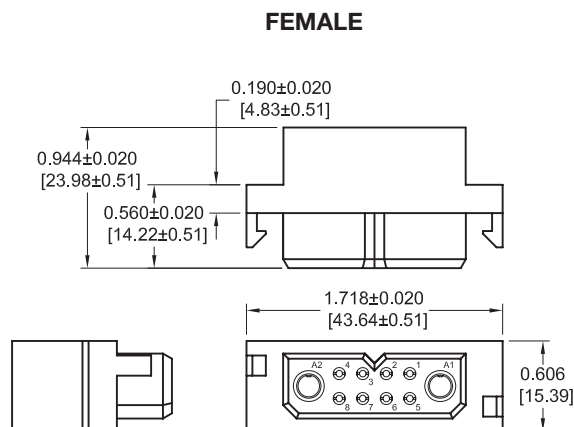
Power
Connection
Systems

PLB10W2 PANEL MOUNT CONNECTOR FOR USE WITH SIZE 20 AND SIZE 8 REMOVABLE CONTACTS CODE 1

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



Part Number:
PLB10W2M1000



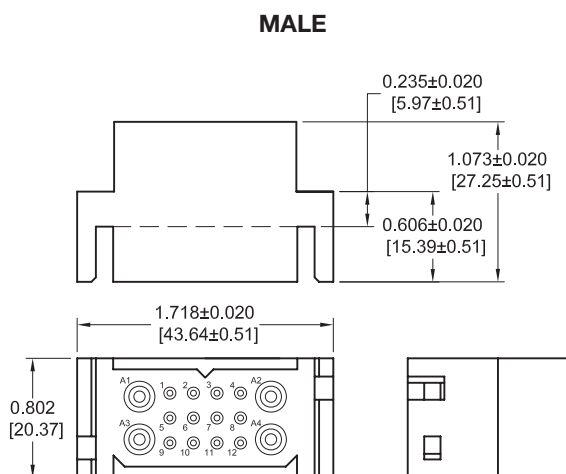
Part Number:
PLB10W2F1000

For panel cutout, see chart on page 63.

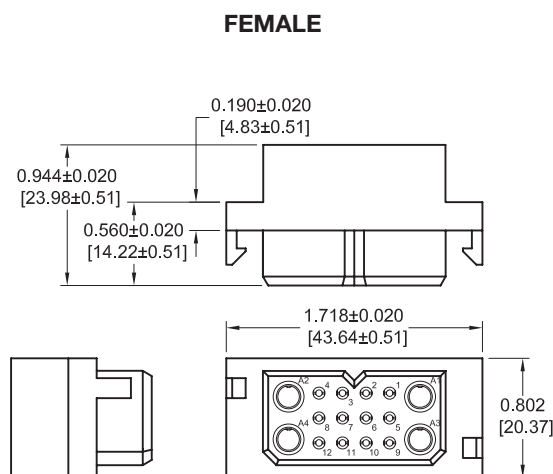
NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 46. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

PLC16W4 PANEL MOUNT CONNECTOR FOR USE WITH SIZE 20 AND SIZE 8 REMOVABLE CONTACTS CODE 1

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



Part Number:
PLC16W4M1000



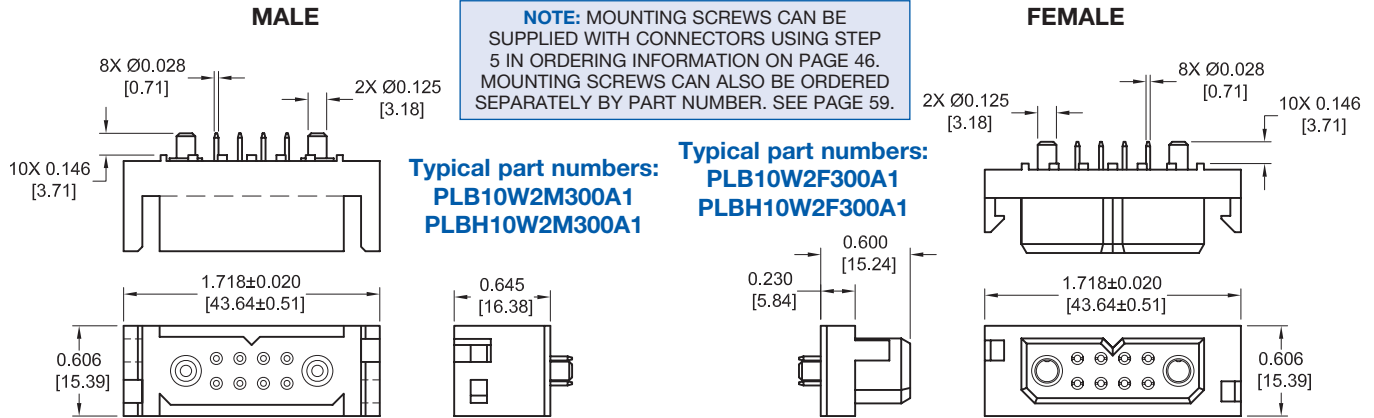
Part Number:
PLC16W4F1000

For panel cutout, see chart on page 63

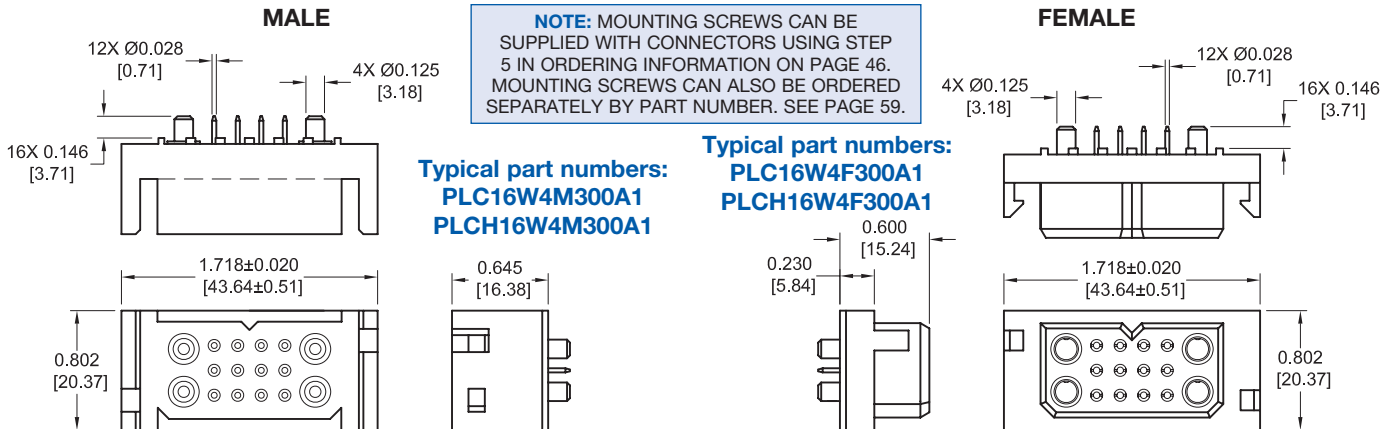
NOTE: MOUNTING SCREWS CAN BE SUPPLIED WITH CONNECTORS USING STEP 5 IN ORDERING INFORMATION ON PAGE 46. MOUNTING SCREWS CAN ALSO BE ORDERED SEPARATELY BY PART NUMBER. SEE PAGE 59.

For information regarding size 20 and size 8 removable contacts, see Removable Contact section, pages 47-53.

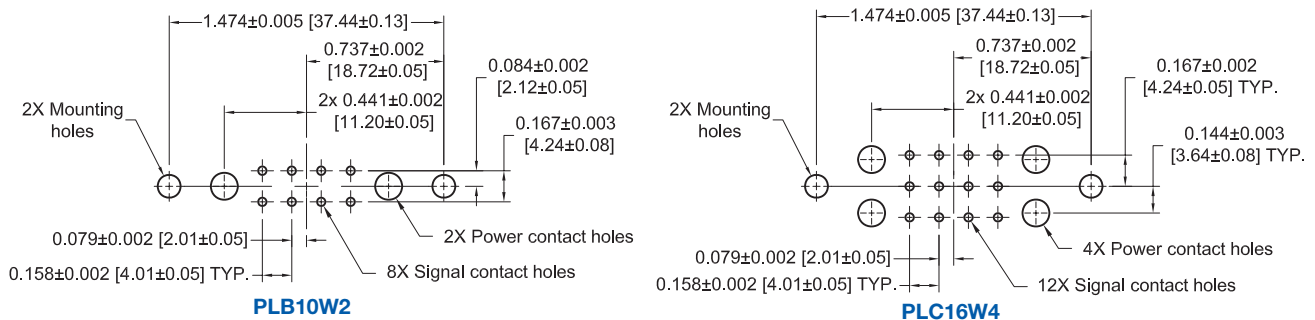
PLB(H)10W3 STRAIGHT PRINTED BOARD MOUNT CONNECTOR CODE 3, 0.146 [3.71] CONTACT EXTENSION



PLC(H)16W4 STRAIGHT PRINTED BOARD MOUNT CONNECTOR CODE 3, 0.146 [3.71] CONTACT EXTENSION



STRAIGHT SOLDER AND COMPLIANT CONTACT HOLE PATTERN



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.145 [3.68] Ø hole in printed board for power contact termination positions.
 Suggest 0.045 [1.14] Ø hole for signal solder contact termination positions.
 Suggest 0.100 [2.54] Ø hole in printed board when mounting connectors with #2 thread forming screws.
 Suggest 0.123±0.003 [3.12±0.08] Ø hole in printed board for mounting connector with push-on fasteners.

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.



Positronic
connectpositronic.com

RIGHT ANGLE (90°) PRINTED BOARD CONNECTOR AND CONTACT HOLE PATTERN

Power
Connection
Systems

PLB(H)10W3 RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR

CODE 4, 0.146 [3.71] CONTACT EXTENSION

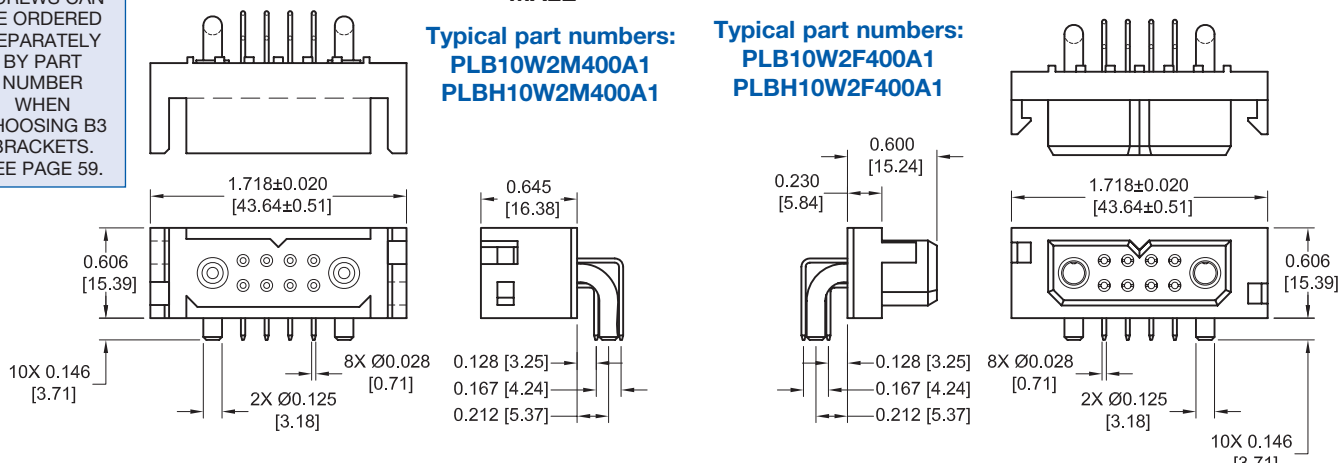
NOTE:
MOUNTING
SCREWS CAN
BE ORDERED
SEPARATELY
BY PART
NUMBER
WHEN
CHOOSING B3
BRACKETS.
SEE PAGE 59.

MALE

Typical part numbers:
PLB10W2M400A1
PLBH10W2M400A1

FEMALE

Typical part numbers:
PLB10W2F400A1
PLBH10W2F400A1



PLC(H)16W4 RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR

CODE 4, 0.146 [3.71] CONTACT EXTENSION

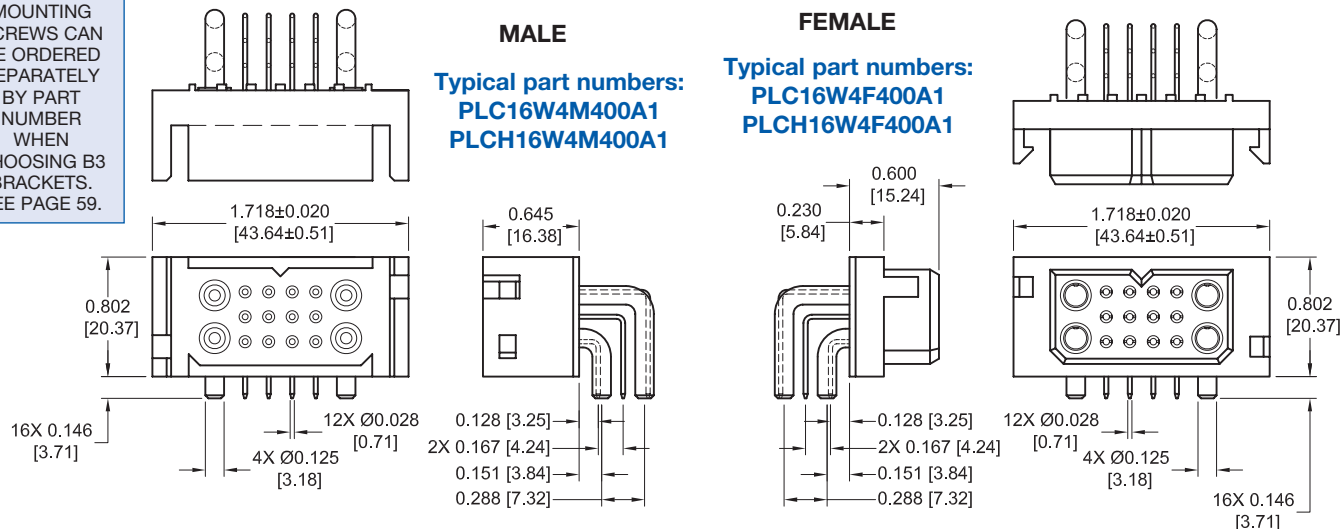
NOTE:
MOUNTING
SCREWS CAN
BE ORDERED
SEPARATELY
BY PART
NUMBER
WHEN
CHOOSING B3
BRACKETS.
SEE PAGE 59.

MALE

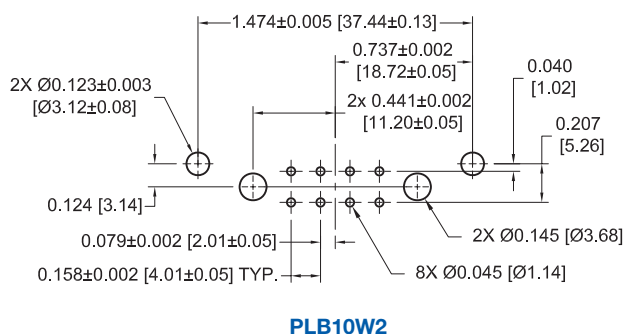
Typical part numbers:
PLC16W4M400A1
PLCH16W4M400A1

FEMALE

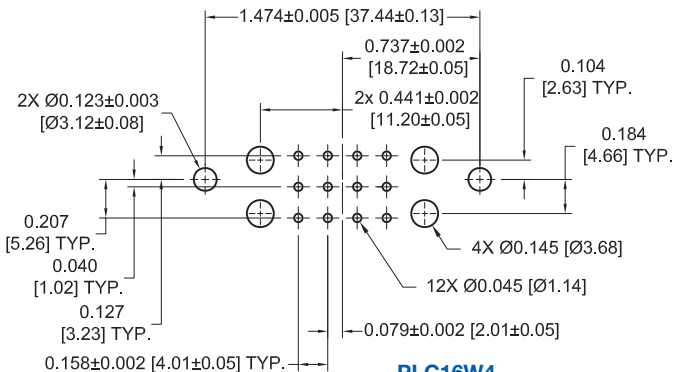
Typical part numbers:
PLC16W4F400A1
PLCH16W4F400A1



RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN

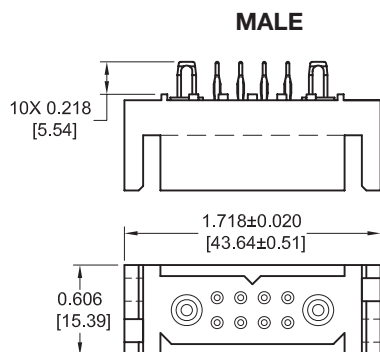


PLB10W2



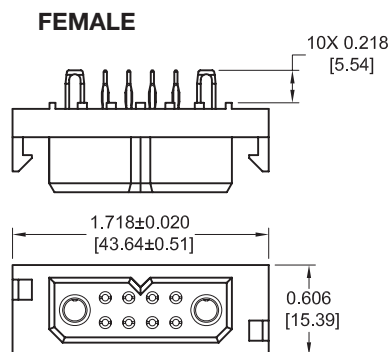
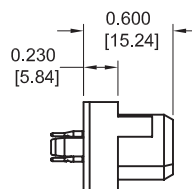
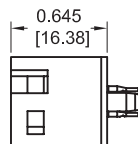
PLC16W4

PLB(H)10W2 COMPLIANT PRESS-IN CONNECTOR CODE 93



Typical part numbers:
PLB10W2M9300A1
PLBH10W2M9300A1

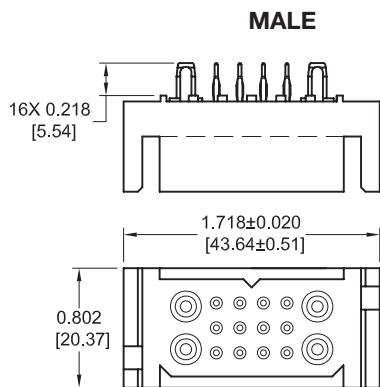
NOTE: Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board. Mounting screws can be supplied with connectors using step 5 in ordering information on page 46. Mounting screws can also be ordered separately by part number. See page 59.



Typical part numbers:
PLB10W2F9300A1
PLBH10W2F9300A1

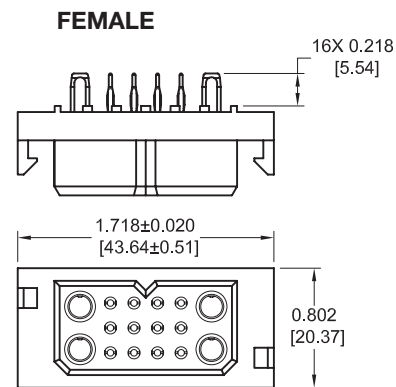
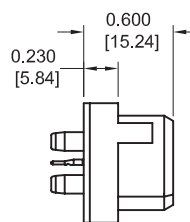
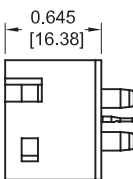
NOTE: Connectors are designed to be mounted to the printed circuit board with screws, see page 59 for mounting screw information. See page 43 for contact hole pattern.

PLC(H)16W4 COMPLIANT PRESS-IN CONNECTOR CODE 93



Typical part numbers:
PLC16W4M9300A1
PLCH16W4M9300A1

NOTE: Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board. Mounting screws can be supplied with connectors using step 5 in ordering information on page 46. Mounting screws can also be ordered separately by part number. See page 59.



Typical part numbers:
PLC16W4F9300A1
PLCH16W4F9300A1

NOTE: Connectors are designed to be mounted to the printed circuit board with screws, see page 59 for mounting screw information. See page 43 for contact hole pattern.



Positronic
connectpositronic.com

PCS MIXED DENSITY CONNECTOR ORDERING INFORMATION

Power
Connection
Systems

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PLC	16W4	F	4	B3N	0	A1	/AA	

STEP 1 - BASIC SERIES

- PLB - 2 Row
- PLBH - 2 Row High conductivity contacts
- PLC - 3 Row
- PLCH - 3 Row High conductivity contacts

STEP 2 - CONNECTOR VARIANTS

- 2 Row - 10W2
- 3 Row - 16W4

STEP 3 - CONNECTOR GENDER

- M - Male
- F - Female

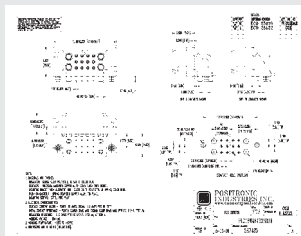
STEP 4 - CONTACT TERMINATION TYPE

- 0 - Removable contact, cable connector. Order contacts separately, see pages 47-53.
- *1 - Removable contact, panel mounted connector. Order contacts separately, see pages 47-53.
- *13 - Solder, Straight Printed Board Mount with 0.146 [3.71] tail extension.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 0.146 [3.71] tail extension.
- *193 - Straight Printed Board Mount, Press-in, length 0.218 [5.54] for 0.125 inch [3.18] thick board.

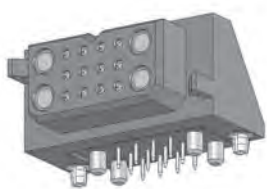
STEP 5 - MOUNTING STYLE

- 0 - None.
- B - Metal Right Angle (90°) Mounting Bracket.
- BN - Metal Right Angle (90°) Mounting Bracket with Push-on Fastener.
- B3 - Plastic Right Angle (90°) Mounting Bracket with Cross Bar.
- B3N - Plastic Right Angle (90°) Mounting Bracket with Cross Bar and Push-on Fastener.
- N - Push-On Fastener For Straight Printed Board Mount Connectors
- ST2 - Self-tapping steel screws 2-28 x 0.250+0.030 [6.35+0.76] length for 0.093 [2.36] thick board.
- ST3 - Self-tapping steel screws 2-28 x 0.312+0.030 [7.92+0.76] length for 0.125 [3.18] thick board.
- ST4 - Self-tapping steel screws 2-28 x 0.375+0.030 [9.53+0.76] length for 0.175 [4.45] thick board.
- SS2 - Self-tapping stainless steel screws 2-28 x 0.250+0.030 [6.35+0.76] length for 0.093 [2.36] thick board.
- SS3 - Self-tapping stainless steel screws 2-28 x 0.312+0.030 [7.92+0.76] length for 0.125 [3.18] thick board.
- SS4 - Self-tapping stainless steel screws 2-28 x 0.375+0.030 [9.53+0.76] length for 0.175 [4.45] thick board.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-D IGES, STEP, or SOLIDWORKS file.



2-D Drawing



3-D Model

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: PLC16W4F4B3N0A1

STEP 7 - CONTACT PLATING FOR PRINTED BOARD CONNECTORS

- 0 - Crimp Contacts ordered separately, see page 47-53.
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coat on termination end. Not available with code 93 in step 4.
- C1 - 0.000030 inch [0.76μ] gold over nickel on mating end and termination end.
- C2 - 0.000030 inch [0.76μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end. Not available with code 93 in step 4.
- D1 - 0.000050 inch [1.27μ] gold over nickel on mating end and termination end.
- D2 - 0.000050 inch [1.27μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end. Not available with code 93 in step 4.

STEP 6 - HOODS AND PANEL MOUNT

- 0 - None.
- 51 - Top Opening Hood.
- 6 - Panel Mount, quick release.
- 81 - Panel Mount, fixed for 0.040 [1.02] thick panel.
- 82 - Panel Mount, fixed for 0.060 [1.52] thick panel.
- 83 - Panel Mount, fixed for 0.090 [2.29] thick panel.
- 11 - Blind Mating System for 0.040 [1.02] thick panel.
- 12 - Blind Mating System for 0.060 [1.52] thick panel.
- 13 - Blind Mating System for 0.090 [2.29] thick panel.
- 14 - Blind Mating System for 0.120 [3.05] thick panel..

*1 Mounting screws are available with code 1, 3 and 93. To order mounting screws separately, see page 59 for part numbers.



REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

SIZE 20 REMOVABLE CONTACT**MATERIALS AND FINISHES:**

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

STANDARD: Insert contact to rear face of insulator, release from front face of insulator. Size 20 contacts, 0.040 inch [1.02 mm] diameter male contacts, closed entry design female contacts.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes nominal.
Initial Contact Resistance: 0.007 ohms max. per IEC 60512-2, test 2b.

SIZE 16 REMOVABLE CONTACT**MATERIALS AND FINISHES:**

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH CONDUCTIVITY: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

SHIELDED:

Dielectric Material: PCTFE
Inner Contacts: Phosphor bronze, 0.000030 inch [0.76 μ] gold over nickel. Other finishes are available, see optional plating finishes for -15.
Outer Contacts: Brass and beryllium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14.

MECHANICAL CHARACTERISTICS:

STANDARD AND HIGH CONDUCTIVITY: Insert contact to rear face of insulator, release from front face of insulator. Size 16 contacts, 0.0625 inch [1.588 mm] diameter male contacts. Female contact closed entry for highest reliability.

SHIELDED:

Contact Retention In Insulator: 18 lbs. [80N].
Removable Contacts: Rear insertion, front removable.
Insertion Force Per Contact: 8 oz. [2.2N] per contact maximum
Durability: 100 cycles minimum.
Vibration: 20g from 10 Hz to 500 Hz
Shock: 30g - 11 ms

ELECTRICAL CHARACTERISTICS:

STANDARD:
Contact Current Rating: See page 9 for detail information.
Initial Contact Resistance: 0.0016 ohms max. per IEC 60512-2, test 2b.

HIGH CONDUCTIVITY:

Contact Current Rating: See page 9 for detail information.
Initial Contact Resistance: 0.0007 ohms max. per IEC 60512-2, test 2b.

SHIELDED:

Dielectric Strength At Sea Level: 600 V rms
Initial Contact Resistance: 0.012 ohms maximum
Insulation Resistance: 5 G ohms
Insertion Loss: 0.2 dB at 500 MHz for 126N contacts
1.0 dB at 500 MHz for 226N contacts
VSWR: 170 at 0 to 200 MHz
2.25 at 200 to 500 MHz

SIZE 12 REMOVABLE CONTACT**MATERIALS AND FINISHES:**

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH CONDUCTIVITY: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

STANDARD AND HIGH CONDUCTIVITY: Insert contact to rear face of insulator, release from front face of insulator. Size 12 contacts, 0.094 inch [2.39 mm] diameter male contacts. Female contact closed entry for highest reliability.

ELECTRICAL CHARACTERISTICS:

STANDARD:
Contact Current Rating: 40 amperes continuous, derated per IEC 60512-3, test 5b.
Initial Contact Resistance: 0.001 ohms max. per IEC 60512-2, test 2b.
HIGH CONDUCTIVITY:
Contact Current Rating: See page 33 for detail information.
Initial Contact Resistance: 0.0007 ohms max. per IEC 60512-2, test 2b.

SIZE 8 REMOVABLE CONTACT**MATERIALS AND FINISHES:**

STANDARD: Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH CONDUCTIVITY: Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

HIGH VOLTAGE:

Insulator Material: PTFE teflon
Contacts: Male contacts, brass. Female contacts, phosphor bronze. Male and female contacts, 0.000030 inch [0.76 μ] gold over nickel. Other finishes are available, see optional plating finishes for -15.

SHIELDED:

Dielectric Material: PTFE teflon
Inner Contacts: Phosphor bronze, 0.000030 inch [0.76 μ] gold over nickel. Other finishes are available, see optional plating finishes for -15.
Outer Contacts: Brass and beryllium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14.

... continued on next page

For information regarding CRIMP TOOLS & CRIMPING TOOL TECHNIQUES, see page 54.



REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

continued from previous page . . .

MECHANICAL CHARACTERISTICS:

STANDARD AND

HIGH CONDUCTIVITY:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts, 0.142 inch [3.61 mm] diameter male contacts, closed entry design female contacts.

HIGH VOLTAGE:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. Straight and right angle (90°) terminations. 0.041 inch [1.04 mm] minimum hole diameter.

Durability:

500 cycles minimum.

Vibration:

20g from 10 Hz to 500 Hz.

Shock:

30g-11ms.

SHIELDED:

Insert contact to rear face of insulator, release from front face of insulator. Size 8 contacts. See page 53 table of cable sizes for contact Termination dimensions.

ELECTRICAL CHARACTERISTICS:

STANDARD:

Contact Current Rating: See temperature rise curves on page 40.
For additional information see page 51-52.
Initial Contact Resistance: 0.001 ohms max. per IEC 60512-2, test 2b.

HIGH CONDUCTIVITY:

Contact Current Rating: See temperature rise curves on page 40.
Initial Contact Resistance: 0.0003 ohms max. per IEC 60512-2, test 2b.

HIGH VOLTAGE:

Flash over Voltage: 3600 V r.m.s.
Proof Voltage: 2700 V r.m.s.
Initial Contact Resistance: 0.008 ohms maximum.

SHIELDED:

Initial Contact Resistance: 0.008 ohms maximum.
Nominal Impedance: 50 ohms.
Insertion Loss: -0.46 dB at 1 GHz
-1.5 dB at 2 GHz

VSWR: 1.15 average at 1 GHz
1.56 average at 2 GHz

Above values measured using frequency domain techniques.

Proof Voltage: 1000 V r.m.s.

OPTIONAL PLATING FINISHES

-14 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. *Example: FC720N2-14.*

-15 0.000050 inch [1.27 µ] gold over nickel by adding "-15".
Example: FC720N2-15.

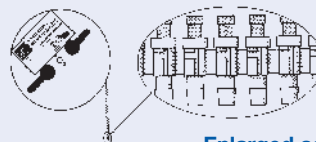
RoHS OPTIONS:

/AA Environmental Compliance Option: RoHS compliant can be achieved by adding "/AA" suffix onto part number. *Examples: FC720N2/AA or for optional plating finishes use FC720N2/AA-14.*

REELED CONTACTS:

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part numbers 9550-0 and 9550-1; packaged in reels holding 1,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9555-0-2. The same type carrier is used for both male and female contacts.

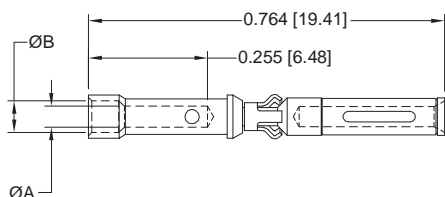
All male and female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as MC6020DR for a male contact and FC6026DR for a female contact.



Enlarged section of
plastic contact carriers

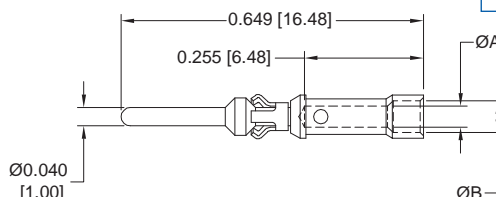
REMOVABLE CRIMP SIGNAL CONTACT FOR USE WITH PCS MIXED DENSITY SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 20

FEMALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm²]	ØA	ØB
FC720N2	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]	0.068 [1.73]

MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm²]	ØA	ØB
MC720N3	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]	0.068 [1.73]

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

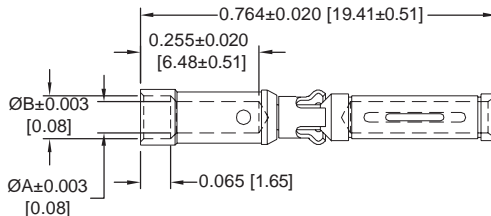
For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 54.

See page 9 for
current ratings.

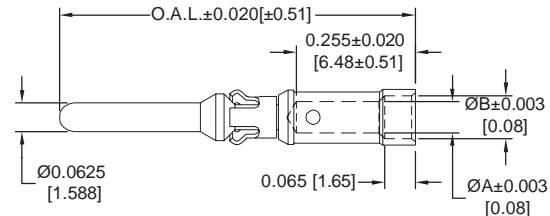
REMOVABLE CRIMP CONTACT FOR USE WITH PCS SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY

Note: Connectors can be kitted
with all applicable crimp/
solder contacts, con-
tact Technical Sales for
connector part number.

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
FC112N2	12 [4.0]	0.098 [2.49]	N/A
FC112N2S	12 [4.0]	0.098 [2.49]	N/A
FC114N2	14-16 [2.5-1.5]	0.081 [2.06]	0.105 [2.67]
FC116N2	16-18 [1.5-1.0]	0.067 [1.70]	0.093 [2.36]
FC120N2	20-22-24 [0.5-0.3-0.25]	0.045 [1.14]	0.068 [1.73]

"S" in
part number
indicates high
conductivity
material.

Compatible
with PL*H
PCB mount
connectors.
See ordering
information.

PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB	OAL
MC112N	12 [4.0]	0.098 [2.49]	N/A	0.764 [19.41]
MC112NS	12 [4.0]	0.098 [2.49]	N/A	0.764 [19.41]
*MC112N-133.0	12 [4.0]	0.098 [2.49]	N/A	0.684 [17.37]
*MC112N-133.1	12 [4.0]	0.098 [2.49]	N/A	0.724 [18.39]
*MC112N-133.2	12 [4.0]	0.098 [2.49]	N/A	0.744 [18.90]
*MC112N-133.3	12 [4.0]	0.098 [2.49]	N/A	0.804 [20.42]
MC114N	14-16 [2.5-1.5]	0.081 [2.06]	0.105 [2.67]	0.764 [19.41]
MC116N	16-18 [1.5-1.0]	0.067 [1.70]	0.093 [2.36]	0.764 [19.41]
*MC116N-133.0	16-18 [1.5-1.0]	0.067 [1.70]	0.093 [2.36]	0.684 [17.37]
*MC116N-133.1	16-18 [1.5-1.0]	0.067 [1.70]	0.093 [2.36]	0.724 [18.39]
*MC116N-133.2	16-18 [1.5-1.0]	0.067 [1.70]	0.093 [2.36]	0.744 [18.90]
*MC116N-133.3	16-18 [1.5-1.0]	0.067 [1.70]	0.093 [2.36]	0.804 [20.42]
MC120N	20-22-24 [0.5-0.3-0.25]	0.045 [1.14]	0.068 [1.73]	0.764 [19.41]

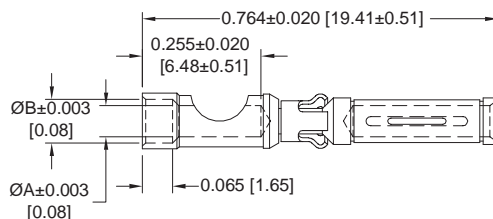
* indicates Sequential mate contacts,
see page 25 for more information
regarding Sequential Mating System.

See page 9 for
current ratings.

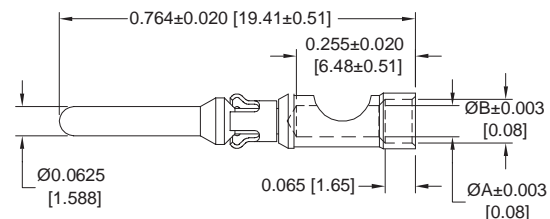
REMOVABLE SOLDER CUP CONTACT FOR USE WITH PCS SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY

Note: Connectors can be kitted
with all applicable crimp/
solder contacts, con-
tact Technical Sales for
connector part number.

FEMALE CONTACT "CLOSED ENTRY" DESIGN



MALE CONTACT



PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
FS112N2	12 [4.0]	0.098 [2.49]	N/A
FS112N2S	12 [4.0]	0.098 [2.49]	N/A
FS114N2	14 [2.5]	0.081 [2.06]	0.105 [2.67]
FS116N2	16 [1.5]	0.067 [1.70]	0.093 [2.36]
FS120N2	20 [0.5]	0.045 [1.14]	0.068 [1.73]

"S" in
part number
indicates high
conductivity
material.

Compatible
with PL*H
PCB mount
connectors.
See ordering
information.

PART NUMBERS	WIRE SIZE AWG/[mm ²]	ØA	ØB
MS112N	12 [4.0]	0.098 [2.49]	N/A
MS112NS	12 [4.0]	0.098 [2.49]	N/A
MS114N	14 [2.5]	0.081 [2.06]	0.105 [2.67]
MS116N	16 [1.5]	0.067 [1.70]	0.093 [2.36]
MS120N	20 [0.5]	0.045 [1.14]	0.068 [1.73]

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 54.



Positronic
connectpositronic.com

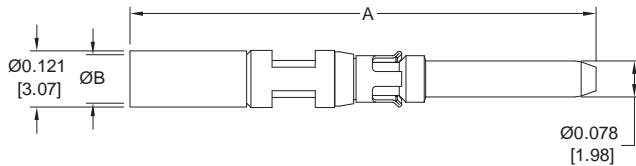
REMOVABLE SHIELDED AND CRIMP CONTACT SIZE 16 AND SIZE 12

Power
Connection
Systems

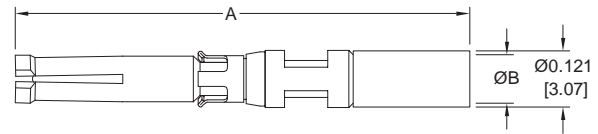
REMOVABLE CRIMP SHIELDED CONTACT FOR USE WITH PCS SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 16

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

MALE CONTACT



FEMALE CONTACT



PART NUMBERS	CABLE SIZE	CHARACT. IMPED.	A	ØB
MCS126N	RG 178 B/U	50 ohms	0.993 [25.22]	0.045 [1.14]
	RG 196 B/U	50 ohms		
MCS226N	RG 179 B/U	75 ohms	1.022 [25.96]	0.070 [1.78]
	RG 316 /U	50 ohms		

PART NUMBERS	CABLE SIZE	CHARACT. IMPED.	A	ØB
FCS126N2	RG 178 B/U	50 ohms	0.967 [24.56]	0.045 [1.14]
	RG 196 B/U	50 ohms		
FCS226N2	RG 179 B/U	75 ohms	1.022 [25.96]	0.070 [1.78]
	RG 316 /U	50 ohms		

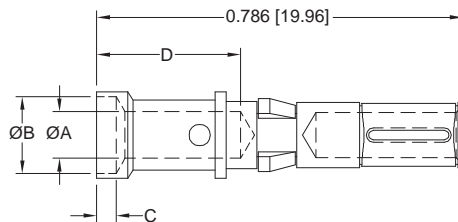
REMOVABLE CRIMP CONTACT

FOR USE WITH SHROUDED AND POWER INPUT CONNECTORS
CONTACTS MUST BE ORDERED SEPARATELY
SIZE 12

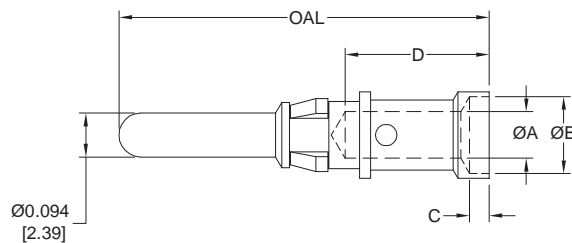
See page 33
for current ratings.

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT



MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm²]	ØA	ØB	C	D
FC610N2S	10 [6.0]	0.147 [3.73]	N/A	N/A	0.254 [6.45]
FC612N2	12 [4.0]	0.100 [2.54]	0.165 [4.19]	0.042 [1.06]	0.309 [7.85]

"S" in
part number
indicates high
conductivity
material.
Compatible with
PLBH3W3
or PLSH
PCB mount
connectors.
See ordering
information.

PART NUMBER	WIRE SIZE AWG/[mm²]	ØA	ØB	C	D	OAL
MC610NS	10 [6.0]	0.147 [3.73]	N/A	N/A	0.254 [6.45]	0.795 [20.19]
MC610NS-228.2	10 [6.0]	0.147 [3.73]	N/A	N/A	0.254 [6.45]	0.714 [18.14]
MC612N	12 [4.0]	0.100 [2.54]	0.165 [4.19]	0.042 [1.06]	0.309 [7.85]	0.795 [20.19]
MC612N-228.2	12 [4.0]	0.100 [2.54]	0.165 [4.19]	0.042 [1.06]	0.309 [7.85]	0.714 [18.14]

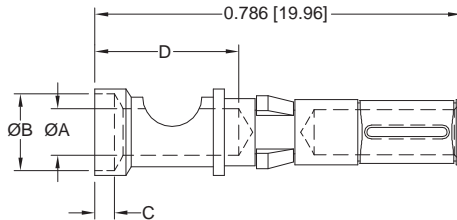
For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 54.

See page 33
for current ratings.

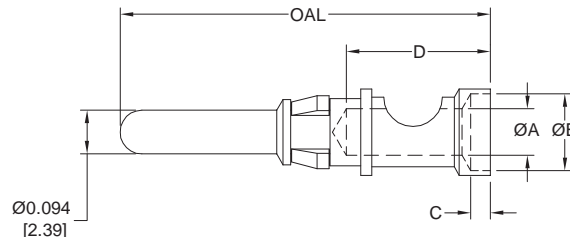
REMOVABLE SOLDER CUP CONTACT FOR USE WITH SHROUDED AND POWER INPUT CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 12

Note: Connectors can be kitted
with all applicable crimp/
solder contacts, con-
tact Technical Sales for
connector part number.

FEMALE CONTACT



MALE CONTACT



PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB	C	D
FS610N2S	10 [6.0]	0.147 [3.73]	N/A	N/A	0.254 [6.45]
FS612N2	12 [4.0]	0.100 [2.54]	0.165 [4.19]	0.042 [1.06]	0.309 [7.85]

"S" in
part number
indicates high
conductivity
material.

Compatible with
PLBH3W3
or PLSH
PCB mount
connectors.
See ordering
information.

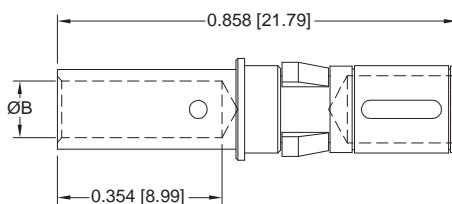
PART NUMBER	WIRE SIZE AWG/[mm ²]	ØA	ØB	C	D	OAL
MS610NS	10 [6.0]	0.147 [3.73]	N/A	N/A	0.254 [6.45]	0.795 [20.19]
MS610NS-228.2	10 [6.0]	0.147 [3.73]	N/A	N/A	0.254 [6.45]	0.714 [18.14]
MS612N	12 [4.0]	0.100 [2.54]	0.165 [4.19]	0.042 [1.06]	0.309 [7.85]	0.795 [20.19]
MS612N-228.2	12 [4.0]	0.100 [2.54]	0.165 [4.19]	0.042 [1.06]	0.309 [7.85]	0.714 [18.14]

REMOVABLE CRIMP CONTACT

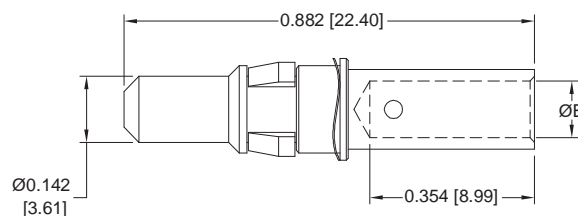
FOR USE WITH PCS MIXED DENSITY SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 8

Note: Connectors can be kitted
with all applicable crimp/
solder contacts, con-
tact Technical Sales for
connector part number.

* FEMALE CONTACT CLOSED ENTRY, L.S.A.



MALE CONTACT



PART NUMBER	CURRENT RATING	WIRE SIZE AWG/[mm ²]	ØB
FC4008D	See Temp. Rise Curve, page 40.	8 / [10.0]	0.181 [4.60]
FC4008DS	See Temp. Rise Curve, page 40.	8 / [10.0]	0.181 [4.60]
FC4010D	30 amperes	10 / [6.0]	0.122 [3.10]
FC4012D	20 amperes	12 / [4.0]	0.101 [2.57]
FC4016D	10 amperes	16 / [1.5]	0.067 [1.70]

"S" in
part number
indicates high
conductivity
material.

Compatible with PL*H
PCB mount
connectors.
See ordering
information.

PART NUMBER	CURRENT RATING	WIRE SIZE AWG/[mm ²]	ØB
MC4008D	See Temp. Rise Curve, page 40.	8 / [10.0]	0.181 [4.60]
MC4008DS	See Temp. Rise Curve, page 40.	8 / [10.0]	0.181 [4.60]
MC4010D	30 amperes	10 / [6.0]	0.122 [3.10]
MC4012D	20 amperes	12 / [4.0]	0.101 [2.57]
MC4016D	10 amperes	16 / [1.5]	0.067 [1.70]

*NOTE: Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 54.



Positronic
connectpositronic.com

REMOVABLE HIGH VOLTAGE CONTACT SIZE 8

Power
Connection
Systems

REMOVABLE SOLDER CUP CONTACT

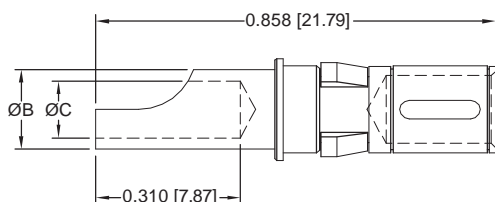
FOR USE WITH PCS MIXED DENSITY SERIES CONNECTORS

CONTACTS MUST BE ORDERED SEPARATELY

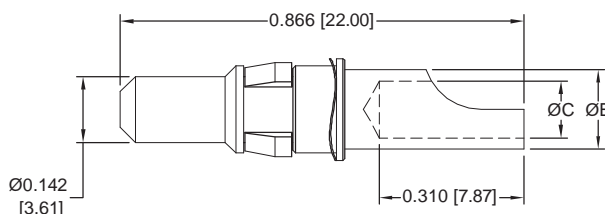
SIZE 8

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

* FEMALE CONTACT
CLOSED ENTRY, L.S.A.



MALE CONTACT



PART NUMBER	CURRENT RATING	WIRE SIZE AWG/[mm ²]	ØB	ØC
FS4008D	40 amperes	8 / [10.0]	0.219 [5.56]	0.188 [4.78]
FS4012D	20 amperes	12 / [4.0]	0.143 [3.63]	0.112 [2.84]
FS4016D	10 amperes	16 / [1.5]	0.100 [2.54]	0.069 [1.75]

PART NUMBER	CURRENT RATING	WIRE SIZE AWG/[mm ²]	ØB	ØC
MS4008D	40 amperes	8 / [10.0]	0.219 [5.56]	0.188 [4.78]
MS4012D	20 amperes	12 / [4.0]	0.143 [3.63]	0.112 [2.84]
MS4016D	10 amperes	16 / [1.5]	0.100 [2.54]	0.069 [1.75]

*NOTE: Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

REMOVABLE HIGH VOLTAGE CONTACT

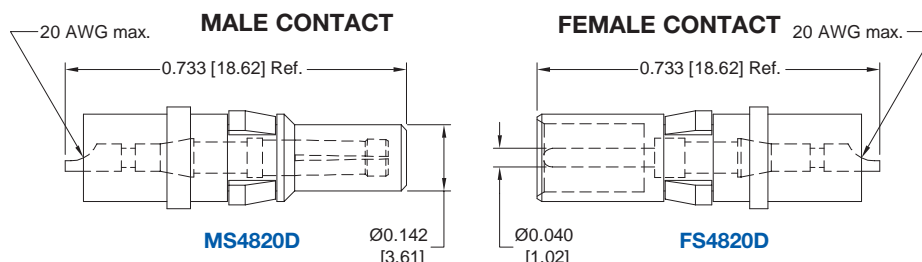
FOR USE WITH PCS MIXED DENSITY SERIES CONNECTORS

CONTACTS MUST BE ORDERED SEPARATELY

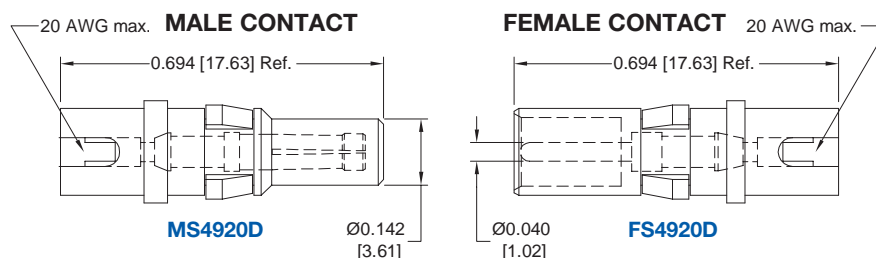
SIZE 8

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

STRAIGHT SOLDER WIRE TERMINATION



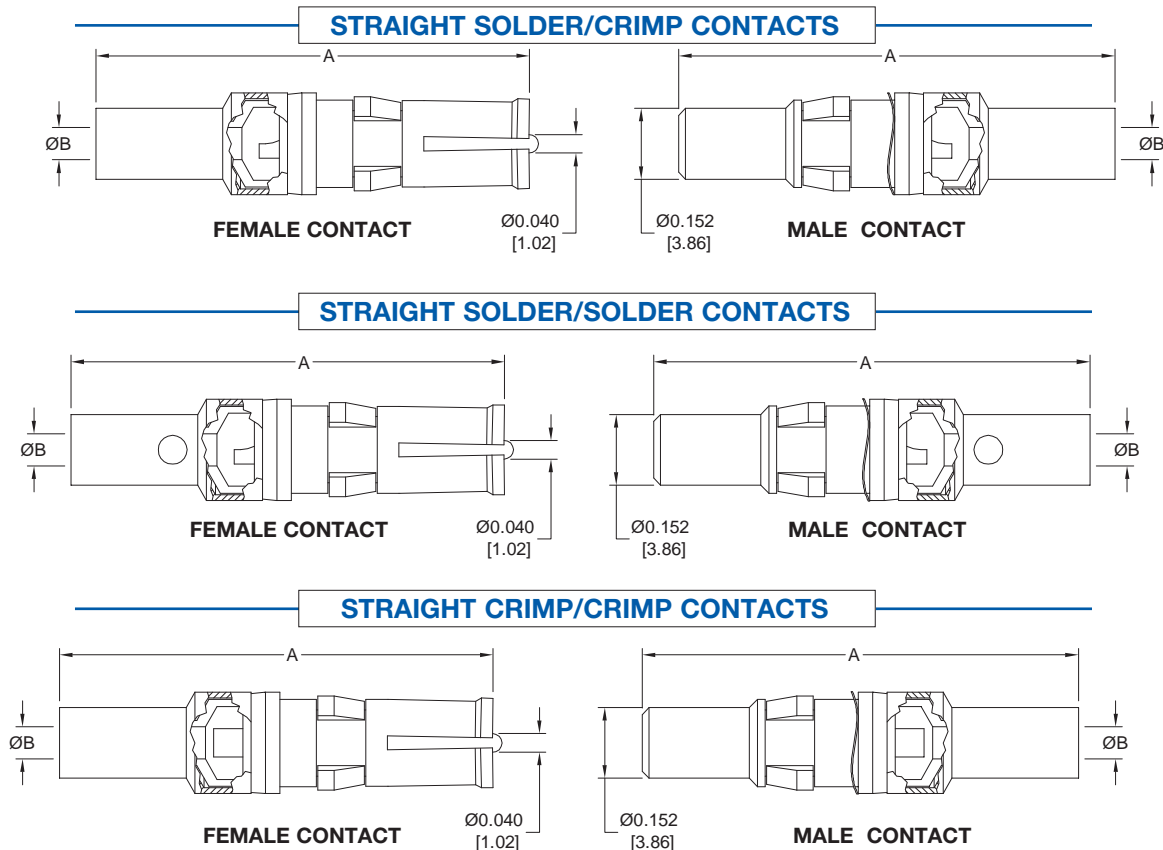
RIGHT ANGLE (90°) SOLDER WIRE TERMINATION



For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 54.

REMOVABLE SHIELDED CONTACT SIZE 8

REMOVABLE SHIELDED CONTACT FOR USE WITH PCS MIXED DENSITY SERIES CONNECTORS CONTACTS MUST BE ORDERED SEPARATELY SIZE 8



TYPE OF CONTACT	PART NUMBER		A	ØB	RG CABLE NUMBER
	MALE	FEMALE			
SOLDER/CRIMP	MC4101D	FC4101D	0.929 [23.60]	0.040 [1.02]	178 B/U 196 B/U
SOLDER/CRIMP	MC4102D	FC4102D	0.929 [23.60]	0.067 [1.70]	179 B/U 316 /U
SOLDER/CRIMP	MC4103D	FC4103D	1.037 [26.34]	0.108 [2.74]	180 B/U
SOLDER/CRIMP	MC4104D	FC4104D	1.037 [26.34]	0.120 [3.05]	58 B/U
SOLDER/SOLDER	MS4101D	FS4101D	0.929 [23.60]	0.040 [1.02]	178 B/U 196 B/U
SOLDER/SOLDER	MS4102D	FS4102D	0.929 [23.60]	0.067 [1.70]	179 B/U 316 /U
SOLDER/SOLDER	MS4103D	FS4103D	1.037 [26.34]	0.108 [2.74]	180 B/U
SOLDER/SOLDER	MS4104D	FS4104D	1.037 [26.34]	0.120 [3.05]	58 B/U
CRIMP/CRIMP	MCC4101D	FCC4101D	0.929 [23.60]	0.040 [1.02]	178 B/U 196 B/U
CRIMP/CRIMP	MCC4102D	FCC4102D	0.929 [23.60]	0.067 [1.70]	179 B/U 316 /U
CRIMP/CRIMP	MCC4103D	FCC4103D	1.037 [26.34]	0.108 [2.74]	180 B/U
CRIMP/CRIMP	MCC4104D	FCC4104D	1.037 [26.34]	0.120 [3.05]	58 B/U

Note: Connectors can be kitted with all applicable crimp / solder contacts, contact Technical Sales for connector part number.



SHIELDED CONTACTS

Two-step crimping action for signal and shielding conductors.

For information regarding **CRIMP TOOLS & CRIMPING TOOL TECHNIQUES**, see page 54.



Positronic
connectpositronic.com

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

Power
Connection
Systems

A P P L I C A T I O N T O O L S S E C T I O N

PLA (H), PLB (H), PLC (H) and PLS (H) connectors are offered with **removable crimp contacts**. Positronic recognizes the

importance of supplying **application tooling** to support our customers' use of our products.

Information on application tooling is **available** on our web site at

<http://www.connectpositronic.com/design-tools/tooling>

There you will find **downloadable PDF** cross reference charts for removable and compliant press-in contacts. These charts will **supply part numbers** for insertion, removal and crimping tools, along with **information regarding use** of tools and techniques.



Connectors Designed To Customer Specifications

Positronic's **PLA(H), PLB(H), PLC(H) and PLS(H)** series connectors can be modified to customers specifications.

Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware.

Positronic can develop and tool new connector designs with reasonable price and delivery.

Contact Technical Sales with your particular requirements.

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

To download a PDF file, visit our web site at http://www.connectpositronic.com/pdf_view/178	PCS MIXED DENSITY		SAFTEY SHROUD & POWER INPUT		P C S S E R I E S									
	SIZE 8 CONTACTS		SIZE 20	SIZE 12 CONTACTS			SIZE 16 CONTACTS							
Positronic Contact P/N	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv	Insertion Tool	Mfg. Cross	Mil Equiv	Removal Tool	Mfg. Cross	Mil Equiv	Automatic Crimp Tool *See Note
FC11+N2		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TH4	M2520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
FC12+N2S	9509-3-0-0	9509-4-0-0	GS222		9509-5-0-0	TP-1366		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
FC120N2		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TH4	M2520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
FCS*26N2	9506-0-0-0	9506-1-0-0	HX3		9506-2-0-0	X530		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
FS11+N2								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
FS12+N2S								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
FS120N2								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
MC11+N, -133 *		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TP1110		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC112NS	9509-3-0-0	9509-4-0-0	GS222		9509-5-0-0	TP-1366		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC120N		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TH4	M2520/1-03	9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MCS*26N	9506-0-0-0	9506-1-0-0	HX3		9506-2-0-0	X530		9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
MS11+N								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
MS112NS								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
MS120N								9099-0-0-0	ITH 1094	M81969/18-01	9081-0-0-0	RTG 2103	M81969/20-01	
FC610N2S	9509-6-0-0	9509-6-1-0	GS223		9509-6-2-0	TP-1386		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9555-0-2-0
FC612N2		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TP-1199		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9555-0-2-0
FS610N2S								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
FS612N2								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
MC610NS	9509-6-0-0	9509-6-1-0	GS223		9509-6-2-0	TP-1386		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9550-0-0-0
MC610NS-228.2	9509-6-0-0	9509-6-1-0	GS223		9509-6-2-0	TP-1386		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9550-0-0-0
MC612N		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TP1199		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9550-0-0-0
MC612N-228.2		9501-0-0-0	AF8	M2520/1-01	9502-1-0-0	TP1199		9099-3-0-0	ITP 1168		2711-0-0-0	P+		9550-0-0-0
MS610NS								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
MS610NS-228.2								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
MS612N								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
MS612N-228.2								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
FS1612N2								9099-3-0-0	ITP 1168		2711-0-0-0	P+		
FC720N2		9507-0-0-0	AFM8	M2520/2-01	9502-22-0-0	K1196		9099-4-0-0	ITP1076		9081-2-0-0	RMG2103		9550-1-0-0
MC720N3		9507-0-0-0	AFM8	M2520/2-01	9502-27-0-0	K1506		9099-4-0-0	ITP1076		9081-2-0-0	RMG2103		9550-1-0-0
*C4008D	9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+		9555-0-2-0
*C4008DS	9504-19-0-0	9504-1-0-0	HX4		9504-19-1-0	Y524		N/A			4311-0-0-0	P+		9555-0-2-0
*C4011D	9509-0-0-0	9509-1-0-0	M310		9509-2-0-0	TP-974		N/A			4311-0-0-0	P+		9555-0-2-0
*S40**D								N/A			4311-0-0-0	P+		
*S4*20D								N/A			4311-0-0-0	P+		
*C410*D	9504-0-0-0	9504-1-0-0	HX4	M2520/5-01	9504-2-0-0	Y322		N/A			4311-0-0-0	P+		
*S410*D								N/A			4311-0-0-0	P+		
*CC4101D	9504-14-0-0	9504-1-0-0	HX4	M2520/5-01	9504-14-1-0	Y878		N/A			4311-0-0-0	P+		
*CC4102D	9504-13-0-0	9504-1-0-0	HX4	M2520/5-01	9504-13-1-0	Y937		N/A			4311-0-0-0	P+		
*CC4103D	9504-15-0-0	9504-1-0-0	HX4	M2520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		
*CC4104D	9504-15-0-0	9504-1-0-0	HX4	M2520/5-01	9504-15-1-0	Y877		N/A			4311-0-0-0	P+		

STOOL NOTATION P/PV

*1 All male and female crimp contacts can be ordered on reels in quantities of 2,000 by adding letter "R" after the contact part number, see page 57 for more information.



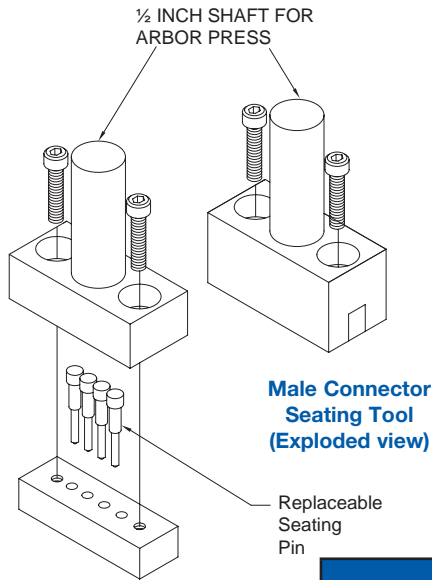
Positronic
connectpositronic.com

PRESS-IN USER INFORMATION AND CONNECTOR INSTALLATION TOOLING

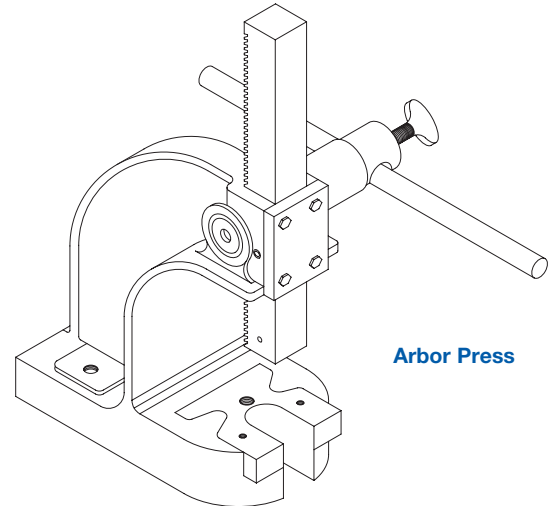
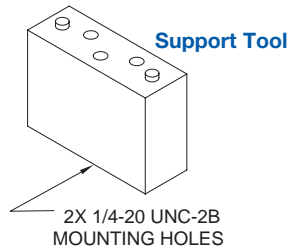
Power
Connection
Systems

COMPLIANT PRESS-IN CONNECTOR INSTALLATION TOOLS

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS




Female Connector
Seating Tool
(Exploded view)



Positronic offers expert assistance in adapting application tooling to your manufacturing environment. Contact our application tooling specialist for assistance.

POSITRONIC RECOMMENDED TOOLS

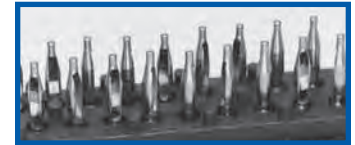
CONNECTOR VARIANT	CONNECTOR SEATING TOOL WITH ARBOR PRESS SHAFT		CONNECTOR SEATING TOOL WITHOUT ARBOR PRESS SHAFT	
	MALE	FEMALE	MALE	FEMALE
PLA03	9513-1-0-41	9513-13-0-41	9513-1-10-41	9513-13-10-41
PLA04	9513-2-0-41	9513-14-0-41	9513-2-10-41	9513-14-10-41
PLA06	9513-3-0-41	9513-15-0-41	9513-3-10-41	9513-15-10-41
PLA08	9513-4-0-41	9513-16-0-41	9513-4-10-41	9513-16-10-41
PLB06	9513-5-0-41	9513-17-0-41	9513-5-10-41	9513-17-10-41
PLB08	9513-6-0-41	9513-18-0-41	9513-6-10-41	9513-18-10-41
PLB10W2	9513-7-0-41	9513-30-0-41	9513-7-10-41	9513-30-10-41
PLB12	9513-7-0-41	9513-19-0-41	9513-7-10-41	9513-19-10-41
PLB16	9513-8-0-41	9513-20-0-41	9513-8-10-41	9513-20-10-41
PLB20	9513-33-0-41	9513-34-0-41	9513-33-10-41	9513-34-10-41
PLB3W3	9513-6-0-41	9513-18-1-41	9513-6-10-41	9513-18-11-41
PLC09	9513-9-0-41	9513-21-0-41	9513-9-10-41	9513-21-10-41
PLC12	9513-10-0-41	9513-22-0-41	9513-10-10-41	9513-22-10-41
PLC16W4	9513-11-0-41	9513-31-0-41	9513-11-10-41	9513-31-10-41
PLC18	9513-11-0-41	9513-23-0-41	9513-11-10-41	9513-23-10-41
PLC24	9513-12-0-41	9513-24-0-41	9513-12-10-41	9513-24-10-41
PLC30	9513-25-0-41	9513-26-0-41	9513-25-10-41	9513-26-10-41
Arbor press for connector seating tools: 9530-1-0-0 1 ton capacity 4 inch throat				
Replacement pins for connector seating tool	PCS Mixed Density Series Size 20		855-347-18-41	
	PCS Series Size 16		855-347-2-41 (female) 	
	PLB3W3 Series Size 12		855-347-11-41 (female)	
	PCS Mixed Density Series Size 8		855-347-19-41	
Support tool for PLB3W3: 9513-401-6-41				

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-IN CONNECTORS

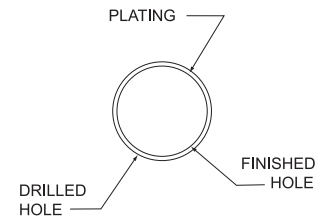
Traditionally, tin-lead has been a popular plating for printed circuit boards (PCB) holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA & BI-SPRING COMPLIANT PRESS-IN CONTACT HOLE				
BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	20 OMEGA	$\phi 0.0453 \pm 0.0010$ [$\phi 1.150 \pm 0.025$]	0.0006 [15μ] minimum solder over 0.0010 [25μ] min. copper	$\phi 0.0394 \pm 0.0035 - 0.0024$ [$\phi 1.000 \pm 0.090 - 0.060$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	12 BI-SPRING	$\phi 0.102 \pm 0.001$ [$\phi 2.59 \pm 0.025$]		$\phi 0.096 \pm 0.002$ [$\phi 2.44 \pm 0.05$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	12 BI-SPRING	$\phi 0.102 \pm 0.001$ [$\phi 2.59 \pm 0.025$]		$\phi 0.096 \pm 0.002$ [$\phi 2.44 \pm 0.05$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
IMMERSION TIN PCB	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000033±0.000006 [0.85±0.15μ] immersion tin over 0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	12 BI-SPRING	$\phi 0.102 \pm 0.001$ [$\phi 2.59 \pm 0.025$]		$\phi 0.096 \pm 0.002$ [$\phi 2.44 \pm 0.05$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
IMMERSION SILVER PCB	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000013±0.000007 [0.34±0.17μ] immersion silver over 0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	12 BI-SPRING	$\phi 0.102 \pm 0.001$ [$\phi 2.59 \pm 0.025$]		$\phi 0.096 \pm 0.002$ [$\phi 2.44 \pm 0.05$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.18 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	20 OMEGA	$\phi 0.047 \pm 0.001$ [$\phi 1.19 \pm 0.025$]	0.000002 [0.05μ] min. immersion gold over 0.000177±0.000059 [4.5±1.5μ] electroless nickel per IPC-4552 over 0.0010 [25μ] min. copper	$\phi 0.043 \pm 0.002$ [$\phi 1.09 \pm 0.05$]
	16 BI-SPRING	$\phi 0.069 \pm 0.001$ [$\phi 1.750 \pm 0.025$]		$\phi 0.0630 \pm 0.0035 - 0.0024$ [$\phi 1.600 \pm 0.090 - 0.060$]
	12 BI-SPRING	$\phi 0.102 \pm 0.001$ [$\phi 2.59 \pm 0.025$]		$\phi 0.096 \pm 0.002$ [$\phi 2.44 \pm 0.05$]
	8 BI-SPRING	$\phi 0.125 \pm 0.001$ [$\phi 3.180 \pm 0.025$]		$\phi 0.119 \pm 0.002$ [$\phi 3.02 \pm 0.05$]

“Omega” Termination
utilized on signal contacts



“Bi-Spring” Termination



COMPLIANT PRESS-IN TERMINATION CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

COMPLIANT PRESS-IN USER INFORMATION

When properly used, Positronic omega and bi-spring compliant press-in terminations provide reliable service even under severe conditions.

Connectors utilizing this leading technology compliant press-in contact are easy to install:

1. Inexpensive installation tooling is available from Positronic, to choose the proper installation tool refer to page 56 for part number ordering information.
2. Insert the connector into the P.C. board or backplane and seat connector fully.
3. Secure the connector to the P.C. board or backplane using two self-tapping screws. The screws should be #2 self-tapping screws for plastic.



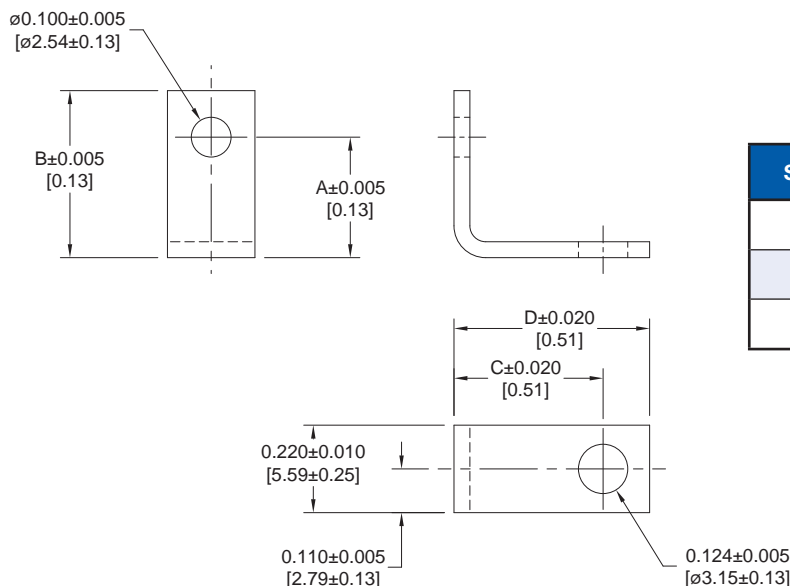
Positronic
connectpositronic.com

RIGHT ANGLE (90°) METAL AND PLASTIC MOUNTING BRACKETS

Power
Connection
Systems

RIGHT ANGLE (90°) METAL MOUNTING BRACKETS

CODE B ON STEP 5 OF ORDERING INFORMATION PAGE

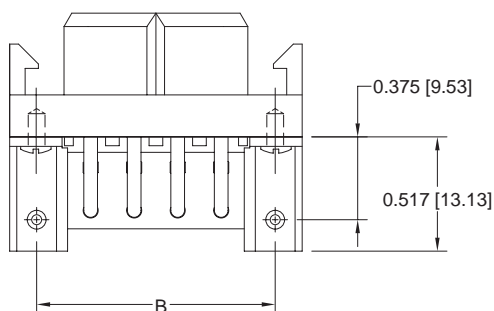


SERIES	A	B	C	D
PLA	0.204 [5.18]	0.321 [8.15]	0.375 [9.53]	0.492 [12.50]
PLB	0.303 [7.70]	0.420 [10.67]	0.375 [9.53]	0.492 [12.50]
PLC	0.401 [10.19]	0.518 [13.16]	0.375 [9.53]	0.492 [12.50]

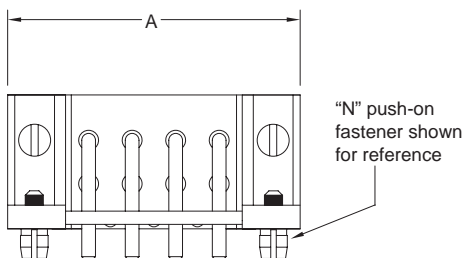
MATERIAL: Brass, tin plate.

RIGHT ANGLE (90°) PLASTIC MOUNTING BRACKET WITH CROSS BAR

CODE B3 OR CODE B3N ON STEP 5 OF ORDERING INFORMATION PAGE



B3 style required
for right angle (90°)
press-in connectors



MATERIAL:

MOUNTING BRACKET/CROSS BAR: Glass filled polyester, UL 94V-0.

PUSH-ON FASTENERS: Copper alloy, tin plated.

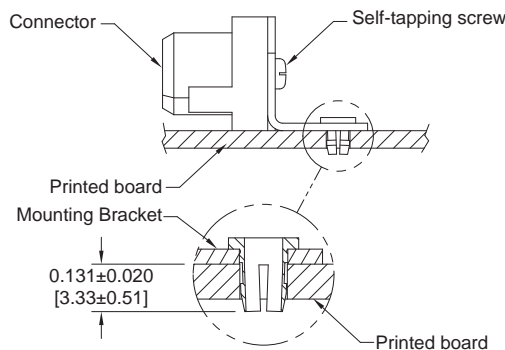
CONNECTOR VARIANT	A	B
PLA03	1.126 [28.60]	0.882 [22.40]
PLA04	1.324 [33.63]	1.080 [27.43]
PLA06	1.718 [43.64]	1.474 [37.44]
PLA08	2.112 [53.64]	1.868 [47.45]
PLB06	1.126 [28.60]	0.882 [22.40]
PLB08	1.324 [33.63]	1.080 [27.43]
PLB12	1.718 [43.64]	1.474 [37.44]
PLB16	2.112 [53.64]	1.868 [47.45]
PLC09	1.126 [28.60]	0.882 [22.40]
PLC12	1.324 [33.63]	1.080 [27.43]
PLC18	1.718 [43.64]	1.474 [37.44]
PLC24	2.112 [53.64]	1.868 [47.45]
PLC30	2.506 [63.65]	2.262 [57.45]

PUSH-ON FASTENERS

CODE BN OR CODE N ON STEP 5 OF ORDERING INFORMATION PAGE

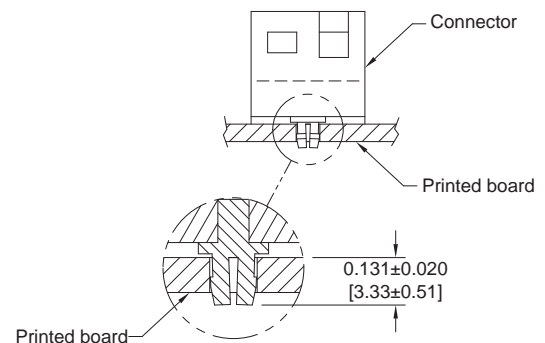
CODE BN

FOR USE WITH RIGHT ANGLE (90°) CONNECTOR



CODE N

FOR USE WITH STRAIGHT SOLDER CONNECTOR



MATERIAL: Spring tempered copper alloy, tin plated.

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 ±0.002 [3.12] Ø hole in printed board for mounting connector with push-on fasteners.







MOUNTING SCREWS

CODE ST2, ST3, ST4, SS2, SS3, OR SS4 ON STEP 5 OF ORDERING INFORMATION PAGE

**NOTE: MOUNTING SCREWS FOR RIGHT ANGLE CONNECTORS ARE ORDERED SEPARATELY
USING PART NUMBERS SHOWN IN CHART BELOW.**

Stresses that occur during coupling and uncoupling of connectors or through shock and vibration of systems can be transferred to backplanes or P.C. boards through press-in connector terminations. Avoid concern over electrical integrity of the connector to board interface by using mounting screws. Bellcore GR1217 details a preference for the use of mounting hardware and we recommend this practice.

SCREWS ARE #2 SELF-TAPPING FOR PLASTIC.

MOUNTING STYLE OPTION	MATERIAL OPTIONS	PART NUMBER	THREAD LENGTH	P.C. BOARED THICKNESS
ST2	STEEL	A4546-7-1-16 	0.250 ± 0.030 [6.35±0.76]	0.093 [2.36]
ST3	STEEL	A4546-7-2-16 	0.312 ± 0.030 [7.93±0.76]	0.125 [3.18]
ST4	STEEL	A4546-7-3-16 	0.375 ± 0.030 [9.53±0.76]	0.175 [4.45]
SS2	STAINLESS STEEL	A4546-7-6-4 	0.250 ± 0.030 [6.35±0.76]	0.093 [2.36]
SS3	STAINLESS STEEL	A4546-7-7-4 	0.312 ± 0.030 [7.93±0.76]	0.125 [3.18]
SS4	STAINLESS STEEL	A4546-7-8-4 	0.375 ± 0.030 [9.53±0.76]	0.175 [4.45]

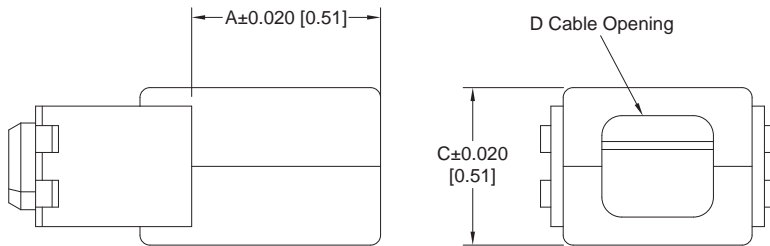
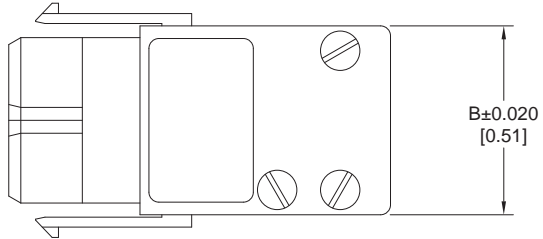
CONSULT TECHNICAL SALES IF AN ALTERNATE SCREW IS REQUIRED.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



POWER CONNECTION SYSTEMS HOOD

CODE 5 ON STEP 6 OF ORDERING INFORMATION PAGE

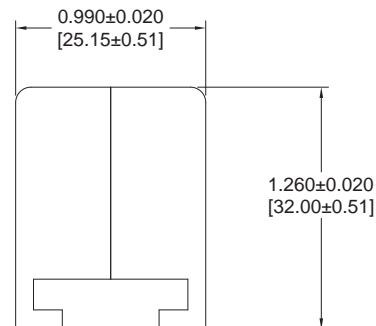
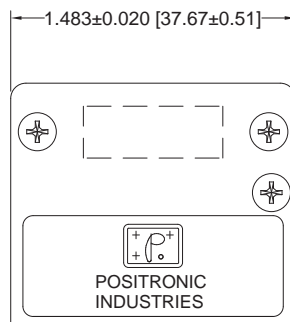


Features internal cable clamp.

CONNECTOR VARIANT	A	B	C	D
PLA03	1.000 [25.40]	0.752 [19.10]	0.594 [15.09]	0.312 [7.92] x 0.363 [9.22]
PLA04	1.000 [25.40]	0.950 [24.13]	0.594 [15.09]	0.312 [7.92] x 0.561 [14.25]
PLA06	1.000 [25.40]	1.344 [34.14]	0.594 [15.09]	0.312 [7.92] x 0.955 [24.26]
PLA08	1.000 [25.40]	1.738 [44.15]	0.594 [15.09]	0.312 [7.92] x 1.349 [34.26]
PLB06	1.000 [25.40]	0.752 [19.10]	0.792 [20.12]	0.510 [12.95] x 0.363 [9.22]
PLB08	1.000 [25.40]	0.950 [24.13]	0.792 [20.12]	0.510 [12.95] x 0.561 [14.25]
PLB12	1.000 [25.40]	1.344 [34.14]	0.792 [20.12]	0.510 [12.95] x 0.955 [24.26]
PLB16	1.000 [25.40]	1.738 [44.15]	0.792 [20.12]	0.510 [12.95] x 1.349 [34.26]
PLB3W3	1.000 [25.40]	0.950 [24.13]	0.792 [20.12]	0.510 [12.95] x 0.561 [14.25]
PLC09	1.000 [25.40]	0.752 [19.10]	0.990 [25.15]	0.708 [17.98] x 0.363 [9.22]
PLC12	1.000 [25.40]	0.950 [24.13]	0.990 [25.15]	0.708 [17.98] x 0.561 [14.25]
PLC18	1.000 [25.40]	1.344 [34.14]	0.990 [25.15]	0.708 [17.98] x 0.955 [24.26]
PLC24	1.000 [25.40]	1.738 [44.15]	0.990 [25.15]	0.708 [17.98] x 1.349 [34.26]
PLC30	1.000 [25.40]	2.132 [54.15]	0.990 [25.15]	0.708 [17.98] x 1.743 [44.27]

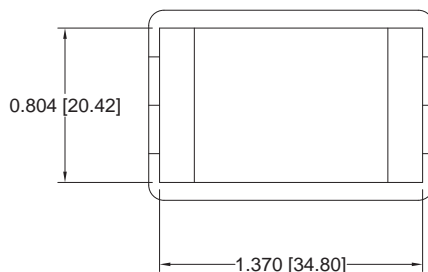
HOOD FOR USE WITH PLS5W5 CONNECTOR

CODE 5 ON STEP 6 OF ORDERING INFORMATION PAGE



For PLS5W5
Connector Only

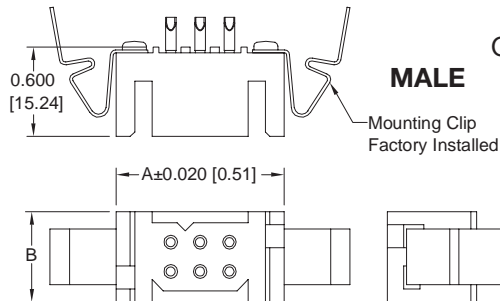
Features internal cable clamp.



CONTACT TECHNICAL SALES
FOR AVAILABILITY OF 7W7 VARIANT.

PANEL MOUNT CONNECTORS WITH QUICK RELEASE MOUNTING CLIP

CODE 6 IN STEP 6 OF
ORDERING INFORMATION PAGE



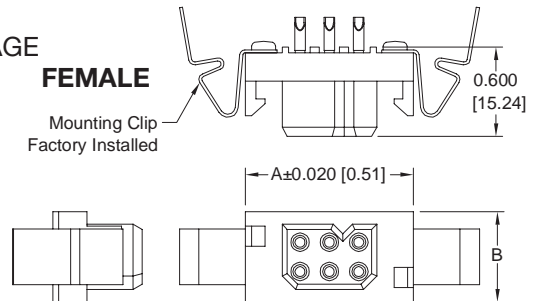
MALE

Mounting Clip
Factory Installed

For connection system 8

Typical part number: PLB06M206C1

CONNECTOR VARIANTS	A	B
PLA03	1.126 [28.60]	0.408 [10.36]
PLA04	1.324 [33.63]	0.408 [10.36]
PLA06	1.718 [43.64]	0.408 [10.36]
PLA08	2.112 [53.64]	0.408 [10.36]
PLB06	1.126 [28.60]	0.606 [15.39]
PLB08	1.324 [33.63]	0.606 [15.39]
PLB12	1.718 [43.64]	0.606 [15.39]



FEMALE

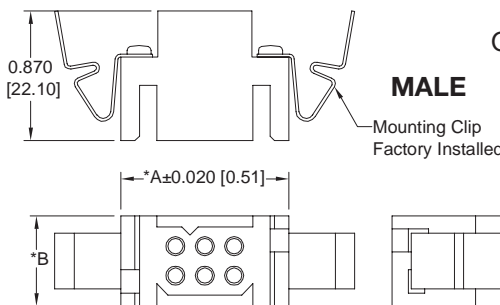
Mounting Clip
Factory Installed

Typical part number: PLB06F206C1

CONNECTOR VARIANTS	A	B
PLB16	2.112 [53.64]	0.606 [15.39]
PLB20	2.506 [63.65]	0.606 [15.39]
PLC09	1.126 [28.60]	0.802 [30.37]
PLC12	1.324 [33.63]	0.802 [30.37]
PLC18	1.718 [43.64]	0.802 [30.37]
PLC24	2.112 [53.64]	0.802 [30.37]
PLC30	2.506 [63.65]	0.802 [30.37]

PANEL MOUNT CONNECTORS WITH QUICK RELEASE MOUNTING CLIP FOR REMOVABLE CONTACTS

CODE 6 IN STEP 6 OF
ORDERING INFORMATION PAGE

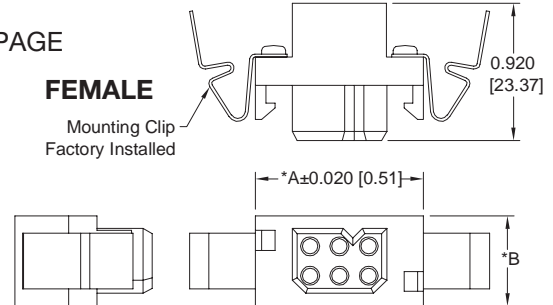


MALE

Mounting Clip
Factory Installed

For connection system 8

Typical part number: PLB06M1060



FEMALE

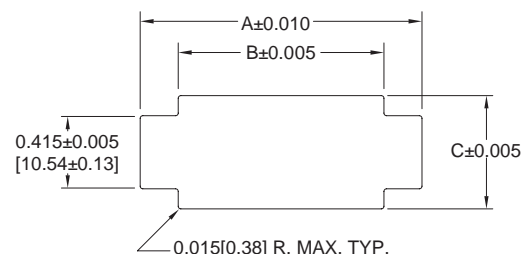
Mounting Clip
Factory Installed

*Note: See chart
above for connector
dimensions.

Typical part number: PLB06F1060

CONNECTOR VARIANTS	A	B	C
PLA03	1.600 [40.64]	1.168 [29.67]	0.445 [11.30]
PLA04	1.798 [45.67]	1.366 [34.70]	0.445 [11.30]
PLA06	2.192 [55.68]	1.760 [44.70]	0.445 [11.30]
PLA08	2.586 [65.68]	2.154 [54.71]	0.445 [11.30]
PLB06	1.600 [40.64]	1.168 [29.67]	0.643 [16.33]
PLB08	1.798 [45.67]	1.366 [34.70]	0.643 [16.33]
PLB12	2.192 [55.68]	1.760 [44.70]	0.643 [16.33]
PLB16	2.586 [65.68]	2.154 [54.71]	0.643 [16.33]
PLB20	2.980 [75.69]	2.548 [64.72]	0.643 [16.33]
PLC09	1.600 [40.64]	1.168 [29.67]	0.839 [21.31]
PLC12	1.798 [45.67]	1.366 [34.70]	0.839 [21.31]
PLC18	2.192 [55.68]	1.760 [44.70]	0.839 [21.31]
PLC24	2.586 [65.68]	2.154 [54.71]	0.839 [21.31]
PLC30	2.980 [75.69]	2.548 [64.72]	0.839 [21.31]

PANEL CUTOUT FOR USE WITH QUICK RELEASE MOUNTING CLIPS



Maximum panel thickness: 0.063 [1.60] nominal.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



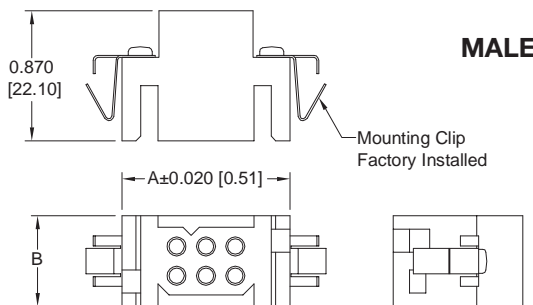
Positronic
connectpositronic.com

FIXED STYLE MOUNTING CLIP AND PANEL CUTOUT

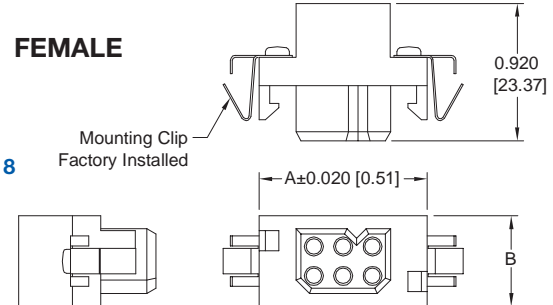
Power
Connection
Systems

PANEL MOUNT CONNECTORS WITH *FIXED STYLE MOUNTING CLIP

CODE 81, 82 AND 83 IN STEP 6 OF ORDERING INFORMATION PAGE



Typical part number:
PLB06M10810



Typical part number:
PLB06F10810

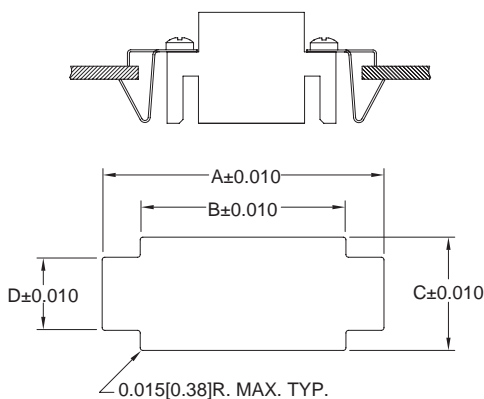
CLIP MATERIAL: Beryllium copper, nickel plated

PART NUMBER	PANEL THICKNESS
PL*****81*	0.040 [1.02]
PL*****82*	0.060 [1.52]
PL*****83*	0.090 [2.29]

* May be used with either fixed solder or removable contact connector insulators.

CONNECTOR VARIANTS	A	B
PLA03	1.126 [28.60]	0.408 [10.36]
PLA04	1.324 [33.63]	0.408 [10.36]
PLA06	1.718 [43.64]	0.408 [10.36]
PLA08	2.112 [53.64]	0.408 [10.36]
PLB06	1.126 [28.60]	0.606 [15.39]
PLB08	1.324 [33.63]	0.606 [15.39]
PLB12	1.718 [43.64]	0.606 [15.39]
PLB16	2.112 [53.64]	0.606 [15.39]
PLB20	2.506 [63.65]	0.606 [15.39]
PLC09	1.126 [28.60]	0.802 [30.37]
PLC12	1.324 [33.63]	0.802 [30.37]
PLC18	1.718 [43.64]	0.802 [30.37]
PLC24	2.112 [53.64]	0.802 [30.37]
PLC30	2.506 [63.65]	0.802 [30.37]

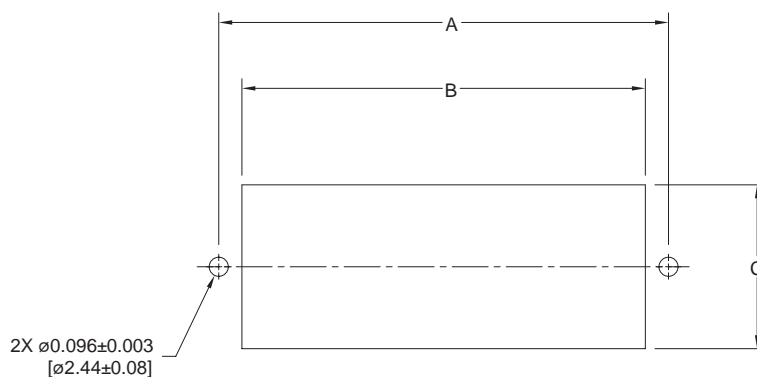
PANEL CUTOUT FOR USE WITH FIXED STYLE MOUNTING CLIPS



CONNECTOR VARIANTS	A	B	C	D
PLA03	1.380 [35.05]	1.150 [29.21]	0.445 [11.30]	0.193 [4.90]
PLA04	1.578 [40.08]	1.348 [34.24]	0.445 [11.30]	0.193 [4.90]
PLA06	1.972 [50.09]	1.742 [44.25]	0.445 [11.30]	0.193 [4.90]
PLA08	2.366 [60.10]	2.136 [54.25]	0.445 [11.30]	0.193 [4.90]
PLB06	1.380 [35.05]	1.150 [29.21]	0.643 [16.33]	0.300 [7.62]
PLB08	1.578 [40.08]	1.348 [34.24]	0.643 [16.33]	0.300 [7.62]
PLB12	1.972 [50.09]	1.742 [44.25]	0.643 [16.33]	0.300 [7.62]
PLB16	2.366 [60.10]	2.136 [54.25]	0.643 [16.33]	0.300 [7.62]
PLB20	2.760 [70.10]	2.530 [64.26]	0.643 [16.33]	0.300 [7.62]
PLC09	1.380 [35.05]	1.150 [29.21]	0.839 [21.31]	0.300 [7.62]
PLC12	1.578 [40.08]	1.348 [34.24]	0.839 [21.31]	0.300 [7.62]
PLC18	1.972 [50.09]	1.742 [44.25]	0.839 [21.31]	0.300 [7.62]
PLC24	2.366 [60.10]	2.136 [54.25]	0.839 [21.31]	0.300 [7.62]
PLC30	2.760 [70.10]	2.530 [64.26]	0.839 [21.31]	0.300 [7.62]

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

PANEL MOUNT CUTOUT



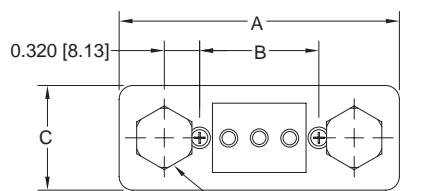
CONNECTOR VARIANTS	A ± 0.005	B ± 0.005	C ± 0.005
PLA03	0.882 [22.40]	0.650 [16.51]	0.430 [10.92]
PLA04	1.079 [27.41]	0.847 [21.51]	0.430 [10.92]
PLA06	1.473 [37.41]	1.241 [31.52]	0.430 [10.92]
PLA08	1.867 [47.42]	1.635 [41.53]	0.430 [10.92]
PLB06	0.882 [22.40]	0.650 [16.51]	0.627 [15.93]
PLB08	1.079 [27.41]	0.847 [21.51]	0.627 [15.93]
PLB12	1.473 [37.41]	1.241 [31.52]	0.627 [15.93]
PLB16	1.867 [47.42]	1.635 [41.53]	0.627 [15.93]
PLB20	2.262 [57.45]	2.029 [51.54]	0.627 [15.93]
PLB3W3	1.079 [27.41]	0.847 [21.51]	0.627 [15.93]
PLB10W2	1.473 [37.41]	1.241 [31.52]	0.627 [15.93]
PLC09	0.882 [22.40]	0.650 [16.51]	0.824 [20.93]
PLC12	1.079 [27.41]	0.847 [21.51]	0.824 [20.93]
PLC18	1.473 [37.41]	1.241 [31.52]	0.824 [20.93]
PLC24	1.867 [47.42]	1.635 [41.53]	0.824 [20.93]
PLC30	2.262 [57.45]	2.029 [51.54]	0.824 [20.93]
PLC16W4	1.473 [37.41]	1.241 [31.52]	0.824 [20.93]



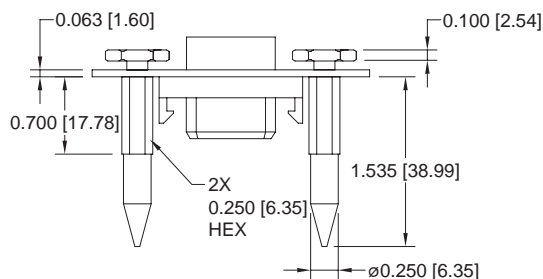
Positronic
connectpositronic.com

BLIND MATING SYSTEM AND PANEL CUTOUT

Power
Connection
Systems

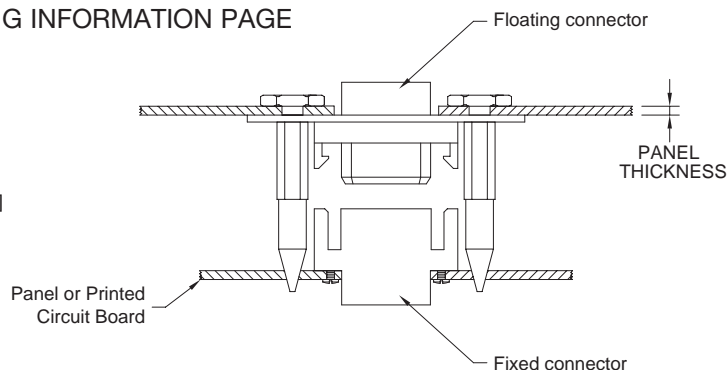


2X
0.500 [12.71] HEX



BLIND MATING SYSTEM

CODE 11, 12, 13 AND 14
IN STEP 6 OF
ORDERING INFORMATION PAGE

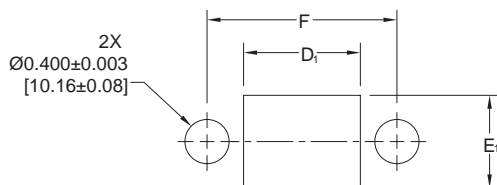


Typical Part Number: **PLB08F10120**

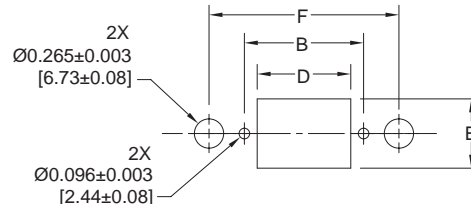
PANEL CUTOUT

FOR USE WITH FLOATING AND FIXED CONNECTOR BLIND MATING SYSTEMS

FLOATING CONNECTOR



FIXED CONNECTOR



NOTE: Panel thickness may impact the orientation of mating end of blind mate pin. Shimming between the panel and the head of the blind mate pin may be necessary to minimize tilt of the blind mate system. Contact technical sales for additional technical information.

MATERIALS AND FINISHES:

BLIND MATING PLATE: Stainless steel.

BLIND MATING GUIDE: Stainless steel, passivated.

FLOAT SCREW: Steel, zinc plate with chromate seal.

Blind mating system provides lead in for 0.100 [2.54] axial misalignment.

Blind mating system sold in a kit containing a connector - plate assembly, Blind mating guides, and float screws.

PART NUMBER	PANEL THICKNESS
PL*****11* PLB3W3*10110	0.040 [1.02]
PL*****12* PLB3W3*10120	0.060 [1.52]
PL*****13* PLB3W3*10130	0.090 [2.28]
PL*****14* PLB3W3*10140	0.120 [3.05]

CONNECTOR VARIANTS	A	B ±0.005	C	D ±0.005	D1 ±0.005	E ±0.005	E1 ±0.005	F ±0.005
PLA03	2.340 [59.44]	0.882 [22.40]	0.750 [19.05]	0.650 [16.51]	0.860 [21.84]	0.430 [10.92]	0.640 [16.26]	1.522 [38.66]
PLA04	2.537 [64.44]	1.079 [27.41]	0.750 [19.05]	0.847 [21.51]	1.057 [26.85]	0.430 [10.92]	0.640 [16.26]	1.719 [43.66]
PLA06	2.931 [74.45]	1.473 [37.41]	0.750 [19.05]	1.241 [31.52]	1.451 [36.86]	0.430 [10.92]	0.640 [16.26]	2.113 [53.67]
PLA08	3.325 [84.46]	1.867 [47.42]	0.750 [19.05]	1.635 [41.53]	1.845 [46.86]	0.430 [10.92]	0.640 [16.26]	2.507 [63.68]
PLB06	2.340 [59.44]	0.882 [22.40]	0.947 [24.05]	0.650 [16.51]	0.860 [21.84]	0.627 [15.93]	0.837 [21.26]	1.522 [38.66]
PLB08	2.537 [64.44]	1.079 [27.41]	0.947 [24.05]	0.847 [21.51]	1.057 [26.85]	0.627 [15.93]	0.837 [21.26]	1.719 [43.66]
PLB12	2.931 [74.45]	1.473 [37.41]	0.947 [24.05]	1.241 [31.52]	1.451 [36.86]	0.627 [15.93]	0.837 [21.26]	2.113 [53.67]
PLB16	3.325 [84.46]	1.867 [47.42]	0.947 [24.05]	1.635 [41.53]	1.845 [46.86]	0.627 [15.93]	0.837 [21.26]	2.507 [63.68]
PLB3W3	2.537 [64.44]	1.079 [27.41]	0.947 [24.05]	0.847 [21.51]	1.057 [26.85]	0.627 [15.93]	0.837 [21.26]	1.719 [43.66]
PLC09	2.340 [59.44]	0.882 [22.40]	1.144 [29.06]	0.650 [16.51]	0.860 [21.84]	0.824 [20.93]	1.034 [26.26]	1.522 [38.66]
PLC12	2.537 [64.44]	1.079 [27.41]	1.144 [29.06]	0.847 [21.51]	1.057 [26.85]	0.824 [20.93]	1.034 [26.26]	1.719 [43.66]
PLC18	2.931 [74.45]	1.473 [37.41]	1.144 [29.06]	1.241 [31.52]	1.451 [36.86]	0.824 [20.93]	1.034 [26.26]	2.113 [53.67]
PLC24	3.325 [84.46]	1.867 [47.42]	1.144 [29.06]	1.635 [41.53]	1.845 [46.86]	0.824 [20.93]	1.034 [26.26]	2.507 [63.68]
PLC30	3.720 [94.49]	2.262 [57.45]	1.144 [29.06]	2.029 [51.54]	2.239 [56.87]	0.824 [20.93]	1.034 [26.26]	2.902 [73.71]

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24

Current Ratings: To 200 amperes per contact

Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in a variety of package sizes
PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

Compliance:

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22

Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven connector housing sizes

Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22

Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22

Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare wire harness connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22

Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



Positronic®
global connector solutions

Divisional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

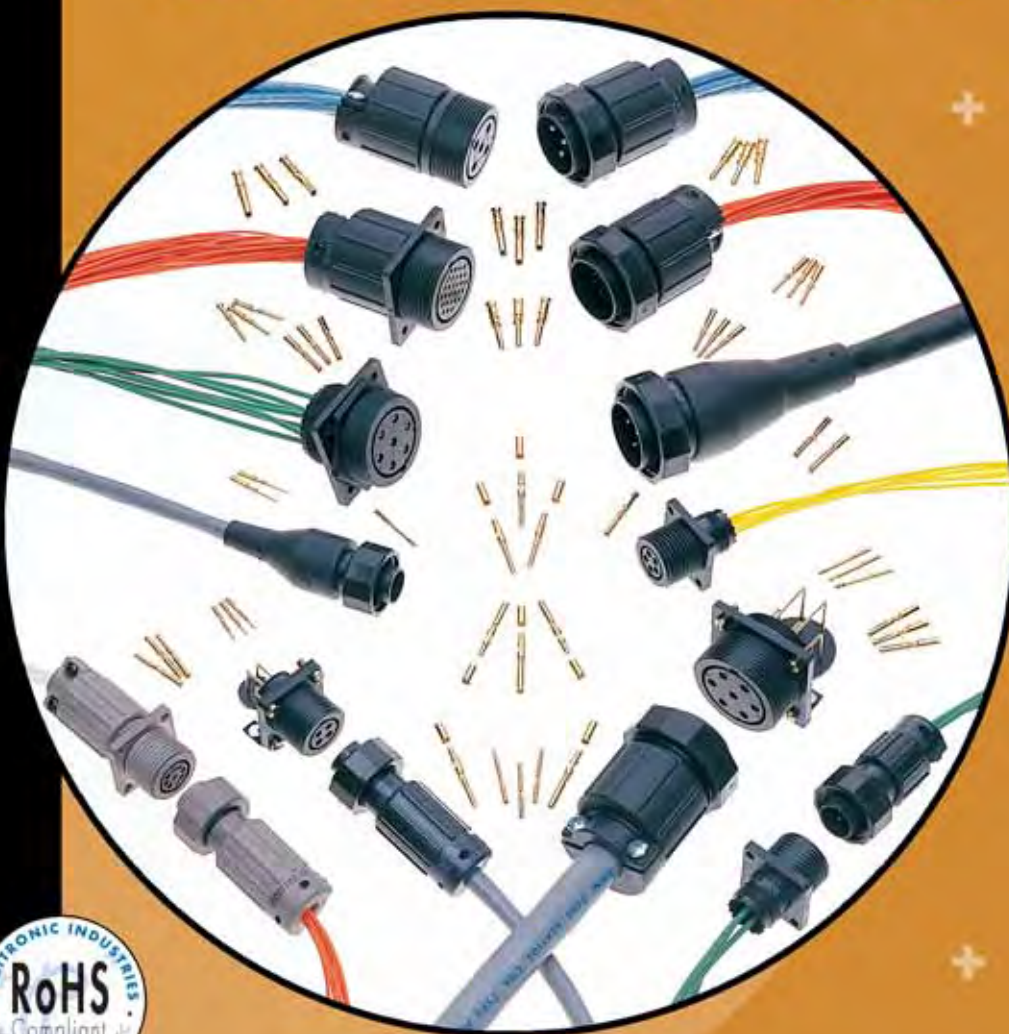
Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/sales



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS

Front Runner

Circular Connectors



FEATURING HIGH PERFORMANCE,
LIGHTWEIGHT,
COMPOSITE CONSTRUCTION

Catalog C-015 Rev. E

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG® and VITA.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, C.UL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 369,000.

Support

- **Quality Systems:** Select locations qualified to ISO9001:2000, ISO14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DESC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ± 0.003 inches [0.08 mm] for contact termination diameters.
- 3) ± 0.005 inches [0.13 mm] for all other diameters.
- 4) ± 0.015 inches [0.38 mm] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic®, Positronic Industries, Inc.®, P+ logo, Positronic Global Connector Solutions®, Connector Excellence® and their logo designs are registered trademarks of Positronic Industries, Inc.

***HIGH PERFORMANCE, LIGHTWEIGHT,
COMPOSITE CONSTRUCTION***



- **SIZES 11 AND 19** connector diameters.
- **16 CONTACT ARRANGEMENTS** from 3 to 29 contacts.
- **EASY CONTACT SERVICING:** Rear insertion/front release of removable contacts.
- **TWO LEVEL SEQUENTIAL MATING OF CONTACTS.**
- **NON-CORRODIBLE/LIGHTWEIGHT COMPOSITE MATERIALS.**
- **ENVIRONMENTAL VERSION** features dust and water ingress protection to IEC IP67 (1 meter immersion for 30 minutes) in mated condition.
- **EMI/RFI SHIELDED VERSION**, electroless nickel plated plastic.
- **THERMOCOUPLE CONTACTS.**



Positronic Industries
connectpositronic.com

TABLE OF CONTENTS

Front
Runner

G E N E R A L I N F O R M A T I O N

General Product Information	1
Typical Connector Assemblies	2
Contact Arrangements	3

T E C H N I C A L I N F O R M A T I O N

Technical Information	4
“Large Surface Area” Contact Mating System	5
Temperature Rise Curves	5

D I M E N S I O N S

Housing Dimensions	6-7
Straight and 90° Printed Board Mount Connectors	8-9
Straight Printed Board Contact Hole Patterns	10
90° Printed Board Contact Hole Patterns	11

O R D E R I N G I N F O R M A T I O N

Ordering Information	12
Special Options	13

A C C E S S O R I E S

Non-Environmental Version Accessories	14-15
Accessories and Panel Cutouts	15
Environmental Version Data	16
EMI/RFI Shielded Version Data	17

C O N T A C T S

Removable Contacts	18-19
Thermocouple Contacts	20
Crimp Shielded Contacts	21-22

A P P L I C A T I O N T O O L S

Introduction	23
Contact Application Tools Cross Reference List	24



The **Front Runner Series** offers a multiplicity of connector features which makes it a first choice to meet the high performance and high reliability requirements of Medical, Transportation, Industrial Control, and Avionics applications. **Front Runner** features include:

1. Composite components: Lightweight and non-corrodible. Contacts machined from solid copper alloy.
2. Sixteen (16) contact arrangements from 3 to 29 contacts.
3. Hot pluggable capabilities to 25 amperes.
4. Two level sequential mating of contacts.
5. A mix of power and signal contacts in Sizes 12, 16, 20, and 22. Crimp removable contacts and printed board straight and right angle terminations.
6. Mounting options include flange and jam nut or printed circuit board mount.
7. Environmental version provides dust and water ingress protection to I.E.C. IP67 (1 meter immersion for 30 minutes in mated condition).
8. EMI/RFI shielded version, electroless nickel plated plastic.
9. Easy contact servicing - rear insertion/front release contact retention system.
10. Threaded coupling nut system.



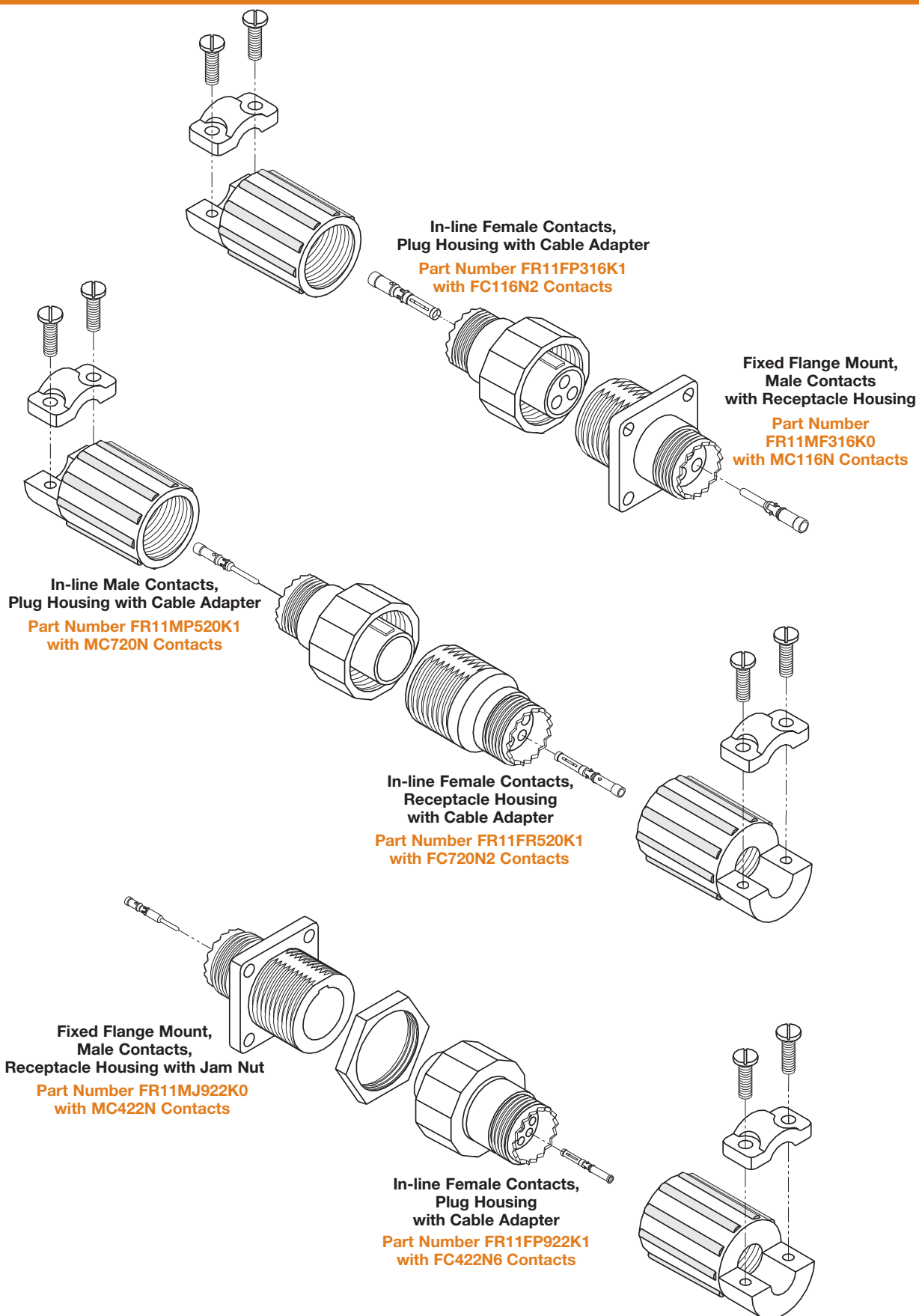
Contact Technical Sales for additional information.



Positronic Industries
connectpositronic.com

TYPICAL CONNECTOR ASSEMBLIES

Front
Runner





CONTACT ARRANGEMENTS FOR SIZE 11 HOUSING

VOLTAGE RATINGS PER EN60950 * INSULATION RESISTANCE OF 5 G OHMS

CONTACT ARRANGEMENTS ARE SHOWN APPROXIMATELY ACTUAL SIZE

MATING FACE OF MALE OR REAR VIEW OF FEMALE CONNECTOR SHOWN



316

Three (3) Size 16 Contacts
0.063 inch [1.6 mm] minimum creepage
for operation at 300V RMS



520

Five (5) Size 20 Contacts
0.039 inch [1.0 mm] minimum creepage
for operation at 200V RMS



822

Eight (8) Size 22 Contacts
0.028 inch [0.7 mm] minimum creepage
for operation at 100V RMS



420

Four (4) Size 20 Contacts
0.059 inch [1.5 mm] minimum creepage
for operation at 250V RMS



722

Seven (7) Size 22 Contacts
0.063 inch [1.6 mm] minimum creepage
for operation at 300V RMS



922

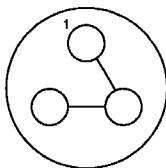
Nine (9) Size 22 Contacts
0.028 inch [0.7 mm] minimum creepage
for operation at 100V RMS

CONTACT ARRANGEMENTS FOR SIZE 19 HOUSING

VOLTAGE RATINGS PER EN60950 * INSULATION RESISTANCE OF 5 G OHMS

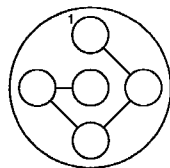
CONTACT ARRANGEMENTS ARE SHOWN APPROXIMATELY ACTUAL SIZE

MATING FACE OF MALE OR REAR VIEW OF FEMALE CONNECTOR SHOWN



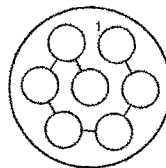
312

Three (3) Size 12 Contacts
0.197 inch [5.0 mm]
minimum creepage for
operation at 600V RMS



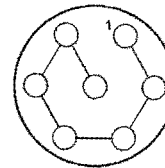
512

Five (5) Size 12 Contacts
0.091 inch [2.3 mm]
minimum creepage for
operation at 400V RMS



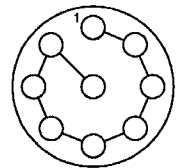
712

Seven (7) Size 12 Contacts
0.071 inch [1.8 mm]
minimum creepage for
operation at 300V RMS



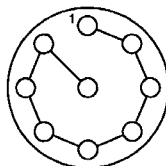
716

Seven (7) Size 16 Contacts
0.189 inch [4.8 mm]
minimum creepage for
operation at 600V RMS



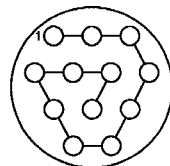
916

Nine (9) Size 16 Contacts
0.118 inch [3.0 mm]
minimum creepage for
operation at 400V RMS



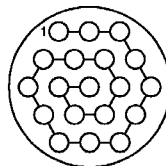
920

Nine (9) Size 20 Contacts
0.154 inch [3.9 mm]
Minimum Creepage for
Operation at 600V RMS



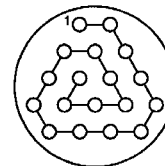
1220

Twelve (12) Size 20 Contacts
0.102 inch [2.6 mm]
minimum creepage for
operation at 400V RMS



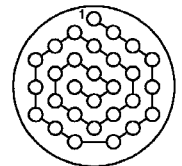
1920

Nineteen (19) Size 20 Contacts
0.059 inch [1.5 mm]
minimum creepage for
operation at 250V RMS



1822

Eighteen (18) Size 22 Contacts
0.086 inch [2.2 mm]
minimum creepage for
operation at 400V RMS



2922

Twenty-nine (29)
Size 22 Contacts
0.051 inch [1.3 mm]
minimum creepage for
operation at 250V RMS

• NOTE: Contact Technical Sales for availability of other contact arrangements.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator Inserts: Glass-filled DAP, Type SDG-F, black color, UL 94V-0.

Non-Environmental Connectors:

Housings: Glass-filled polyester, black color, UL 94V-0.

Coupling Nut: Glass-filled polyester, black color, UL 94V-0.

Cable Adapters: Glass-filled polyester, black color, UL 94V-0.

Environmental Connectors:

Interfacial O-Rings: T.P.E.

Cable Adapters: Glass-filled polyester with T.P.E. boot.

Dust Cover: Glass-filled polyester, black color, or low density polyethylene, black color, UL 94V-0.

EMI/RFI Shielded Connectors:

Housings: Thermoplastic, electroless nickel over copper plated.

Cable Adapters: Thermoplastic, electroless nickel over copper plated.

Contacts: Copper alloy with gold flash over nickel or 0.000030 inch [0.76 microns] gold plate over nickel plate.

Jam Nuts: Aluminum, black anodized.

MECHANICAL CHARACTERISTICS:

Polarization: Plug and receptacle housings are molded with integral polarization system.

Removable Contacts: Rear insertion/Front release removal. Female contact features "Closed Entry Design" for highest reliability.

Contact Retention in Insulator:

Size 22: 6 lbs. [27 N] per IEC 60512-8, Test 15a.
Size 20: 10 lbs. [44 N] per IEC 60512-8, Test 15a.
Size 16: 20 lbs. [89 N] per IEC 60512-8, Test 15a.
Size 12: 20 lbs. [89 N] per IEC 60512-8, Test 15a.

Sequential Contact

Mating Systems: One and two level systems. Contact Technical Sales for ordering information.

Coupling System:

Size 11 Housing: M19 coupling nut.
Size 19 Housing: M32 coupling nut.

Printed Board

Contact Terminations: Straight and 90° solder terminations.

Mechanical Operations: 500 operations.

ELECTRICAL CHARACTERISTICS:

Nominal Contact Current Rating:

Size 12: 25 amperes.
Size 16: 13 amperes.
Size 20: 7.5 amperes.
Size 22: 5 amperes.

Initial Contact Resistance, Maximum:

Size 12: 0.001 ohms per IEC 60512-2, Test 2b.
Size 16: 0.0016 ohms per IEC 60512-2, Test 2b.
Size 20: 0.007 ohms per IEC 60512-2, Test 2b.
Size 22: 0.012 ohms per IEC 60512-2, Test 2b.

Size 16 Micro-Coaxial Contacts:

See page 22 for technical information.

Insulation Resistance: 5 G ohms per IEC 60512-2, Test 3a, Method A.

Creepage and

Clearance Distance:

See values given with the specific contact arrangements on page 3.

Working Voltage:

See values given with the specific contact arrangements on page 3.

Hot Pluggable

(50 couplings per

UL 1977, paragraph 15):

Size 12 Contacts: 250 VAC at 25 amperes.
Size 16 Contacts: 120 VAC at 4.5 amperes.

CLIMATIC CHARACTERISTICS:

Working Temperature: -55°C to +125°C.

Dust and Water Ingress: Per IEC IP67 (1 meter immersion for 30 minutes) in mated condition.

EMI/RFI SHIELDING CHARACTERISTICS:

Surface Conductivity: < 0.5 ohm per square.

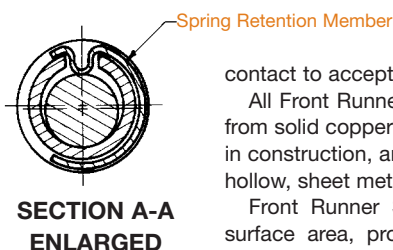
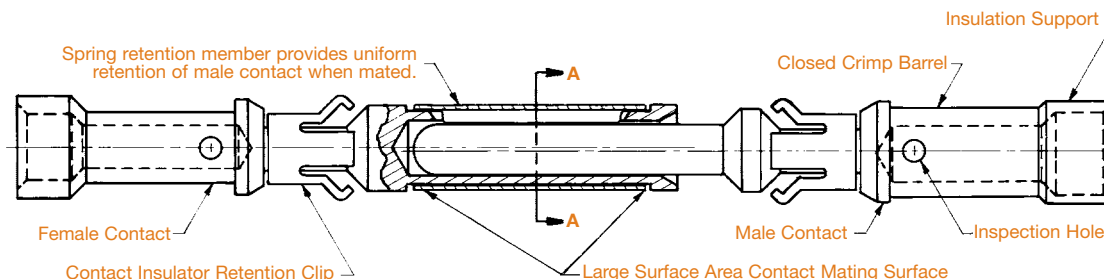
Attenuation: 70-80 dB at most frequencies.

THERMOCOUPLE CONTACTS:

Size 20 and 22 crimp contacts are available. See page 20 for details.

PCB mount contacts are available please contact Technical Sales for details.

FRONT RUNNER HIGH PERFORMANCE CONTACTS "LARGE SURFACE AREA CONTACT MATING SYSTEM" HIGH RELIABILITY "CLOSED ENTRY" DESIGN PRECISION MACHINED SOLID COPPER ALLOY



All contacts of Positronic's Front Runner Series utilize the "Large Surface Area (L.S.A.) Contact Mating System." The "L.S.A. Contact Mating System" insures the lowest level of contact resistance during mechanical endurance tests of 1000 coupling cycles or more. Contact insertion/withdrawal forces remain substantially the same during the life of the connector.

Front Runner Series use only "Closed Entry" design female contacts. The "Closed Entry" design prevents probe damage to the female contacts, and will not allow the female

contact to accept misaligned or bent male contacts.

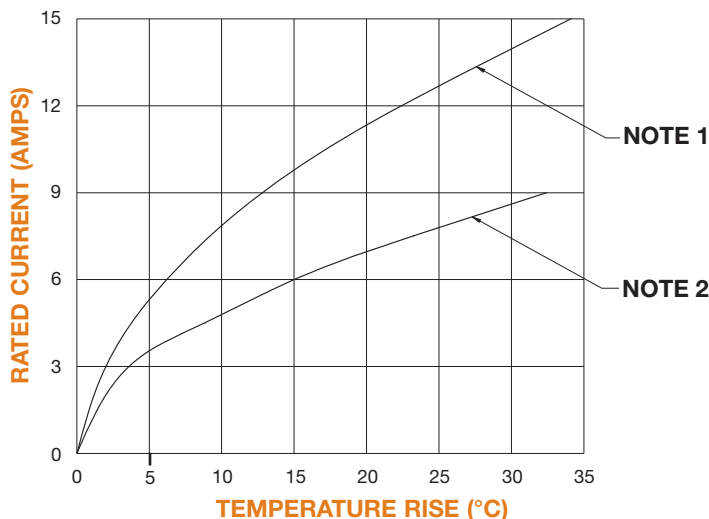
All Front Runner Series contacts are precision machined from solid copper alloy barstock. They are durable, smooth in construction, and have greater amperage capacities than hollow, sheet metal-style contacts.

Front Runner Series contacts, having a large contact surface area, produce less heat at the contact surface, thereby permitting the connector to operate at high amperage levels continuously and still maintain lower connector temperatures.

CONNECTOR TEMPERATURE RISE CURVES

Tested per IEC Publication 512-3, Test 5a

Size 16 Contact / Size 20 Contacts / Size 11 Housing



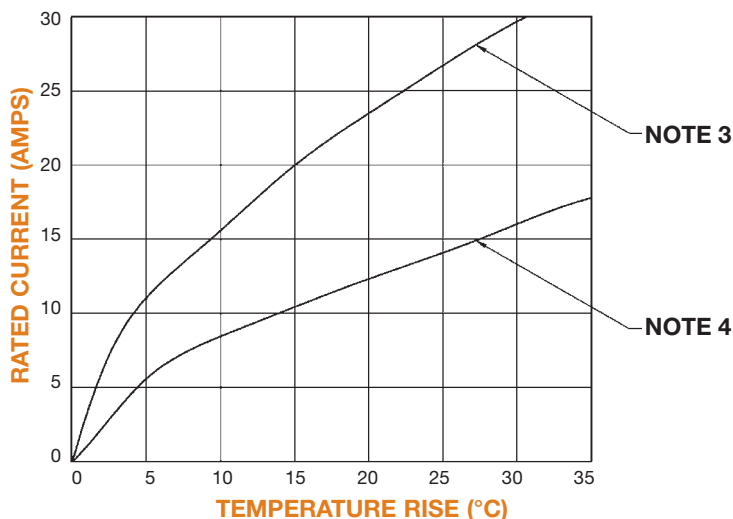
NOTE 1:

Curve developed using FR11MP316K0 and FR11FF316K0 connectors, MC116N and FC116N2 crimp contacts and 16 AWG [1.5 mm²] size wire. All contacts under load.

NOTE 2:

Curve developed using FR11MP520K0 and FR11FF520K0 connectors, MC720N and FC720N2 crimp contacts and 20 AWG [0.5 mm²] size wire. All contacts under load.

Size 12 Contact / Size 16 Contacts / Size 19 Housing



NOTE 3:

Curve developed using FR19MF312K0 and FR19FP312K0 connectors, MC612N and FC612N2 crimp contacts and 12 AWG [4.0 mm²] size wire. All contacts under load.

NOTE 4:

Curve developed using FR19MF716K0 and FR19FP716K0 connectors, MC116N and FC116N2 crimp contacts and 16 AWG [1.5 mm²] size wire. All contacts under load.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



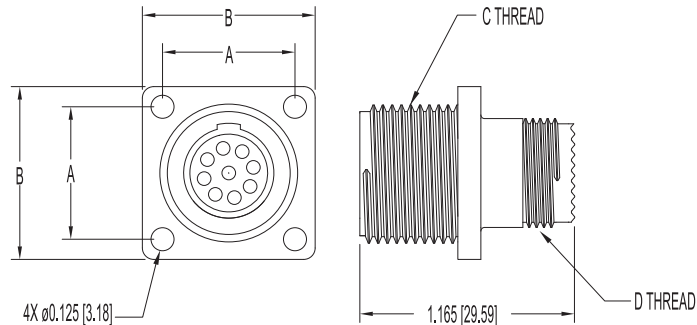
Positronic Industries
connectpositronic.com

HOUSING DIMENSIONS

Front
Runner

FIXED FLANGE-MOUNT HOUSING

RECEPTACLE HOUSING, MALE OR FEMALE CONTACTS



DIMENSION	SIZE 11 HOUSING	SIZE 19 HOUSING
A	0.719 [18.26]	1.062 [26.97]
B	0.938 [23.83]	1.438 [36.53]
C Thread	M19	M32
D Thread	M15	M28

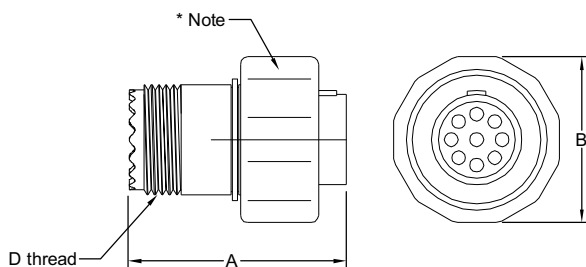
MATERIALS:

Insert: Glass-filled DAP.

Housing: Glass-filled polyester.

FREE IN-LINE HOUSINGS

PLUG HOUSING,
MALE OR FEMALE CONTACTS

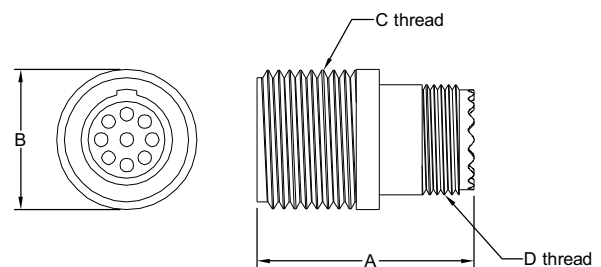


DIMENSION	SIZE 11 HOUSING	SIZE 19 HOUSING
A	1.165 [29.59]	1.165 [29.59]
B	0.890 [22.61]	1.435 [36.45]
D Thread	M15	M28

NOTE:

This connector may be ordered without the coupling nut.

RECEPTACLE HOUSING,
MALE OR FEMALE CONTACTS



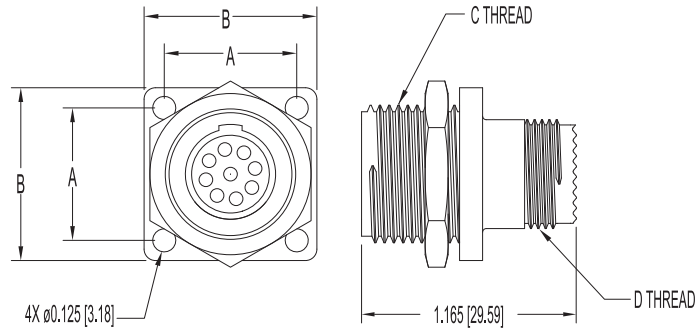
DIMENSION	SIZE 11 HOUSING	SIZE 19 HOUSING
A	1.165 [29.59]	1.165 [29.59]
B	ø 0.750 [19.05]	ø 1.260 [32.00]
C Thread	M19	M32
D Thread	M15	M28

MATERIALS:

Insert: Glass-filled DAP.

Housing & Coupling Nut: Glass-filled polyester.

FIXED JAM NUT MOUNTING RECEPTACLE HOUSING, MALE OR FEMALE CONTACTS



DIMENSION	SIZE 11 HOUSING	SIZE 19 HOUSING
A	0.719 [18.26]	1.062 [26.97]
B	0.938 [23.83]	1.438 [36.53]
C Thread	M19	M32
D Thread	M15	M28

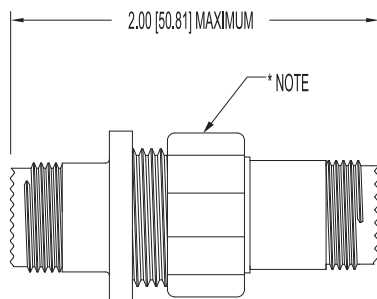
MATERIALS AND FINISHES:

Insert: Glass-filled DAP.

Housing: Glass-filled polyester.

Jam Nut: Aluminum, black anodize.

IN-LINE TO IN-LINE MOUNTING LENGTH OF MATED PAIR



MATERIALS:

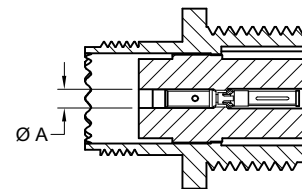
Insert: Glass-filled DAP.

Housing & Coupling Nut: Glass-filled polyester.

NOTE:

This connector may be ordered without the coupling nut.

CONTACT HOLE DIAMETER TERMINATION SIDE OF INSULATOR



CONTACT SIZE	Ø D
12	0.195 [4.95]
16	0.125 [3.18]
20	0.097 [2.46]
22	0.079 [2.01]



Positronic Industries
connectpositronic.com

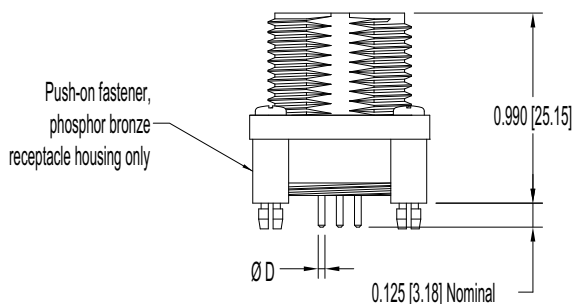
STRAIGHT AND 90° PRINTED BOARD CONNECTORS

Front
Runner

STRAIGHT PRINTED BOARD MOUNT CONNECTOR

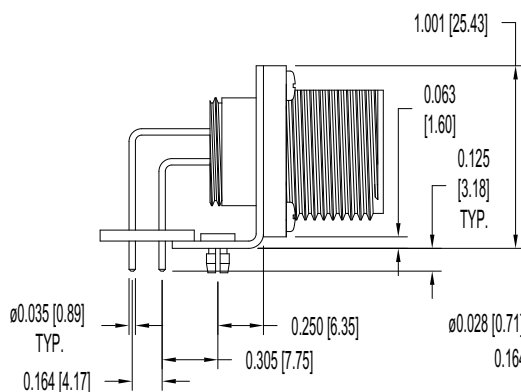
RECEPTACLE HOUSING, MALE OR FEMALE CONTACTS

CONTACT SIZE	Ø D
12	0.094 [2.39]
16	0.035 [0.89]
20	0.028 [0.71]
22	0.025 [0.64]

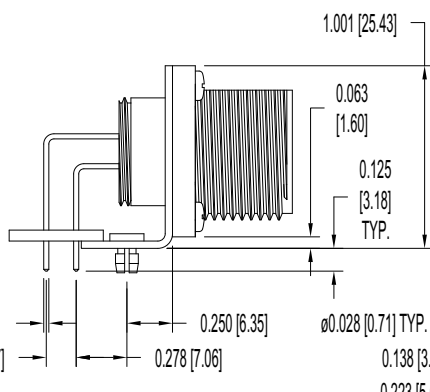


Typical Part Number:
FR11FF316K0-1554.0

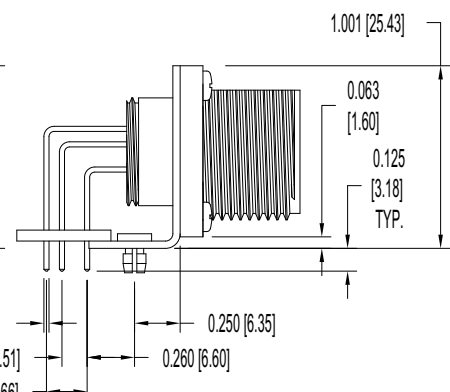
90° PRINTED BOARD MOUNT CONNECTOR



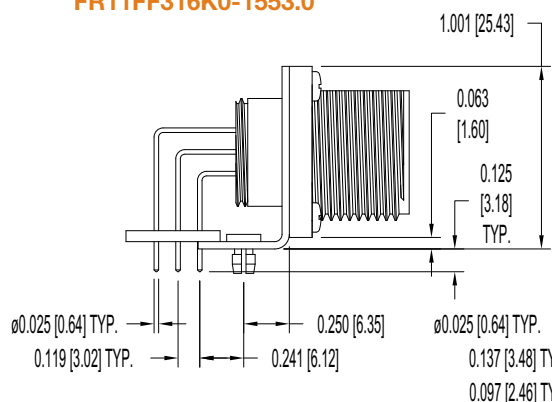
Typical Part Number:
FR11FF316K0-1553.0



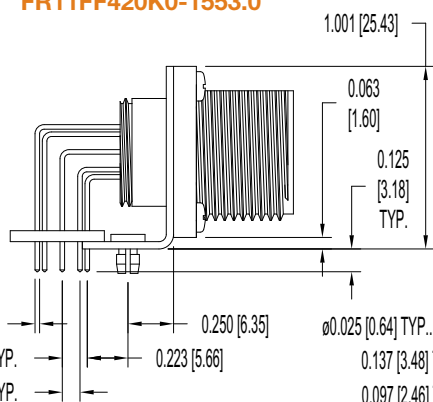
Typical Part Number:
FR11FF420K0-1553.0



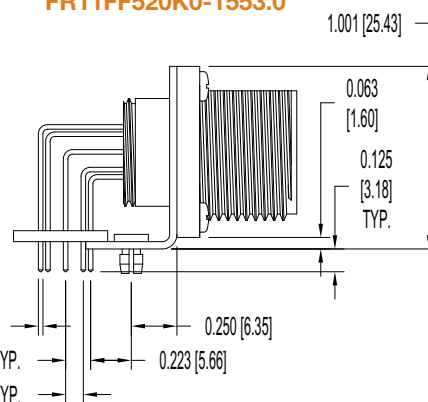
Typical Part Number:
FR11FF520K0-1553.0



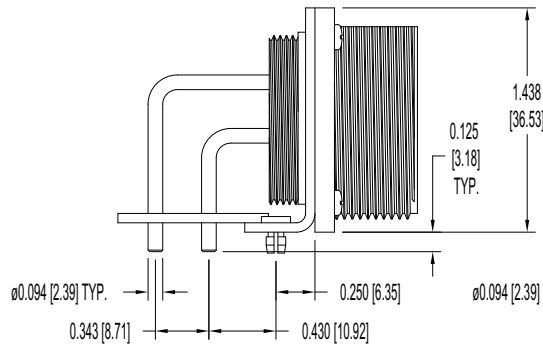
Typical Part Number:
FR11FF722K0-1553.0



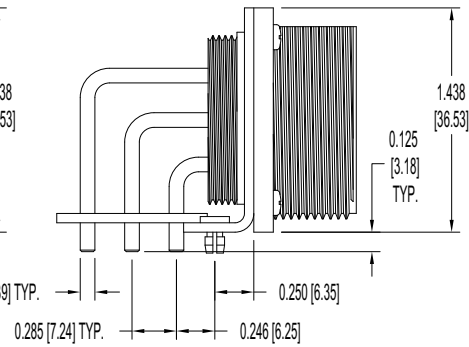
Typical Part Number:
FR11FF822K0-1553.0



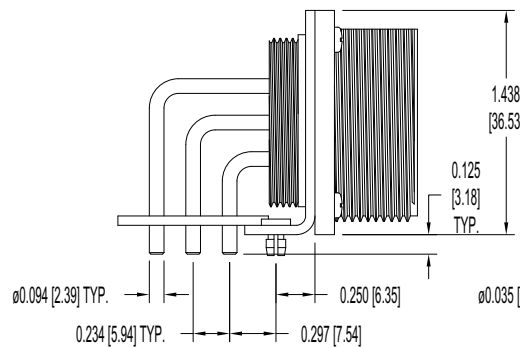
Typical Part Number:
FR11FF922K0-1553.0



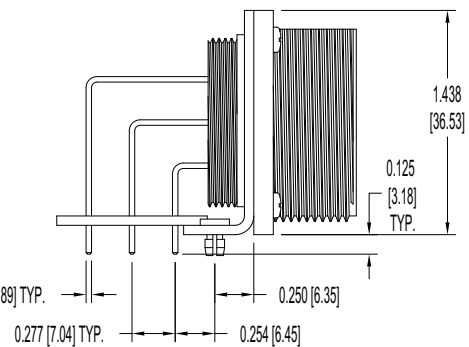
Typical Part Number:
FR19FF312K0-1553.0



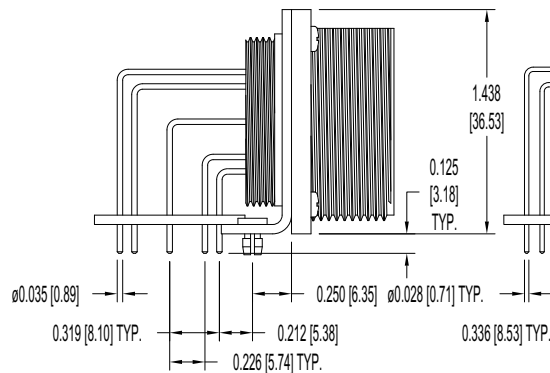
Typical Part Number:
FR19FF512K0-1553.0



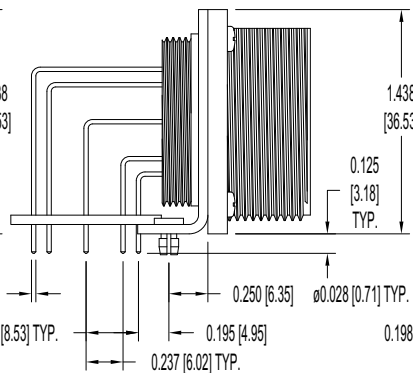
Typical Part Number:
FR19FF712K0-1553.0



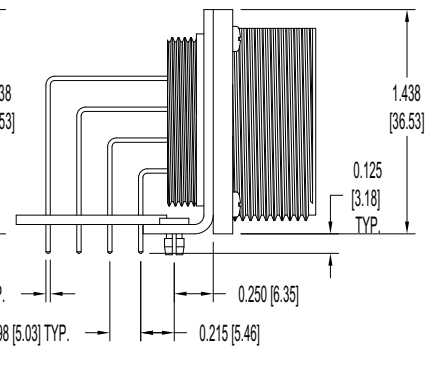
Typical Part Number:
FR19FF716K0-1553.0



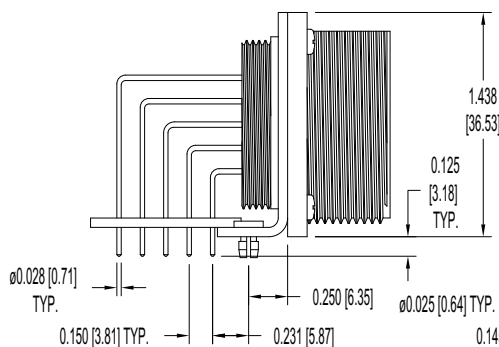
Typical Part Number:
FR19FF916K0-1553.0



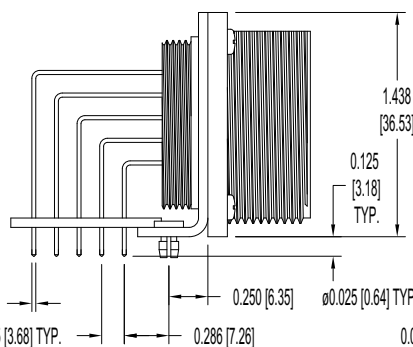
Typical Part Number:
FR19FF920K0-1553.0



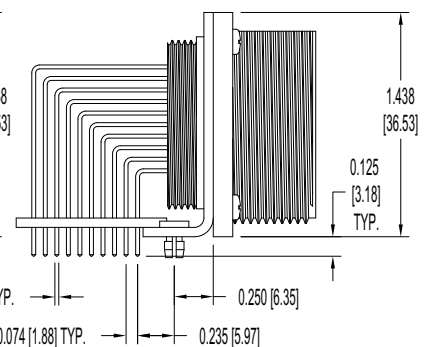
Typical Part Number:
FR19FF1220K0-1553.0



Typical Part Number:
FR19FF1920K0-1553.0



Typical Part Number:
FR19FF1822K0-1553.0



Typical Part Number:
FR19FF2922K0-1553.0



Positronic Industries
connectpositronic.com

STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

Front
Runner

SUGGESTED PRINTED BOARD HOLE SIZES:

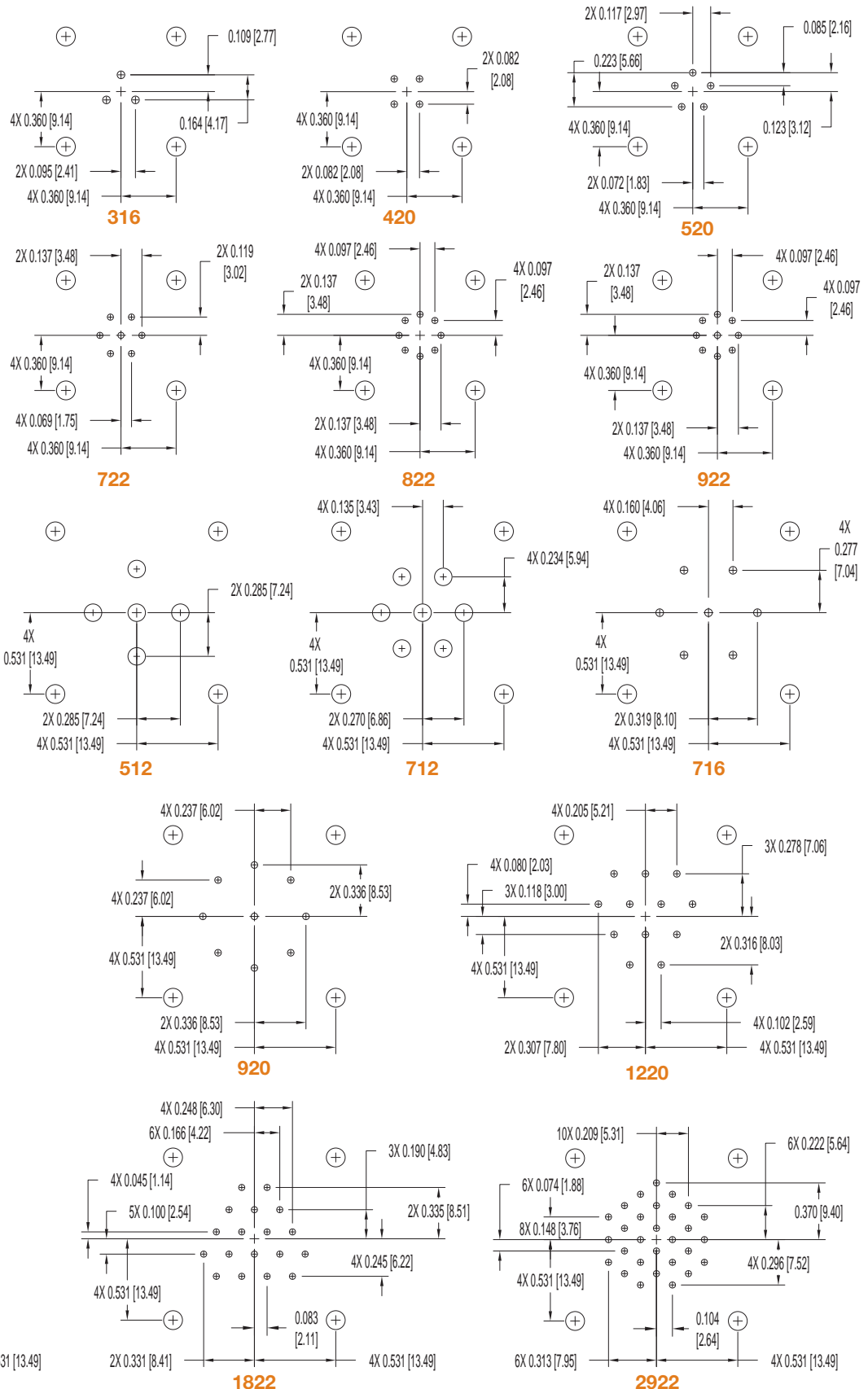
Suggest \varnothing 0.114 [2.90] plated through hole for size 12 contact termination positions.

Suggest \varnothing 0.052 [1.32] plated through hole for size 16 contact termination positions.

Suggest \varnothing 0.045 [1.14] plated through hole for size 20 contact termination positions.

Suggest \varnothing 0.040 [1.02] plated through hole for size 22 contact termination positions.

Suggest \varnothing 0.123 \pm 0.003 [3.12 \pm 0.08] hole for mounting connector with push-on fasteners.





SUGGESTED PRINTED BOARD HOLE SIZES:

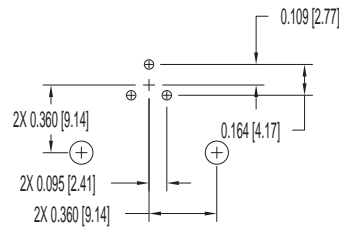
Suggest $\varnothing 0.114$ [2.90] plated through hole for size 12 contact termination positions.

Suggest $\varnothing 0.052$ [1.32] plated through hole for size 16 contact termination positions.

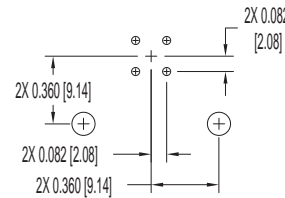
Suggest $\varnothing 0.045$ [1.14] plated through hole for size 20 contact termination positions.

Suggest $\varnothing 0.040$ [1.02] plated through hole for size 22 contact termination positions.

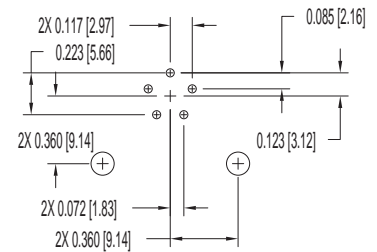
Suggest $\varnothing 0.123 \pm 0.003$ [3.12 \pm 0.08] hole for mounting connector with push-on fasteners.



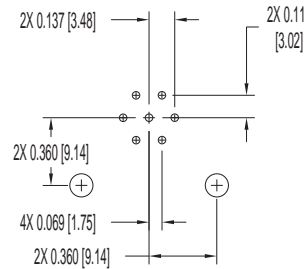
316



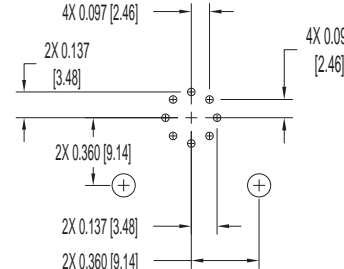
420



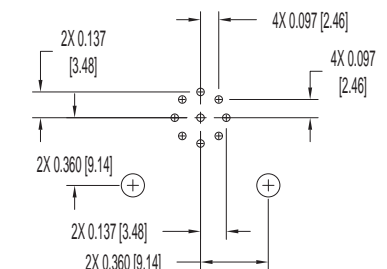
520



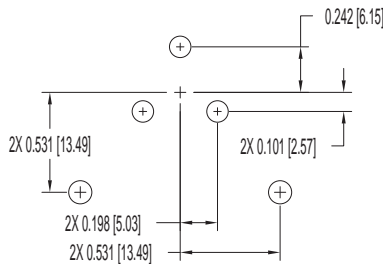
722



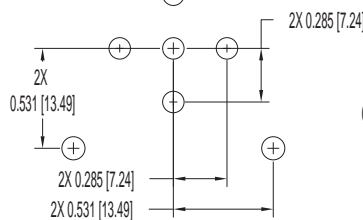
822



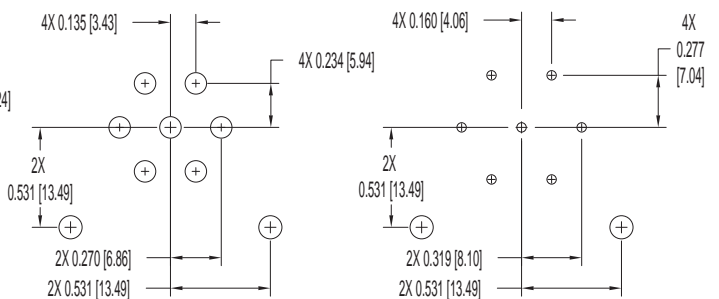
922



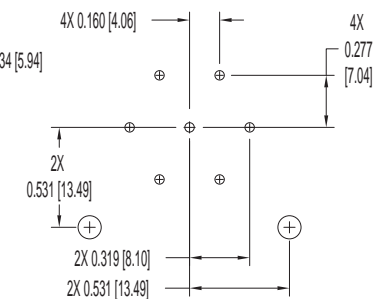
312



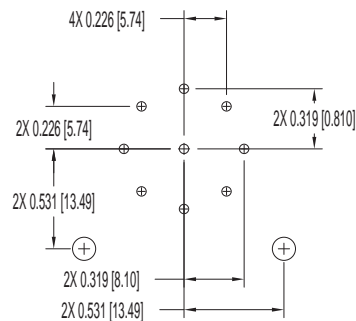
512



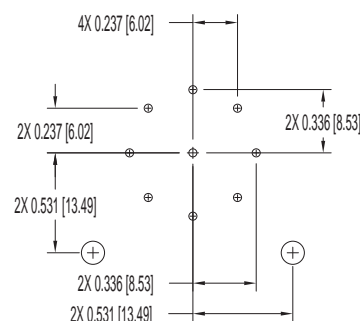
712



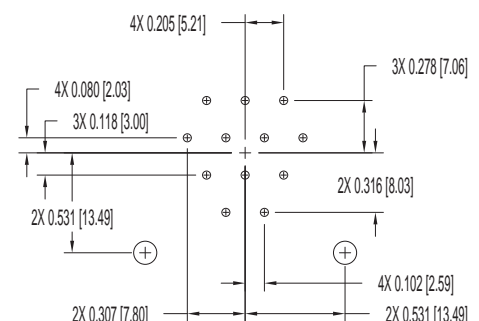
716



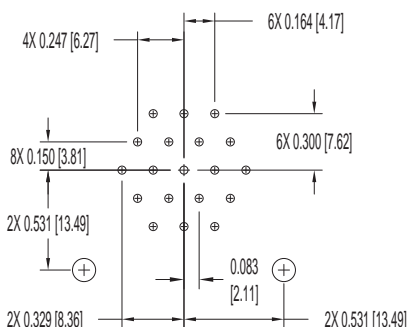
916



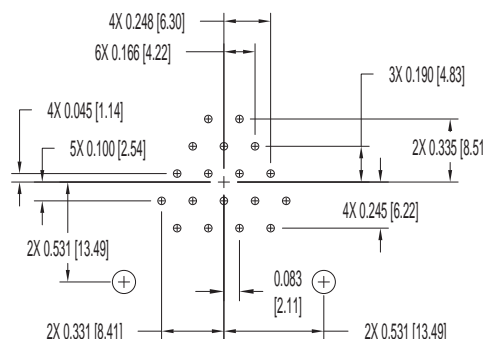
920



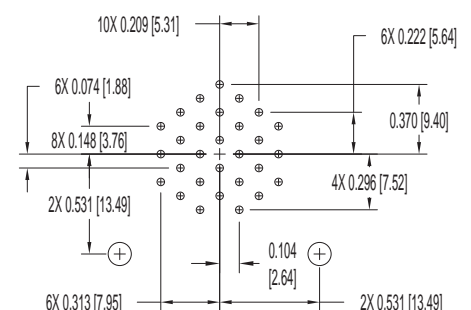
1220



1920



1822



2922



Positronic Industries
connectpositronic.com

ORDERING INFORMATION

Front
Runner

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 6

STEP	1	2	3	4	5	6	7	8
EXAMPLE	FR	11	MF	922	K	0	/AA	-1554.0

STEP 1 - BASIC SERIES

FR - Front Runner Series

STEP 2 - HOUSING SIZE

11 - Size 11 Housing
19 - Size 19 Housing

STEP 3 - HOUSING STYLE AND GENDER

MP - Free In-line, Male Contacts with Plug Housing
FP - Free In-line, Female Contacts with Plug Housing
MF - Fixed Flange Mount, Male Contacts with Receptacle Housing
FF - Fixed Flange Mount, Female Contacts with Receptacle Housing
MJ - Fixed Jam Nut, Male Contacts with Receptacle Housing
FJ - Fixed Jam Nut, Female Contacts with Receptacle Housing
MR - Free In-line, Male Contacts with Receptacle Housing
FR - Free In-line, Female Contacts with Receptacle Housing

STEP 4 - CONTACT ARRANGEMENTS AND SIZE

SIZE 11 HOUSING

316 - Three (3) Size 16 Contacts
420 - Four (4) Size 20 Contacts
520 - Five (5) Size 20 Contacts
722 - Seven (7) Size 22 Contacts
822 - Eight (8) Size 22 Contacts
922 - Nine (9) Size 22 Contacts

SIZE 19 HOUSING

312 - Three (3) Size 12 Contacts
512 - Five (5) Size 12 Contacts
712 - Seven (7) Size 12 Contacts
716 - Seven (7) Size 16 Contacts
916 - Nine (9) Size 16 Contacts
920 - Nine (9) Size 20 Contacts
1220 - Twelve (12) Size 20 Contacts
1822 - Eighteen (18) Size 22 Contacts
1920 - Nineteen (19) Size 20 Contacts
2922 - Twenty-nine (29) Size 22 Contacts

STEP 5 - SERVICE CLASS

K - Non-Environmental
L - Environmental
M - EMI/RFI Shielded
LM - Environmental and EMI/RFI Shielded

Note: Crimp contacts must be ordered separately. Select desired contact size and wire gauge size from pages 18 - 19.

Order thermocouple contacts from page 20.
Order size 16 micro-coaxial contacts from page 22.

STEP 8 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL
OPTIONS APPENDIX ON PAGE 13.

STEP 7 - ENVIRONMENTAL COMPLIANCE OPTIONS



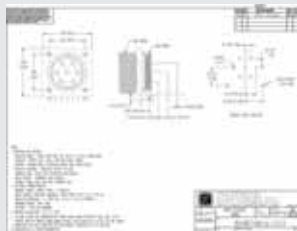
/AA - Compliant per EU Directive
2002/95/EC (RoHS)

Note: If compliance to environmental
legislation is not required, this step will
not be used. Example: FR11MP922K1

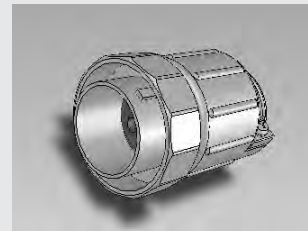
STEP 6 - CABLE ADAPTERS (HOOD)

- 0 - None
- 1 - Long, Straight, Non-Environmental
- 2 - Short, Straight, Non-Environmental
- 4 - Long, Straight, Environmental
- 41- Long, Straight, Environmental with single cable seal.
(Size 11 - 0.150 [3.81] ID, size 19 - 0.345 [8.76] ID)
- 42- Long, Straight, Environmental with single cable seal.
(Size 11 - 0.200 [5.08] ID, size 19 - 0.420 [10.67] ID)
- 43- Long, Straight, Environmental with single cable seal.
(Size 11 - 0.250 [6.35] ID, size 19 - 0.495 [12.57] ID)
- 44- Long, Straight, Environmental with single cable seal.
(Size 11 - 0.300 [7.62] ID, size 19 - 0.570 [14.48] ID)
- 5 - Long, Straight, EMI/RFI
- 6 - Short, Straight, EMI/RFI

NOTE: Once you have made a connector selection, contact
Technical Sales if you would like to receive a drawing in DXF, PDF
format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



2-dimensional drawing



3-dimensional model



MODIFICATIONS (MOS)

Specify complete connector by selecting a base part number from the **Ordering Information Page**.
Once base part number is selected, add desired modification (MOS) number below to the end of the part number.

Example part number: FR19FR916K0-14-1553.0

HOUSING SIZE	GENDER	HOUSING STYLE	MODIFICATION OF STANDARD (MOS) NUMBER	DESCRIPTION OF MODIFICATION
11 & 19	M / F	PLUG	-1512.0	Allows for connector to be supplied without the coupling nut and associated retainer ring.
11 & 19	M / F	FIXED FLANGE MOUNT RECEPTACLE	-1553.0	Allows for connector be to supplied with right angle (90°) printed board mount termination contacts that allow for a 0.125 [3.18] tail length.
11 & 19	M / F	FIXED FLANGE MOUNT RECEPTACLE	-1554.0	Allows for connector to be supplied with straight printed board mount termination contacts that allow for a 0.125 [3.18] tail length. Push-on fasteners included.
11 & 19	M / F	ALL	-14	Allows connector with signal contacts installed, for signal contacts only to be plated 0.000030 [0.76μ] gold over nickel.
11 & 19	M / F	ALL	-15	Allows connector with signal contacts installed, for signal contacts only to be plated 0.000050 [1.27μ] gold over nickel.

MANY OTHER SPECIAL OPTIONS ARE AVAILABLE.

Find out more about Sequential Mating System,
Straight and Right Angle Thermocouple Printed Circuit Board mount contacts.

CONSULT TECHNICAL SALES OR VISIT OUR WEBSITE AS WWW.CONNECTPOSITRONIC.COM

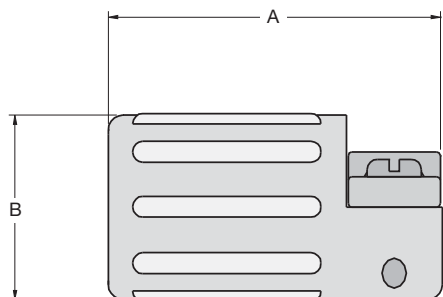


Positronic Industries
connectpositronic.com

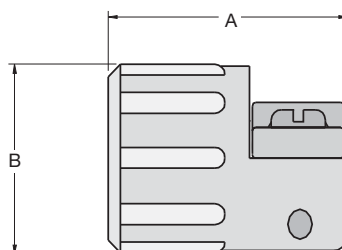
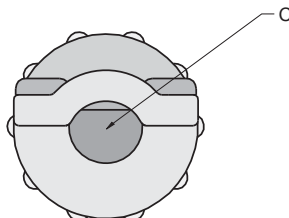
NON-ENVIRONMENTAL VERSION ACCESSORIES

Front
Runner

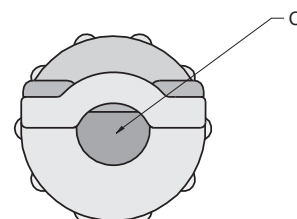
CABLE ADAPTERS



Long Cable Adapter



Short Cable Adapter



MATERIALS:

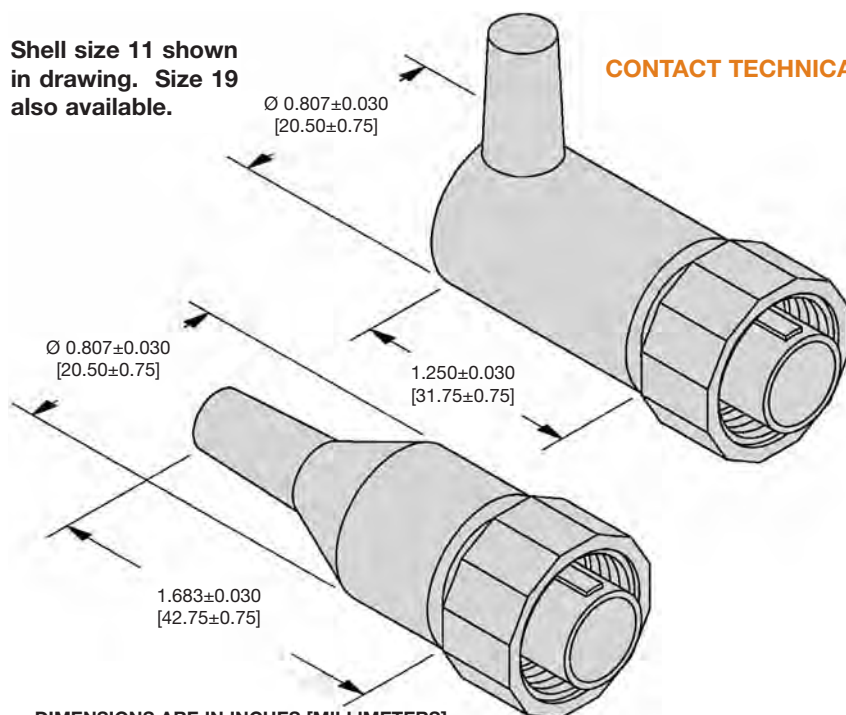
Cable Adapter & Cable Clamp: Glass-filled polyester.

DIMENSIONS	LONG CABLE ADAPTER			SHORT CABLE ADAPTER		
	A	B	C Cable Range	A	B	C Cable Range
Size 11 Housing	1.350 [34.29]	0.750 [19.05]	0.300 [7.62] Maximum	0.975 [24.77]	0.750 [19.05]	0.300 [7.62] Maximum
Size 19 Housing	1.350 [34.29]	1.285 [32.64]	0.570 [14.48] Maximum	0.975 [24.77]	1.285 [32.64]	0.570 [14.48] Maximum

MOLDED CABLE ASSEMBLY

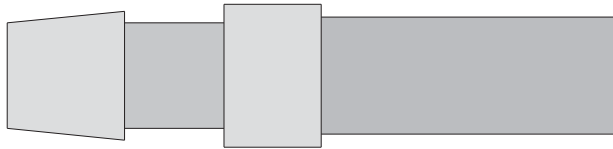
Shell size 11 shown
in drawing. Size 19
also available.

CONTACT TECHNICAL SALES FOR ORDERING INFORMATION.





KEYING PLUGS



Keying Plug

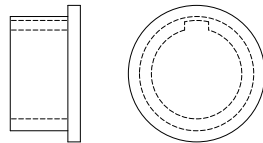
MATERIAL: Nylon.

CONTACT SIZE	KEYING PLUG PART NUMBER
SIZE 12	5123-1-0-0
SIZE 16	5123-2-0-0
SIZE 20	5123-3-0-0
SIZE 22	5123-4-0-0



PRESS-ON DUST COVERS

PART NUMBER
5125-11-2-0 for Size 11 Connector
5125-19-2-0 for Size 19 Connector

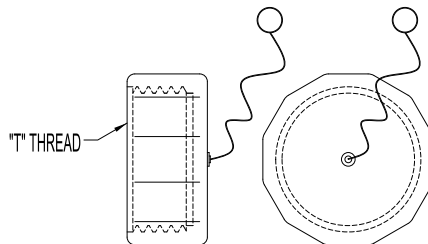


Use with Plug Shell

MATERIAL: Low density polyethylene.

THREADED DUST COVERS

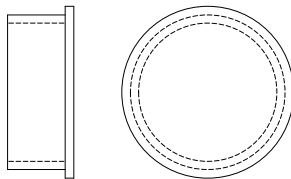
PART NUMBER	THREAD
5125-11-0-0 for Size 11 Connector	M19
5125-19-0-0 for Size 19 Connector	M32



Use with Receptacle Shell

MATERIAL: Glass-filled polyester.

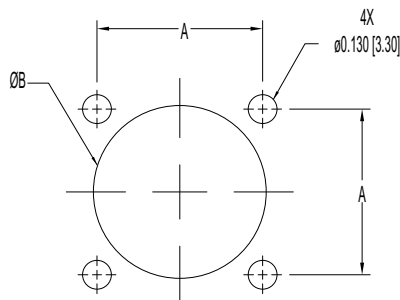
PART NUMBER
5125-11-1-0 for Size 11 Connector
5125-19-1-0 for Size 19 Connector



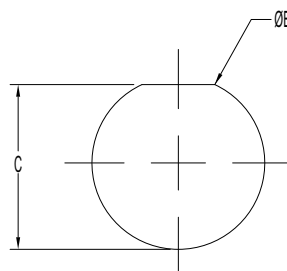
Use with Receptacle Shell



PANEL MOUNTING CUTOUTS



Flange Mounting



Jam Nut

Suggest 0.092 [2.34] maximum panel thickness if using environmental flange gasket or 0.122 [3.10] maximum panel thickness without gasket.

DIMENSION	SIZE 11 HOUSING	SIZE 19 HOUSING
A	0.719 [18.26]	1.062 [26.97]
Ø B	0.760 ±0.003 [19.30 ±0.08]	1.275 ±0.003 [32.39 ±0.08]
C	0.715 ±0.003 [18.16 ±0.08]	1.227 ±0.003 [31.17 ±0.08]

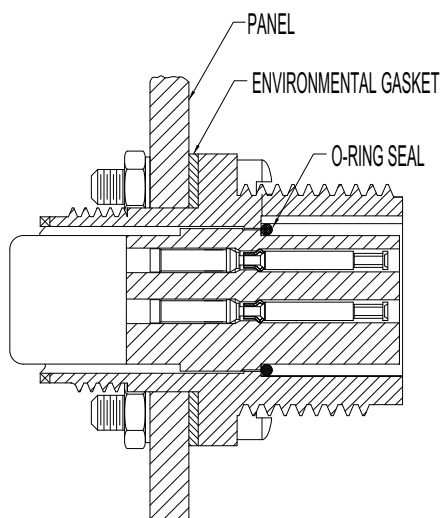


Positronic Industries
connectpositronic.com

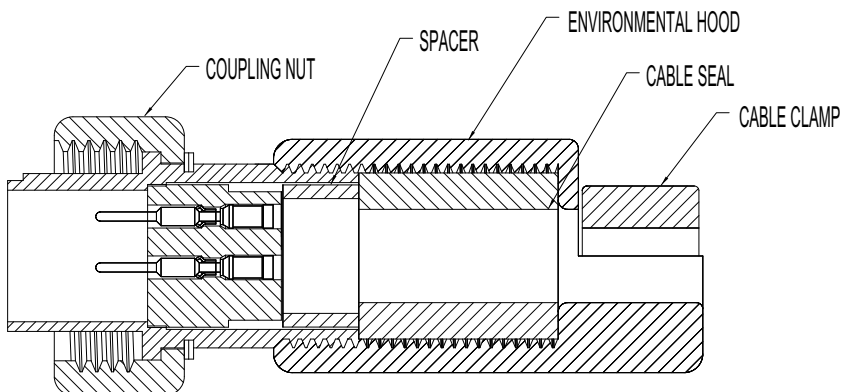
ENVIRONMENTAL VERSION

Front
Runner

ENVIRONMENTAL DESIGN FEATURES



Fixed Female Flange Mounted Connector



Free Male In-line Connector

MATERIALS:

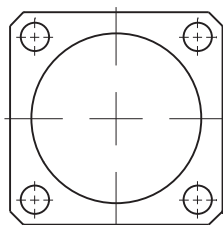
O-Ring: Thermoplastic elastomer.

ENVIRONMENTAL VERSION ACCESSORIES

NOTE:

Environmental flange gaskets supplied with flange mount environmental connectors. Part numbers are shown for replacement parts only.

Environmental Flange Gasket

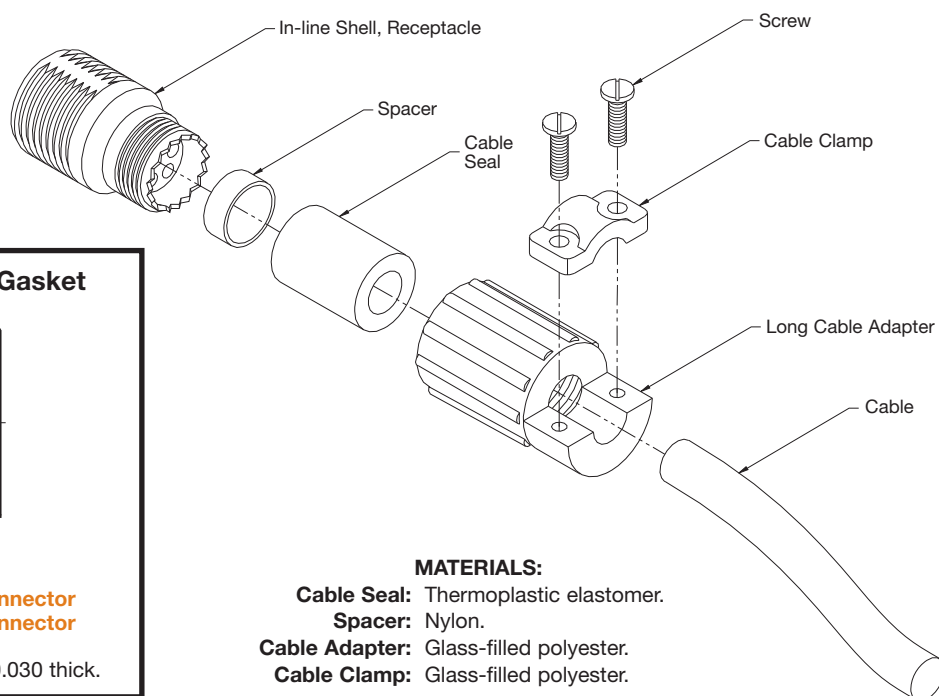


PART NUMBER:

5124-11-0-0 for Size 11 Connector
5124-19-0-0 for Size 19 Connector

MATERIAL: Neoprene sheet, 0.030 thick.

Environmental Cable Adapter Assembly Male or Female, Free In-Line Connectors



MATERIALS:

Cable Seal: Thermoplastic elastomer.

Spacer: Nylon.

Cable Adapter: Glass-filled polyester.

Cable Clamp: Glass-filled polyester.



TECHNICAL DATA



MATERIAL: Electroless nickel over copper. Electroless plating offers surface conductivity of < 0.5 ohm per square and attenuation of 70-80 dB at most frequencies. Due to differences in cable construction and termination, results may vary and should be tested under actual operating conditions to determine exact values.

➡ **NOTE:** Dimensions are consistent with non-shielded versions.

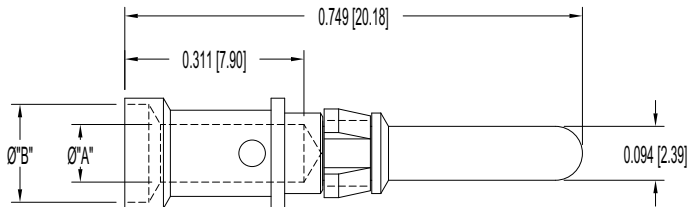


Positronic Industries
connectpositronic.com

REMOVABLE CONTACTS

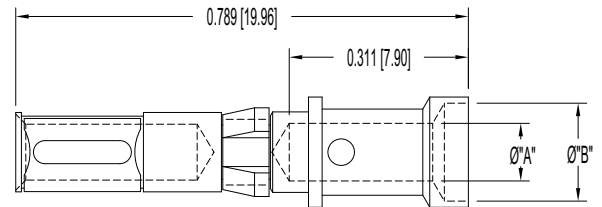
Front
Runner

SIZE 12 REMOVABLE CONTACTS



MALE

MALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
MC612N	12 [4.0]	0.100 [2.54]	0.170 [4.32]



FEMALE

FEMALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
FC612N2	12 [4.0]	0.100 [2.54]	0.170 [4.32]

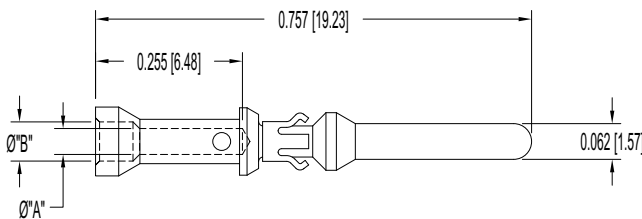
MATERIALS AND FINISHES:

Material: Copper Alloy.

Finish: Gold flash over nickel.

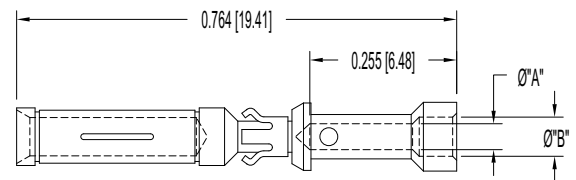
0.000030 inch [0.76 µ] gold over nickel available by adding "-14" suffix onto the part number.
Example: MC612N-14.

SIZE 16 REMOVABLE CONTACTS



MALE

MALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
MC114N	14 / 16 [2.5 / 1.5]	0.081 [2.06]	0.105 [2.67]
MC116N	16 / 18 [1.5 / 1.0]	0.067 [1.70]	0.093 [2.36]
MC120N	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]	0.065 [1.65]



FEMALE

FEMALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
FC114N2	14 / 16 [2.5 / 1.5]	0.081 [2.06]	0.105 [2.67]
FC116N2	16 / 18 [1.5 / 1.0]	0.067 [1.70]	0.093 [2.36]
FC120N2	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]	0.065 [1.65]

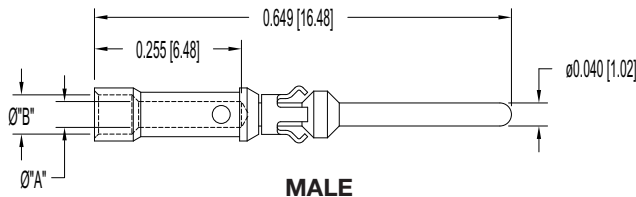
MATERIALS AND FINISHES:

Material: Copper Alloy.

Finish: Gold flash over nickel.

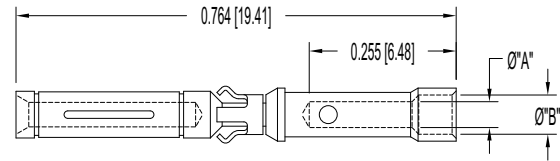
0.000030 inch [0.76 µ] gold over nickel available by adding "-14" suffix onto the part number.
Example: FC612N-14.

SIZE 20 REMOVABLE CONTACTS



MALE

MALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
MC720N3	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]	0.068 [1.73]



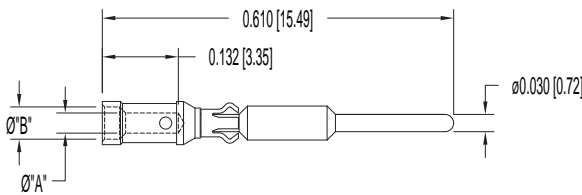
FEMALE

FEMALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
FC720N2	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]	0.068 [1.73]

MATERIALS AND FINISHES:

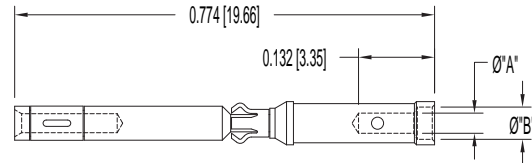
Material: Copper Alloy.**Finish:** Gold flash over nickel.0.000030 inch [0.76 µ] gold over nickel available by adding "-14" suffix onto the part number.
Example: FC720N2-14.

SIZE 22 REMOVABLE CONTACTS



MALE

MALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
MC422N	22 / 24 / 26 [0.3 / 0.25 / 0.12]	0.035 [0.89]	0.056 [1.42]



FEMALE

FEMALE CONTACT PART NUMBER	WIRE SIZE AWG [mm ²]	Ø "A"	Ø "B"
FC422N6	22 / 24 / 26 [0.3 / 0.25 / 0.12]	0.035 [0.89]	0.056 [1.42]

MATERIALS AND FINISHES:

Material: Copper Alloy.**Finish:** Gold flash over nickel.0.000030 inch [0.76 µ] gold over nickel available by adding "-14" suffix onto the part number.
Example: MC422N-14.ADVANTAGES OF REAR INSERTION-FRONT RELEASE
CONTACT RETENTION SYSTEM

CONSIDERATION	FRONT RELEASE ADVANTAGE
1. Size	Will accept a wire with oversized insulation diameter.
2. Connector Wiring	Less open wiring is required between the connector and the lacing or between the connector and the cable jacket. Minimum service time is required for repairs.
3. Shielded Wires	Provides the most effective RFI shielding as the shielding can be brought closer to the grommet surface for terminations to the connector shell.
4. Contact Servicing	Since the removal tool is inserted from the front, finding the correct position is relatively simple.
5. Wire Breakage	The standard removal tool can be used to remove a contact which has a broken wire at the contact crimp joint.
6. Service Tools	Metal tools are available for inserting and removing contacts.

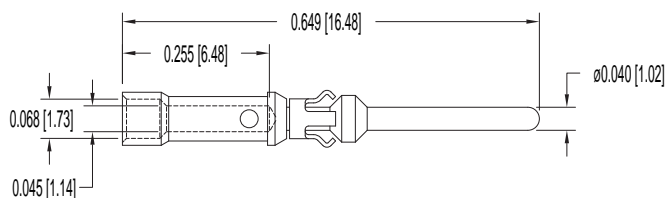


Positronic Industries
connectpositronic.com

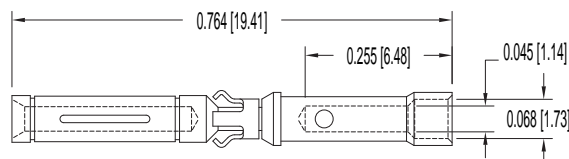
THERMOCOUPLE CONTACTS

Front
Runner

SIZE 20 CRIMP THERMOCOUPLE CONTACTS



MALE



FEMALE

TYPE	MATERIAL	MALE PART NUMBER	FEMALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]
K	CHROMEL (+)	MC720N3CH	FC720N2CH	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]
	ALUMEL (-)	MC720N3AL	FC720N2AL	GREEN	20 / 22 / 24 [0.5 / 0.3 / 0.25]
T	COPPER (+)	MC720N3CU	FC720N2CU	RED	20 / 22 / 24 [0.5 / 0.3 / 0.25]
	CONSTANTAN (-)	MC720N3CO	FC720N2CO	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]
E	CHROMEL (+)	MC720N3CH	FC720N2CH	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]
	CONSTANTAN (-)	MC720N3CO	FC720N2CO	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]

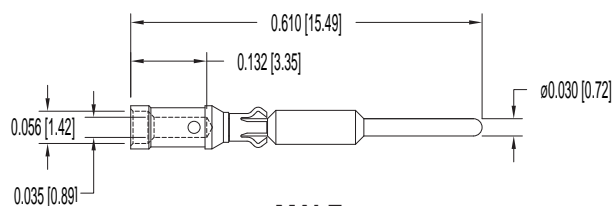
Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

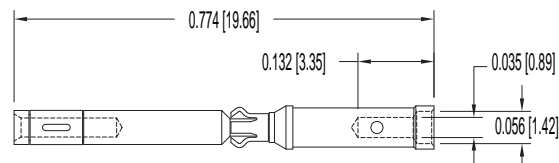
For more information about thermocouple contacts with PCB solder termination, please contact Technical Sales.

See page 24 for Crimp Tool information.

SIZE 22 CRIMP THERMOCOUPLE CONTACTS



MALE



FEMALE

TYPE	MATERIAL	MALE PART NUMBER	FEMALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]
K	CHROMEL (+)	MC422NCH	FC422N6CH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	ALUMEL (-)	MC422NAL	FC422N6AL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
T	COPPER (+)	MC422NCU	FC422N6CU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	MC422NCO	FC422N6CO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	MC422NCH	FC422N6CH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	MC422NCO	FC422N6CO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

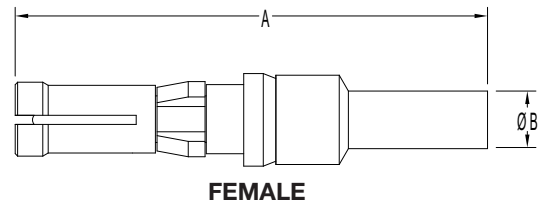
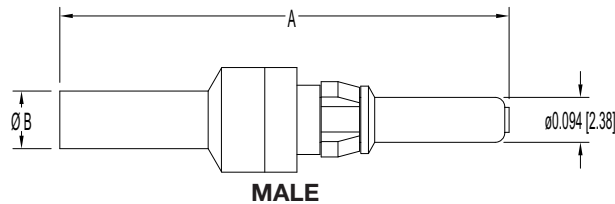
Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with PCB solder termination, please contact Technical Sales.

See page 24 for Crimp Tool information.

SIZE 12 CRIMP SHIELDED CONTACTS



CONTACT DESIGNATION	PART NUMBER	A	Ø B	CABLE SIZE
MALE	MC601D	0.936 [23.77]	0.041 [1.04]	RG 178 B/U RG 196 B/U
FEMALE	FC601D	0.984 [24.99]	0.041 [1.04]	RG 178 B/U RG 196 B/U
MALE	MC602D	0.936 [23.77]	0.070 [1.78]	RG 179 B/U RG 316 /U
FEMALE	FC602D	0.984 [24.99]	0.070 [1.78]	RG 179 B/U RG 316 /U

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulating Material: (Dielectric) PTFE, Teflon.
Inner Contacts: Brass & Phosphor bronze, 0.000030 inch [0.76 microns] gold over nickel and 0.000050 inch [1.27 microns] gold over nickel.

Contact Body: Brass and Phosphor bronze, gold flash over nickel.

MECHANICAL CHARACTERISTICS:

Removable Contacts: Rear insertion, front release.
Durability: 100 cycles minimum.
Vibration: 20g from 10 HZ to 500 HZ.
Shock: 30g - 11rms.

ELECTRICAL CHARACTERISTICS:

Initial Contact Resistance: 0.010 ohms maximum.
Nominal Impedance: 50 ohms.
Insertion Loss: 0.35 dB at 1 GHz
 1.35 dB at 2 GHz
 1.53 dB at 3 GHz
VSWR: 1.20 average at 1 GHz
 1.45 average at 2 GHz
 1.63 average at 3 GHz
Proof Voltage: 600 V r.m.s.

Above values measured using frequency domain techniques.

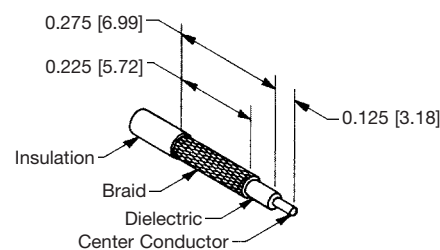
CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

CRIMP TOOL

Use 9504-0-0-0 Crimp Tool

SHIELDED CABLE STRIP LENGTH



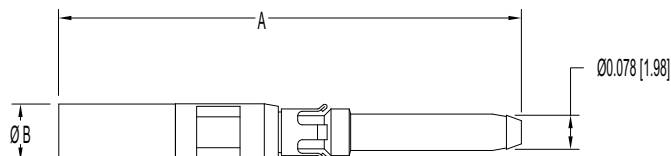


Positronic Industries
connectpositronic.com

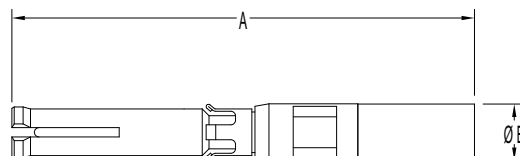
CRIMP SHIELDED CONTACTS

Front
Runner

SIZE 16 CRIMP SHIELDED CONTACTS



MALE



FEMALE



CONTACT DESIGNATION	PART NUMBER	A	Ø B	CABLE SIZE
MALE	MCS126N	0.993 [25.22]	0.045 [1.14]	RG 178 B/U RG 196 A/U
FEMALE	FCS126N2	0.967 [24.56]	0.045 [1.14]	RG 178 B/U RG 196 B/U
MALE	MCS226N	1.048 [26.62]	0.070 [1.78]	RG 179 B/U RG 316 /U
FEMALE	FCS226N2	1.022 [25.96]	0.070 [1.78]	RG 179 B/U RG 316 /U

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulating Material: (Dielectric) Teflon.
Inner Contacts: Phosphor bronze, 0.000030 inch [0.76 microns] gold over nickel.
Outer Contacts: Brass and beryllium copper, gold flash over nickel.

MECHANICAL CHARACTERISTICS:

Contact Retention in Insulator: 20 lbs. [89N].
Removable Contacts: Rear insertion, front removable.
Insertion Force per Contact: 8 oz. [2.2 N] per contact maximum.
Durability: 100 cycles minimum.
Vibration: 20g from 10 HZ to 500 HZ.
Shock: 30g - 11rms.

ELECTRICAL CHARACTERISTICS:

MICRO-COAXIAL CONTACTS	CONTACT/WIRE COMBINATIONS			
	126N		226N	
	RG178	RG196	RG179	RG316
Characteristic Impedance (ohms)	50	50	75	50
Frequency Range	0-500 MHz			
VSWR				
0 to 200 MHz	1.25			
200 to 500 MHz	1.70		2.25	
Insertion Loss @ 500 MHz	0.2 dB		1.0 dB	

Dielectric Strength at Sea Level: 600 V rms.
Initial Contact Resistance: 0.012 ohms maximum.
Insulator Resistance: 5 G ohms.

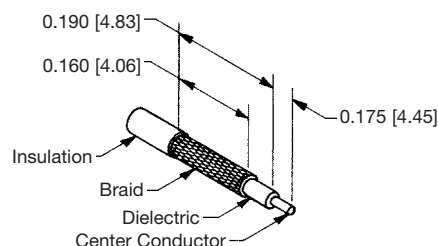
CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C



9506-0-0-0 CRIMP TOOL

SHIELDED CABLE STRIP LENGTH





APPLICATION TOOLS SECTION

Front Runner connectors are offered with **removable crimp contacts**.

Positronic Industries recognizes the **importance of**
supplying **application tooling** to support our
customers' use of our products.

Information on application tooling is
available on our web site at

<http://www.connectpositronic.com/products/157/ApplicationTooling>

There you will find **downloadable PDF** cross reference
charts for removable contacts. These charts will **supply**
part numbers for insertion, removal and crimping tools,
along with **information regarding use** of tools and techniques.



Connectors Designed To Customer Specifications

Positronic **Front Runner** connectors
can be modified to customer specifications.

Examples: select loading of contacts for cost savings or to gain creepage and
clearance distances; longer printed circuit board terminations; customer specified hardware.

Contact Technical Sales with your particular requirements.



Positronic Industries
connectpositronic.com

APPLICATION TOOLS

Front
Runner

CONTACT APPLICATION TOOLS CROSS REFERENCE LIST

USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS

*1 All male and female crimp contacts can be ordered on reels in quantities of 2,000 by adding letter "R" after the contact part number.

Positronic Contact P/N	Contact Size	Handle & Positioner P/N	Hand Crimp Tool P/N	Mfg. Cross	Mil Equiv	Positioner	Mfg. Cross	Mil Equiv	Insertion Tool	Mfg. Cross	Mil Equiv	Removal Tool	Mfg. Cross	Mil Equiv	Automatic Crimp Tool *1 See Note
FC114N2	16	---	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	9550-0-0-0
FC116N2		---	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	9550-0-0-0
FC120N2		---	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	9550-0-0-0
FC422N6	22	---	9507-0-0-0	AFM8	M22520/2-01	9502-20-0-0	K1197	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-3-0-0	ENG2103	---	9550-1-0-0
FC422N6AL		---	9507-0-0-0	AFM8	M22520/2-01	9502-20-0-0	K1197	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-3-0-0	ENG2103	---	9550-1-0-0
FC422N6CH		---	9507-0-0-0	AFM8	M22520/2-01	9502-20-0-0	K1197	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-3-0-0	ENG2103	---	9550-1-0-0
FC422N6CO	20	---	9507-0-0-0	AFM8	M22520/2-01	9502-20-0-0	K1197	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-3-0-0	ENG2103	---	9550-1-0-0
FC422N6CU		---	9507-0-0-0	AFM8	M22520/2-01	9502-20-0-0	K1197	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-3-0-0	ENG2103	---	9550-1-0-0
FC601D		9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322	---	9099-3-0-0	ITP 1168	---	2711-0-0-0	P+	---	---
FC602D	12	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322	---	9099-3-0-0	ITP 1168	---	2711-0-0-0	P+	---	---
FC612N2		---	9501-0-0-0	AF8	M22520/1-01	9502-19-0-0	TP1199	---	9099-3-0-0	ITP 1168	---	2711-0-0-0	P+	---	---
FC720N2		---	9507-0-0-0	AFM8	M22520/2-01	9502-22-0-0	K1196	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
FC720N2AL	20	---	9507-0-0-0	AFM8	M22520/2-01	9502-22-0-0	K1196	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
FC720N2CH		---	9507-0-0-0	AFM8	M22520/2-01	9502-22-0-0	K1196	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
FC720N2CO		---	9507-0-0-0	AFM8	M22520/2-01	9502-22-0-0	K1196	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
FC720N2CU	16	---	9507-0-0-0	AFM8	M22520/2-01	9502-22-0-0	K1196	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
FC8126N2		9506-0-0-0	9506-1-0-0	HX3	---	9506-2-0-0	X530	---	9099-0-0-0	PTH 1094	---	9081-4-0-0	RTG 2103	M81969/20-01	---
FC8226N2		9506-0-0-0	9506-1-0-0	HX3	---	9506-2-0-0	X530	---	9099-0-0-0	PTH 1094	---	9081-4-0-0	RTG 2103	M81969/20-01	---
MC114N	16	---	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC116N		---	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC120N		---	9501-0-0-0	AF8	M22520/1-01	9502-1-0-0	TH4	M22520/1-03	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	9550-0-0-0
MC422N	22	---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC422NAL		---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC422NCH		---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC422NCO	12	---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC422NCU		---	9507-0-0-0	AFM8	M22520/2-01	9502-12-0-0	K187	---	9099-1-0-0	PTH 1056	M81969/18-02	9081-1-0-0	RTCO 2061	---	9550-1-0-0
MC801D		9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322	---	9099-3-0-0	ITP 1168	---	2711-0-0-0	P+	---	---
MC802D	20	9504-0-0-0	9504-1-0-0	HX4	M22520/5-01	9504-2-0-0	Y322	---	9099-3-0-0	ITP 1168	---	2711-0-0-0	P+	---	---
MC812N		---	9501-0-0-0	AF8	M22520/1-01	9502-19-0-0	TP1199	---	9099-3-0-0	ITP 1168	---	2711-0-0-0	P+	---	9550-0-0-0
MC720N3		---	9507-0-0-0	AFM8	M22520/2-01	9502-27-0-0	K1506	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
MC720N3AL	20	---	9507-0-0-0	AFM8	M22520/2-01	9502-21-0-0	K1195	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
MC720N3CH		---	9507-0-0-0	AFM8	M22520/2-01	9502-21-0-0	K1195	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
MC720N3CO		---	9507-0-0-0	AFM8	M22520/2-01	9502-21-0-0	K1195	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
MC720N3CU	16	---	9507-0-0-0	AFM8	M22520/2-01	9502-21-0-0	K1195	---	9099-4-0-0	ITP 1076	---	9081-2-0-0	ENG2103	---	9550-1-0-0
MC8126N		9506-0-0-0	9506-1-0-0	HX3	---	9506-2-0-0	X530	---	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	---
MC8226N		9506-0-0-0	9506-1-0-0	HX3	---	9506-2-0-0	X530	---	9099-0-0-0	PTH 1094	M81969/18-01	9081-4-0-0	RTG 2103	M81969/20-01	---

For more listings see visit our web site to download a PDF file at http://www.connectpositronic.com/pdf_view/178/

POSITRONIC CABLIZED CONNECTORS

SAVE TIME AND MONEY!

Let Positronic support you by cablizing your
Front Runner connector selection.

Cable Assembly Design Support

We work closely with customers to:

1. Design assemblies in accordance with customer specifications.
2. Prepare cablized connector configuration and performance specifications.
3. Design each system in accordance with applicable customer, domestic, and international standards.
4. Define and conduct performance and verification testing.



Technical Sales Support



Engineering Support



Puerto Rico Cable Assembly



Quality Assurance

FOR MORE DETAILS CONTACT **TECHNICAL SALES**
OR VISIT OUR **WEB SITE** AT:

**[HTTP://WWW.CONNECTPOSITRONIC.COM/
PRODUCTS/47/CABLEASSEMBLIES](http://www.connectpositronic.com/products/47/cableassemblies)**

OTHER CIRCULAR PRODUCTS

Positronic Industries offers a range of circular connectors in a variety of contact variants and package sizes with compliant press-in, solder and cable terminations. All Positronic connector products provide **high quality**, **reliability** and **flexibility**.



KING COBRA SERIES CONNECTORS

Offer the performance of high reliability machined contacts at a price you might expect from lower performance products.

- Lightweight, non-corrodible, composite material
- Right angle and straight PCB mount terminations
- Size 16, 20 and 22 machined contact options
- Power contact current ratings to 20 amperes each
- Environmental options to IP65
- Secured using unique one quarter turn locking system

BABY KING COBRA CONNECTORS

Miniature, rugged, economical

- Smaller package size than King Cobra
- Solder cup terminations
- Size 20 machined contacts
- Cable or panel mount options
- Environmental options to IP65
- Secured using unique one quarter turn locking system



CIRCLE HEX SERIES CONNECTORS

Ideal for use in industrial and instrumentation applications where light weight, miniature, high reliability interconnections are necessary.

- “Twist Spring” locking device
- Large, miniature, and microminiature sizes available
- Solid machined contacts for high reliability
- Available in straight solder and solder cup terminations
- Variety of cable adapters and contact variants
- Contact current ratings to 7.5 amperes nominal

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
To 200 amperes per contact

Current Ratings: Crimp and panel mount, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Terminations: Multiple variants in a variety of package sizes
Configurations: PICMG 2.11, PICMG 3.0, VITA 41, DESC, GSFC S-311-P-4, GSFC S-311-P-10

Compliance:

D-SUBMINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven shell sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DESC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact variants and package sizes
- Connector keying options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal

Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes

Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal

Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder

Configurations: Multiple variants in four package sizes

Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cabled connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Leakage rate: 5 x 10⁻⁹ mbar.l/s @ vacuum 1.5 x 10⁻⁵ atm
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal

Terminations: Feedthrough is standard; flying leads and board mount available upon request

Configurations: See D-subminiature and circular configurations above

Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices (800) 641-4054 info@connectpositronic.com

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices (800) 641-4054 info@connectpositronic.com

MEXICO

Factory Sales and Engineering Offices (800) 872-7674 info@connectpositronic.com

CANADA

Factory Sales and Engineering Offices (800) 327-8272 info@connectpositronic.com

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices (65) 6842 1419 singapore@connectpositronic.com

ASIA, Direct Sales Offices

China -Zhuhai Factory and Sales Office	(86) 759 3626 466	zhuhai@connectpositronic.com
China -Shenzhen Sales Office	(86) 755 2643 7578	shenzhen@connectpositronic.com
China -Shanghai Sales Office	(86) 158 2907 9779	shanghai@connectpositronic.com
China -Xian/Beijing Sales Office	(86) 29 8839 5306	xian@connectpositronic.com
Korea Sales Office	(82) 31 909 8047 or 8	korea@connectpositronic.com
Taiwan Sales Office	(88) 62 2937 8775	taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices (81) 35 619 8072 japan@connectpositronic.com

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices	(91) 20 2439 4810	india@connectpositronic.com
Bangalore Sales Office	(91) 94 4907 3251	bangalore@connectpositronic.com
New Delhi Sales Office	(91) 80 1071 1175	delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines, Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 5 62 63 44 91 contact@connectpositronic.com

EUROPE, Direct Sales Offices

Northern France Sales Office	33 1 45 88 13 88	jchalaux@connectpositronic.com
Southern France Sales Office	33 5 62 63 44 91	plafon@connectpositronic.com
Eire + Northern Ireland	33 562 63 45 57	tauvin@connectpositronic.com
Italy Sales Office	39 02 54 1161 06	rmagni@connectpositronic.com
Germany Sales Office	49 2351 63 47 39	cbouche@connectpositronic.com
UK Sales Office	44 1993 831 939	lbridwell@connectpositronic.com

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Russia, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 5 62 63 44 91 • Fax 33 5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com

LOCAL
ATTI
ONS

www.connectpositronic.com

COMPACT POWER CONNECTORS

Power Connectors



Positronic®
global connector solutions



LOOK
FOR OUR
NEW PRODUCTS!



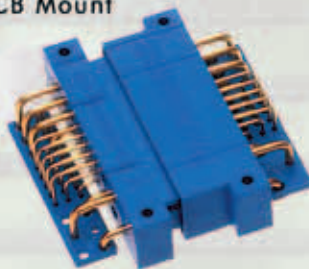
Panel Mount

AC Pass-Through



The power interface for plug-in power
supplies or other chassis mount applications

Right Angle (90°)
PCB Mount



Five Package Sizes



Solid, Machined
Power Contacts



Catalog C-017 Rev H

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in 1966
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261† #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

†Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.03 mm [0.001 inches] for male contact mating diameters.
- 2) ± 0.08 mm [0.003 inches] for contact termination diameters.
- 3) ± 0.13 mm [0.005 inches] for all other diameters.
- 4) ± 0.38 mm [0.015 inches] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

COMPACT POWER CONNECTORS

THE POWER INTERFACE FOR PLUG-IN POWER SUPPLIES OR OTHER CHASSIS MOUNT APPLICATIONS

- High current through a small package
- Three level sequential mating
- A.C. or D.C. input, output and power management in a simple package
- Multiple power contacts provide efficient current distribution of multi-voltage outputs
- Multiple output contacts can be paralleled for the increased current requirements of distributed power applications
- Superior blind mating

Connectors Designed To Customer Specifications

Positronic connectors can be modified to customers specifications.

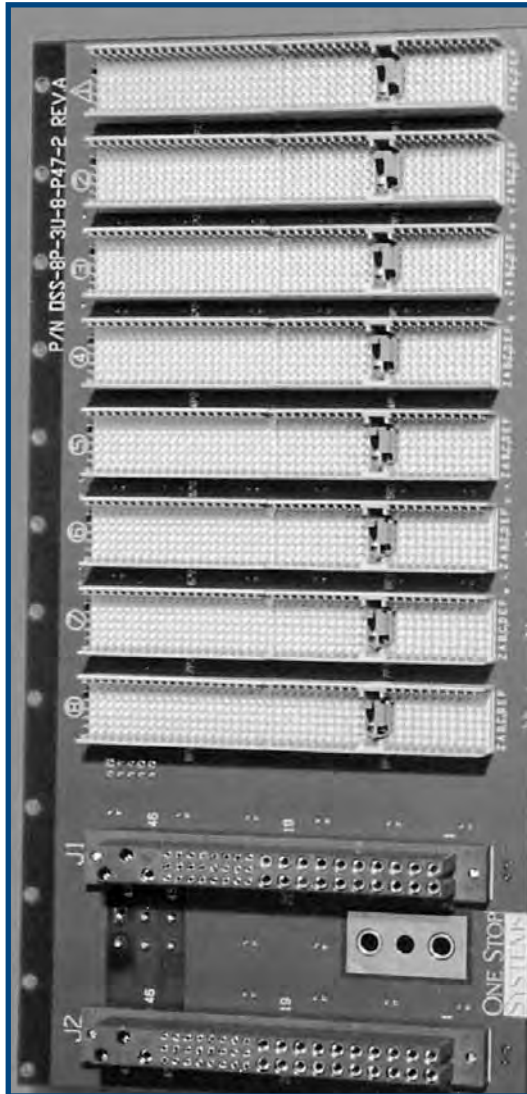
Examples: select loading of contacts for cost savings or to gain creepage and clearance distances; longer PCB terminations; customer specified hardware.

Positronic can develop and tool new connector designs with reasonable price and delivery.

Contact Technical Sales with your particular requirements.



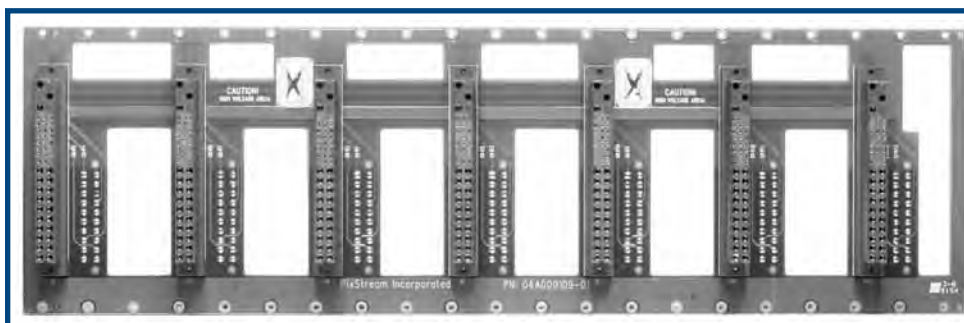
Compact Power Connector Applications



Courtesy of
One Stop Systems
www.onestopsystems.com



Courtesy of
Hybricon Corporation
www.hybricon.com



Courtesy of
Kaparel Corporation
www.kaparel.com

Please visit
the website of
the companies
listed to view
a wide variety
of product
offerings.

Courtesy of Deltron Inc.
www.deltroninc.com



1U Deltron power supply
with Positronic interface



Courtesy of
Tracewell Power, Inc.
www.tracewell.com

***Positronic is proud to participate in the
important work of the following organizations....***



PICMG® and PICMG® logo are registered
trademarks of the PCI Industrial Computers
Manufacturers Group.

www.picmg.com



www.pdma.com



Cable & Harness Assemblies

Many Industries Served including:

- Aerospace
- Datacom / Telecom
- Medical
- Industrial
- Military / Defense
- Transit / Rail

Support Capabilities:

- Design, development, engineering support, and documentation
- Build to customer print
- Assist in expansion of qualified suppliers on BOM
- Select facilities certified to ISO 9001 and AS9100
- Adherence to IPC-620 standards
- Product prototyping and first articles
- Electrical and mechanical testing

Products & Services

- Cable and harness assemblies
- Flex circuit assemblies
- Coaxial cable assemblies
- Kitting services
- EMI/RFI shielded assemblies
- Box builds
- Hermetic assemblies

SAVE TIME AND MONEY! Let Positronic support you by cablizing your **PICH / PCIA / PCIM / PCIB / PCIC** connector selection.

For more details contact *Technical Sales* or visit our web site at: <http://www.connectpositronic.com/cable-assemblies>

DIMENSIONS ARE IN MILLIMETERS (INCHES).
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



GENERAL INFORMATION

PCI Connection Systems	1-2
Current Rating Information	3
Temperature Rise Curves	4-6
AC/DC Input Keying	6-7
Large Surface Area Contact Mating System	8
Compliant Terminations	9
Application Specific Arrangements	10
Special Options	11

PCIH SERIES

General Product Information	12
Technical Characteristics	13-14
Connector Outline and Mating Dimensions	15
Code 3 Female - Straight Solder Connector, Straight Solder Connector with A.C. Pass-Through and Other Special Options	16-19
Code 3 Male - Straight Solder Connector and Other Special Options	20-21
Code 4 Female - Right Angle (90°) Board Mount Connector, Right Angle (90°) Board Mount Connector with A.C. Pass-Through and Other Special Options	22-25
Code 4 Male - Right Angle (90°) Board Mount Connector and Other Special Options	26-28
Code 8 Female - Panel Mount Connector	29
Code 93 or 94 Female - Compliant Press-Fit Board Mount Connector, Compliant Press-Fit Board Mount Connector with A.C. Pass-Through and Other Special Options	30-33
Code 93 or 94 Male - Compliant Press-Fit Board Mount Connector and Other Special Options	34-35
Ordering Information	36

PCIA SERIES

General Product Information	37
Technical Characteristics	38
Connector Outline and Mating Dimensions	39
Code 3 Female and Male - Straight Solder Connector	40
Code 4 Female - Right Angle (90°) Board Mount Connector	41
Code 4 Male - Right Angle (90°) Board Mount Connector	42
Code 8 Female - Panel Mount Connector	43
Code 93 or 94 Female and Male - Compliant Press-Fit Board Mount Connector	44
Ordering Information	45

continued on next page



TABLE OF CONTENTS

Compact
Power
Connectors

P C I H S E R I E S

General Product Information.	46
Technical Characteristics	47-48
Connector Outline Mating Dimensions	49
Code 3 Female - Straight Solder Connector and Straight Solder Connector with A.C. Pass-Through	50-52
Code 3 Male - Straight Solder Connector	53-54
Code 4 Female - Right Angle (90°) Board Mount Connector	55-58
Code 4 Male - Right Angle (90°) Board Mount Connector	59-62
Code 8 Female - Panel Mount Connector	63-64
Code 93 or 94 Female - Compliant Press-Fit Board Mount Connector and Compliant Press-Fit Board Mount Connector with A.C. Pass-Through	65-67
Code 93 or 94 Male - Compliant Press-Fit Board Mount Connector	68-69
Ordering Information.	70

P C I B S E R I E S

General Product Information.	71
Technical Characteristics	72
Connector Outline and Mating Dimensions.	73
Code 3 Female - Straight Solder Connector and Straight Solder Connector with A.C. Pass-Through	74-75
Code 3 Male - Straight Solder Connector and Straight Solder Connector with Jackscrew System.	76-77
Code 4 Female - Right Angle (90°) Board Mount Connector and Right Angle (90°) Board Mount Connector with A.C. Pass-Through	78-80
Code 4 Male - Right Angle (90°) Board Mount Connector	81-82
Code 8 Female - Panel Mount Connector and Panel Mount Connector with Jackscrew System	83-84
Code 93 or 94 Female - Compliant Press-Fit Board Mount Connector and Compliant Press-Fit Board Mount Connector with A.C. Pass-Through	85-86
Code 93 or 94 Male - Compliant Press-Fit Board Mount Connector and Compliant Press-Fit Board Mount Connector with Jackscrew System	87-88
Ordering Information.	89

*Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog*

continued on next page



P C I C S E R I E S

General Product Information	90
Technical Characteristics	91
Connector Outline and Mating Dimensions.	92
Code 3 Female - Straight Solder Connector and Straight Solder Connector with A.C. Pass-Through	93
Code 3 Male - Straight Solder Connector and Straight Solder Connector with Jackscrew System.	94
Code 4 Female - Right Angle (90°) Board Mount Connector	95
Code 4 Male - Right Angle (90°) Board Mount Connector	96
Code 8 Female - Panel Mount Connector	97
Code 93 or 94 Female - Compliant Press-Fit Board Mount Connector, Compliant Press-Fit Board Mount Connector with A.C. Pass-Through and Compliant Press-Fit Board Mount Connector with Jackscrew System	98-99
Code 93 or 94 Male - Compliant Press-Fit Board Mount Connector	100
Ordering Information.	101

R E M O V A B L E C O N T A C T S

Removable Contact Technical Characteristics	102
Size 22 Removable Crimp Contacts.	102
Size 20 and Size 16 Removable Crimp Contacts	103

A P P L I C A T I O N T O O L S

Application Tools Introduction and Contact Reels For Automatic Pneumatic Crimp Tools	104
Compliant Press-Fit Connectors Printed Board Hole Sizes and Mounting Screws	105
Compliant Press-Fit Connector Installation Tools	106

S P E C I A L O P T I O N A P P E N D I X

Modification of Standard (MOS) Suffixes	107-108
---	---------

*Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog*



Positronic
connectpositronic.com

PCI CONNECTION SYSTEMS

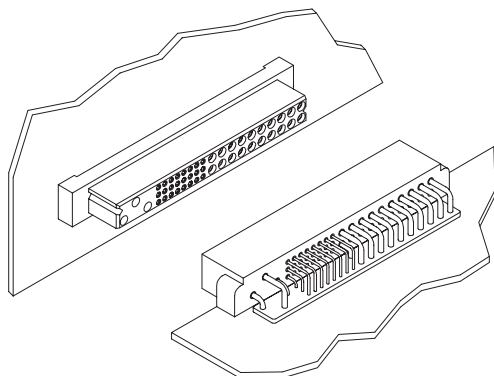
Compact
Power
Connectors

SYSTEM 1

MOTHER BOARD TO DAUGHTER BOARD

Female, Straight Solder or Press-fit Contacts

Typical part number: PCIH47F300A1
Currently available in: PCIH, PCIA, PCIM,
PCIB, PCIC

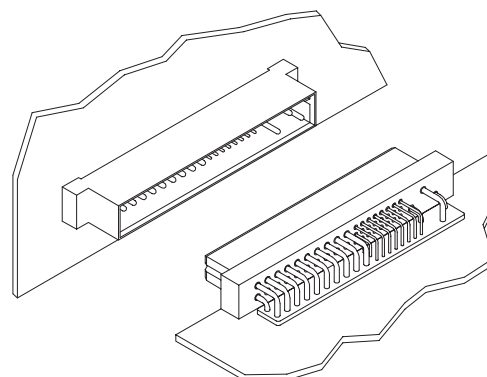


Male, Right Angle (90°) Contacts

Typical part number: PCIH47M400A1
Currently available in: PCIH, PCIA,
PCIM, PCIB, PCIC

Male, Straight Solder or Press-fit Contacts

Typical part number: PCIH47M300A1
Currently available in: PCIH and PCIA



Female, Right Angle (90°) Contacts

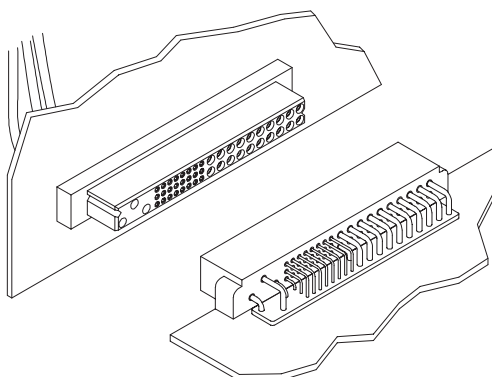
Typical part number: PCIH47F400A1
Currently available in: PCIH, PCIA,
PCIM, PCIB, PCIC

SYSTEM 2

A.C. PASS-THROUGH TO RIGHT ANGLE (90°) BOARD MOUNT

Female, Straight Solder or Press-fit with AC Pass-Through Contacts Installed

Typical part number: PCIH47F300A1-246.0 with
FC112N2S-1565.0 (Ordered Separately)
Currently available in PCIC, PCIH, and PCIB.



Male, Right Angle (90°) Contacts

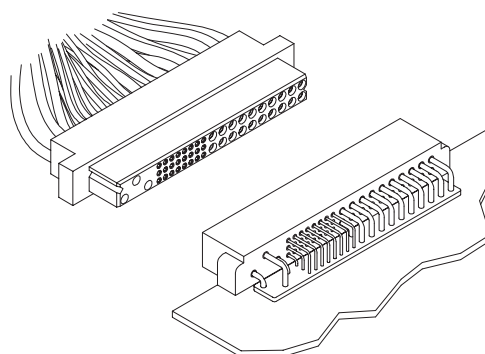
Typical part number: PCIH47M400A1
Currently available in: PCIH, PCIA,
PCIM, PCIB, PCIC

SYSTEM 3

CABLE TO RIGHT ANGLE (90°) BOARD MOUNT

Female, Crimp Contacts Installed

Typical part number: PCIH47F8000 with
FC112N2S-1565.0 (Order Separately)
Currently available in PCIH, PCIA, PCIM,
PCIB, PCIC



Male, Right Angle (90°) Contacts

Typical part number: PCIH47M400A1
Currently available in: PCIH, PCIA,
PCIM, PCIB, PCIC

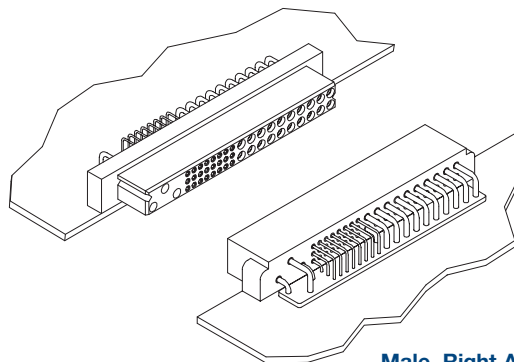
SYSTEM 4

RIGHT ANGLE (90°) BOARD MOUNT TO RIGHT ANGLE (90°) BOARD MOUNT

Female, Right Angle (90°) Contacts

Typical part number: PCIH47F400A1

Currently available in: PCIH, PCIA, PCIM, PCIB, PCIC



Male, Right Angle (90°) Contacts

Typical part number: PCIH47M400A1

Currently available in: PCIH, PCIA, PCIM, PCIB, PCIC

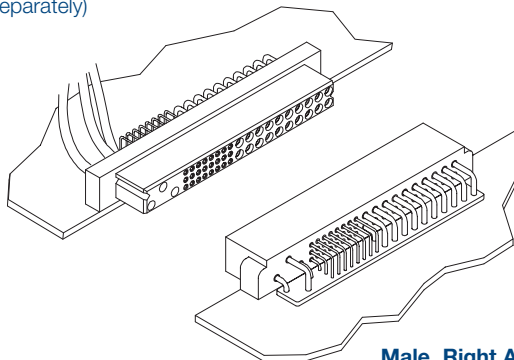
SYSTEM 5

RIGHT ANGLE (90°) BOARD MOUNT WITH A.C. PASS-THROUGH TO RIGHT ANGLE (90°) BOARD MOUNT

Female, Right Angle (90°) with AC Pass-Through Contacts Installed

Typical part number: PCIH47F400A1-246.4 with
FC112N2S-1565.0 (Ordered Separately)

Currently available in: PCIH.



Male, Right Angle (90°) Contacts

Typical part number: PCIH47M400A1

Currently available in: PCIH, PCIA, PCIM, PCIB, PCIC



DEMYSTIFYING CURRENT RATINGS

Connector current ratings seem to be shrouded in mystery at times. The user wonders how a listed current rating is relevant to a particular application. Perhaps more mysterious is how similar connectors from various manufacturers list different current rating values. While it is true that material choices and design can enhance a connector's current rating, the test method by which the rating was developed must be understood when evaluations are made.

Users of connectors for power applications are entitled to current rating test details in order to make an informed choice. Ideally, a connector's current rating should be developed within the application for which it is being considered. Although ideal, this approach is not always practical given the many differing applications. In order for connector manufacturers to give potential product users an idea of what can be expected, connectors are given current ratings based on a specific test method.

A wide variety of test methods are employed in order to develop current ratings for connectors. Some of these methods come from standards that are recognized industry-wide, while others are unique to the manufacturer or user. These various test methods can produce different results for the same product. It is no wonder confusion sometimes results.

There are key factors that, when understood, can help in choosing the right power connector. All test methods used to rate current have similarities; however, there are variables in applying the test methods which explain differing results.

Current ratings are usually established by first developing a temperature rise curve. This curve plots temperature rise against increasing current levels. The curve is a reliable tool in understanding heat generation of the connector at various currents. When a defined failure is reached, the test ends. The highest current level achieved is usually listed as the current rating.

The temperature rise curve, and therefore the current rating, will change when certain key factors are varied.

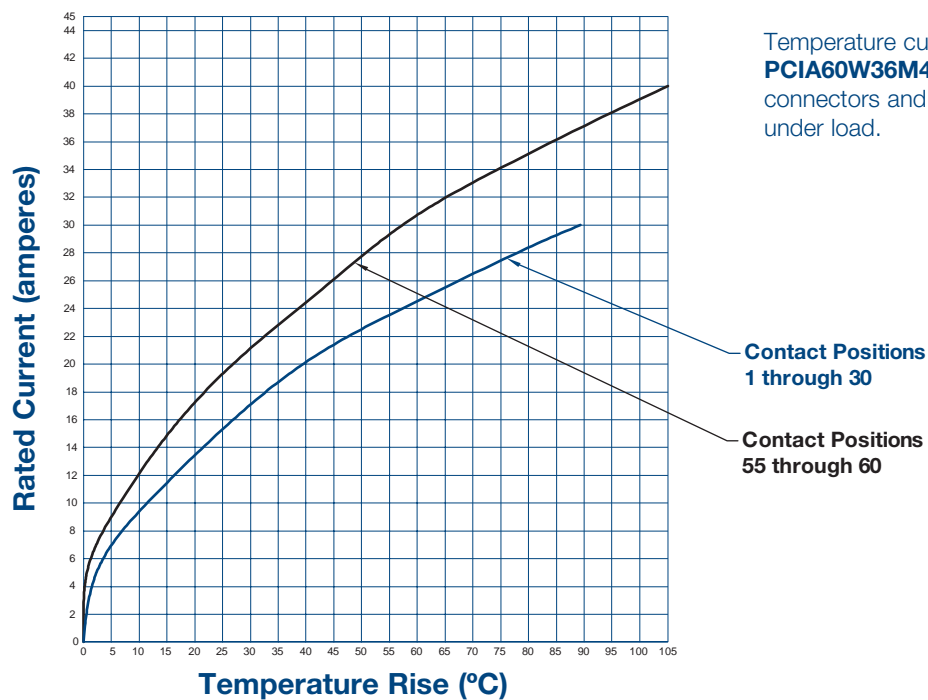
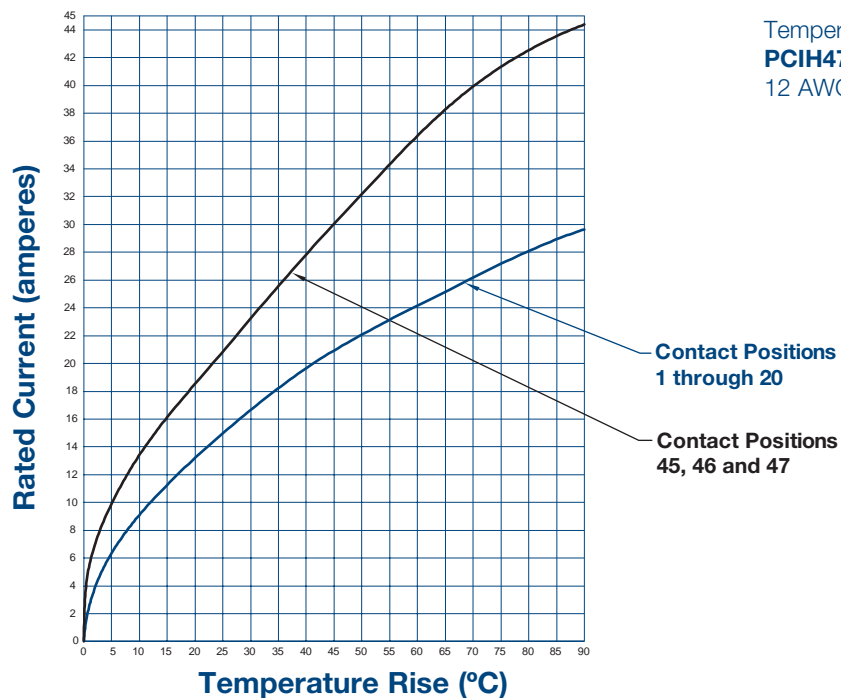
These are:

- **Where is the temperature sensing probe placed?** *If placed on the contact in the mating area (the hottest spot), the results will be quite different than if placed on the outside of the connector body.*
- **Are the contacts being tested and rated in free air or are they contained within the connector housing?** *Contacts will obviously be cooler in free air.*
- **Are all of the contacts in the connector under load?** *If only part of the contacts are under load, the temperature rise could be less.*
- **What is the defined failure?** *Does the test end when the temperature rise reaches 30°C, 40°C, or some other number? Does it end when the temperature rise plus ambient temperature equal the operating limit of the connector housing? The current rating will be fixed by the defined failure point.*
- **How were the test samples prepared?** *Were the samples energized through a printed circuit board? How many layers? How large were the traces? What was the weight of the copper? Were the samples energized through wire? What size was the wire? How long was the wire? Was the sample tested in static or forced air conditions? All of these factors can affect cooling characteristics.*

Clearly, a current rating value alone is not enough, and must be viewed in the context of the test used to develop the rating. When the test method is understood, evaluating and comparing power connectors for specific applications becomes much less of a mystery.

Tested per IEC Publication 60512-3, Test 5a

Test Detail: Curves were developed with all power contacts energized through 12 awg wire. Temperature rise was measured in the contact mating area. Test was conducted in static air.





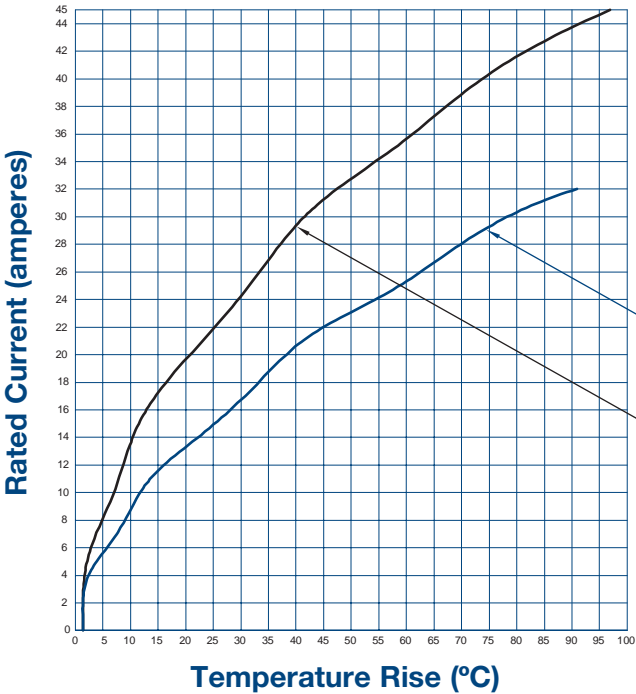
Positronic
connectpositronic.com

TEMPERATURE RISE CURVES

Compact
Power
Connectors

Tested per IEC Publication 60512-3, Test 5a

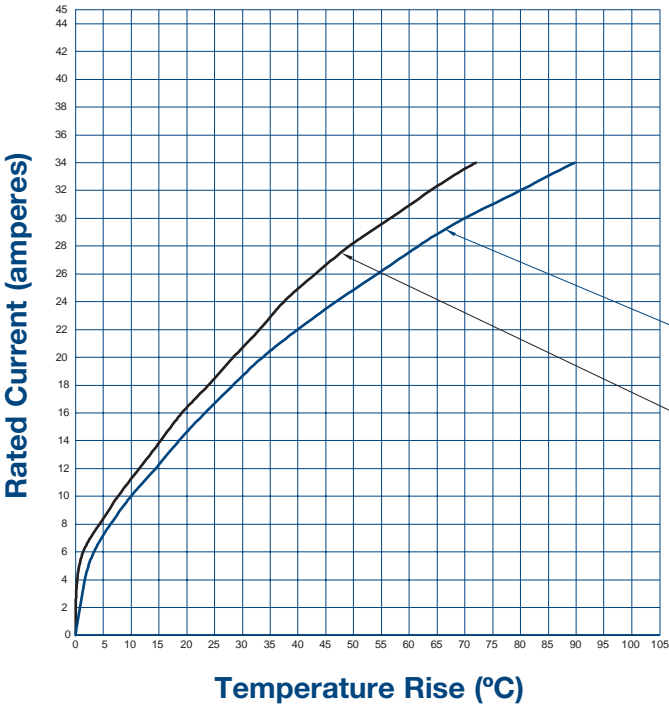
Test Detail: Curves were developed with all power contacts energized through 12 awg wire. Temperature rise was measured in the contact mating area. Test was conducted in static air.



Temperature curve developed using **PCIM30W15M400A1** and **PCIM30W15F9300A1** connectors and 12 AWG wire. All size 16 contacts under load.

Contact Positions
1 through 12

Contact Positions
28 through 30



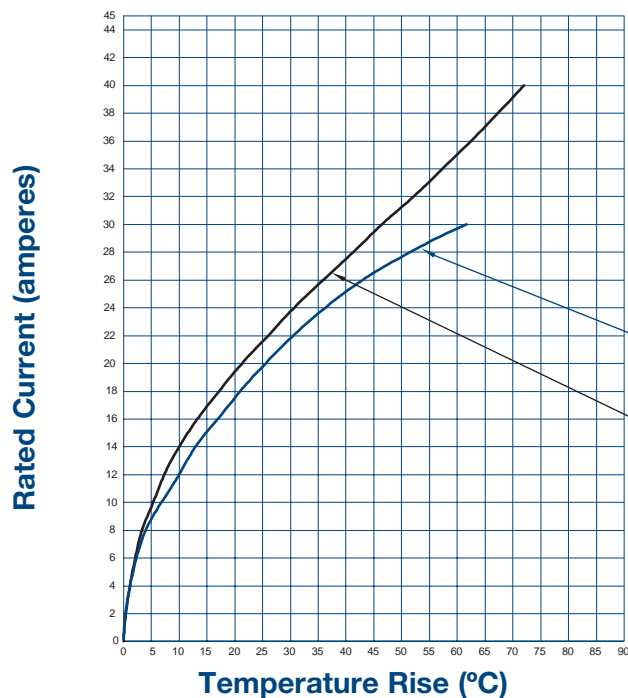
Temperature curve developed using **PCIB26W11M400A1** and **PCIB26W11F9300A1** connectors and 12 AWG wire. All size 16 contacts under load.

Contact Positions
1 through 6

Contact Positions
22 through 26

Tested per IEC Publication 60512-3, Test 5a

Test Detail: Curves were developed with all power contacts energized through 12 awg wire. Temperature rise was measured in the contact mating area. Test was conducted in static air.



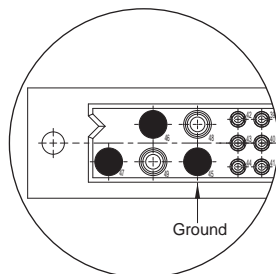
Temperature curve developed using **PCIC16W7M400A1** and **PCIC16W7F9300A1** connectors and 12 AWG wire. All size 16 contacts under load.

Contact Positions
1 through 4

Contact Positions
14 through 16

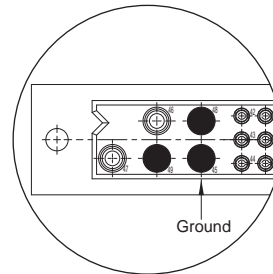
AC/DC INPUT KEYING

The PCIH49W25 variant has two more contacts than the PCIH47 variant, This provides an “electrical keying” for dedicated AC and DC inputs in a single connector (see below). This prevents damage to power supplies if mechanical keying fails or is not used. **Contacts can be depopulated as creepage and clearance requirements dictate.** It is also important to note that male versions of the PCIH47 will mate to female versions of the PCIH49W25.



Dedicated AC Input

Position 45 - Ground
Positions 46, 47 - Line, Neutral
Positions 48, 49 - Depopulated, if required.



Dedicated DC Input

Position 45 - Ground (optional)
Positions 48, 49 - D.C. Input
Positions 46, 47 - Depopulated, if required.



Positronic
connectpositronic.com

A.C./D.C. INPUT KEYING

Compact
Power
Connectors

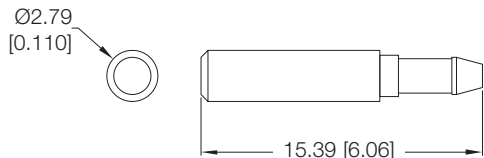
MECHANICAL KEYING

Mechanical keying is valuable for applications which offer A.C. or D.C. input power supplies. Inserting a D.C. input power supply into an A.C. slot can damage the power supply. Mechanical keying prevents this.

MATERIALS: Nylon

COLOR: White

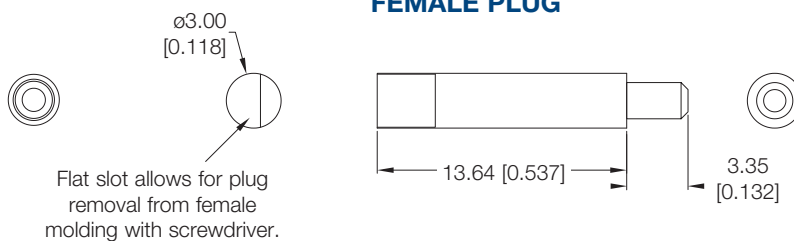
MALE PLUG



PART NUMBER 2703-16-0-0

To insert male plug use tool # 4311-0-0-0

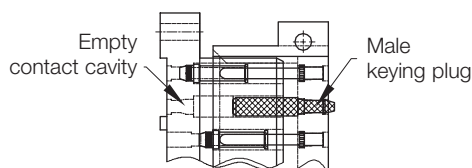
FEMALE PLUG



PART NUMBER 2704-26-0-0

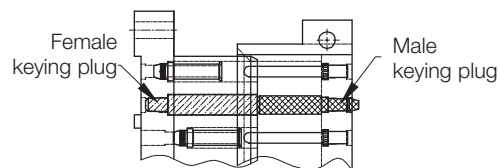
PCIH47 connectors can be ordered for use with keying plugs. Select base part number and add modifier -441.0 or -442.0 as described on page 107.

KEYED TO MATE



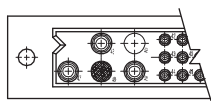
Keys can be placed in positions 48 and 49 to achieve keying.

KEYED TO BLOCK

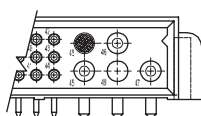


TYPICAL EXAMPLE FOR A.C. INPUT SUPPLIES

FEMALE



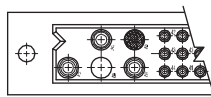
MALE



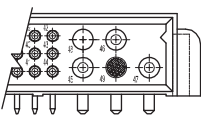
This example shows keying which allows A.C. input male connector to mate with A.C. input female connector. D.C. input male connector will not mate with A.C. input female connector.

TYPICAL EXAMPLE FOR D.C. INPUT SUPPLIES

FEMALE



MALE



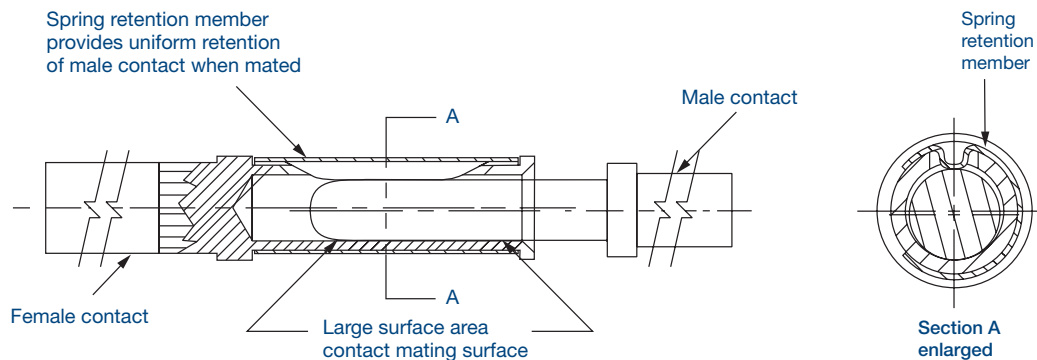
This example shows keying which allows D.C. input male connector to mate with D.C. input female connector. A.C. input male connector will not mate with D.C. input female connector.

NOTE: Once keying plugs are installed, they can be removed. To change keying sequence, remove installed plugs and insert **new** male and female keying plugs.

ALL PCI SERIES utilize Positronic

LARGE SURFACE AREA CONTACT MATING SYSTEM

- Separates mechanical and electrical functions for superior performance
- Low contact resistance provides minimized voltage drop across the contact
- True closed entry design prevents damage to female contacts and will not allow misaligned or bent contacts to enter
- Precision machined from solid, high conductivity copper alloy
- Stable insertion and withdrawal forces throughout repeated mating cycles



WHY IS THE L.S.A. SYSTEM SUPERIOR?

The primary function of connector contact is electrical conductivity. Also, a mechanical function is required to provide normal force between male and female contacts.

In order to provide for proper mechanical characteristics, material that has good memory or “elasticity” must be chosen. This will ensure contact normal force in a coupled condition and allow for repeated coupling and uncoupling.

Unfortunately, many materials that have good memory characteristics have low electrical conductivity. For instance, beryllium copper is a good choice for mechanical function; however, some beryllium copper alloys are poor conductors and have relatively low conductivity rates.

The conductivity path of many contact designs goes directly through materials that have been chosen based on mechanical need. If these materials have a low conductivity rating, increased contact resistance will result.

Positronic Large Surface Area Contact System separates the mechanical and electrical functions.

A spring retention member provides normal forces, while the electrical conductivity path is through highly conductive contact material. See above detail.



Positronic
connectpositronic.com

COMPLIANT TERMINATIONS

Compact
Power
Connectors

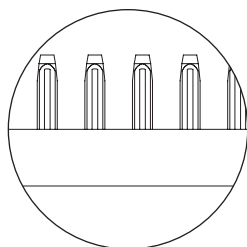
POSITRONIC BI-SPRING POWER COMPLIANT TERMINATIONS

The Next Evolution In Compliant Technology. Fully Compliant, Fully Reliable.

Reliable, solderless connections from connectors to backplanes started with solid press-fit technology. Although these are still used today, concerns about board damage led to the use of compliant press-fit technology. This technology allows the connection to be made through compliance of the contact termination along with printed circuit board hole deformation. Although risk of damaged printed circuit boards and backplanes

is lessened, damage can still occur due to relatively high insertion and extraction forces.

The next step in press-fit technology is a highly reliable connection between the contact termination and backplane that is accomplished with reduced insertion and extraction forces. This eliminates risk of printed circuit board and backplane damage. This technology exists today with Positronic Bi-Spring Power Press-Fit termination.



**Bi-Spring Power
Press-Fit Compliant
Terminations**

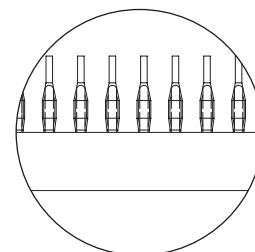
- Average insertion and extraction forces of size 16 contacts are 22N (5 lbs.) per contact and do not produce stresses in printed circuit boards and backplanes that can occur with higher insertion forces. These stresses can cause board warpage and hole damage.
- Connector systems utilizing Bi-Spring terminations use mounting screws to secure the connector to the printed circuit board or backplane. Stresses that occur during coupling, uncoupling or shock and vibration of systems are not transferred to the printed circuit boards or backplanes through the press-fit connection. The electrical integrity of the connector to board interface is maintained; this is particularly important in power applications. Bellcore GR1217 details a preference for mounting hardware when using press-fit terminations.
- Size 16 Bi-Spring terminations are designed to meet the performance requirements and hole diameters as listed in the internationally recognized specification IEC 60352-5.

- Lower insertion and extraction forces eliminate the need for expensive pressing equipment.

OMEGA SIGNAL LEVEL COMPLIANT TERMINATIONS

Today's power supplies feature communication options with the host system. The power interface must have reliable signal level connections.

Positronic Omega Press-Fit terminations are the perfect solderless connection companion to the Bi-Spring Power Press-Fit terminations.



**Omega Signal Level
Press-Fit Compliant
Terminations**

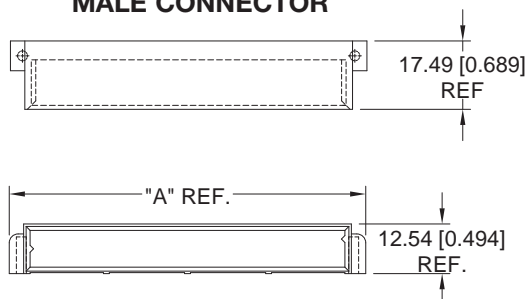
Patent No. 6,260,268

The Compact Power Connector Series design allows for the development of application specific contact arrangements in a timely manner and at a reasonable price. After reviewing the following basic information, contact Technical Sales with your current, voltage, and safety requirements. We look forward to working with you to develop a connector for your specific needs.

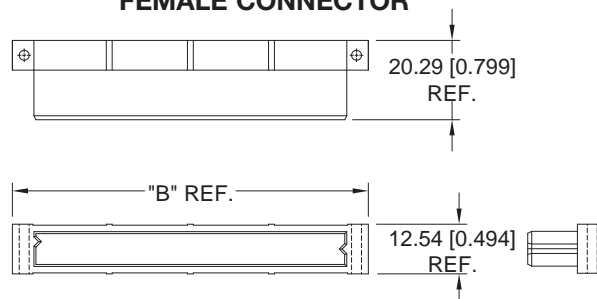
BASIC CONNECTOR DIMENSIONS

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR

MALE CONNECTOR

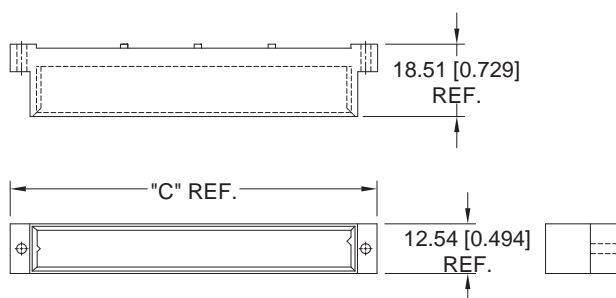


FEMALE CONNECTOR

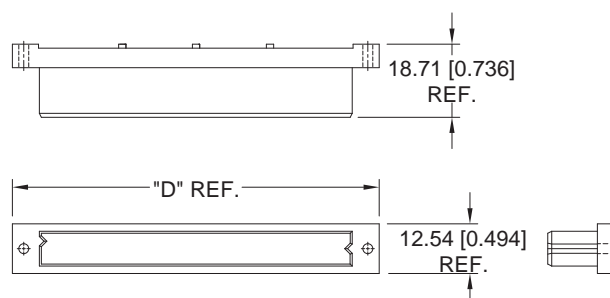


STRAIGHT BOARD MOUNT CONNECTOR

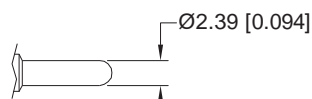
MALE CONNECTOR



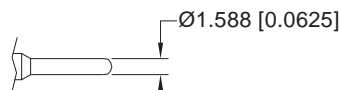
FEMALE CONNECTOR



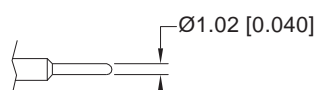
FOUR CONTACT SIZES TO CHOOSE FROM



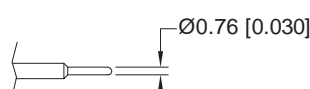
Size 12 contact



Size 16 contact



Size 20 contact



Size 22 contact

Contact sizes may be mixed within a single connector.

BASIC SERIES	"A"	"B"	"C"	"D"
PCIH	91.03 [3.584]	91.04 [3.584]	93.82 [3.694]	93.82 [3.694]
PCIA	116.53 [4.588]	120.90 [4.760]	119.32 [4.698]	119.32 [4.698]
PCIB	53.54 [2.108]	53.54 [2.108]	N/A	56.32 [2.217]
PCIC	43.96 [1.731]	43.96 [1.731]	N/A	46.74 [1.840]
PCIM	69.66 [2.743]	69.66 [2.743]	N/A	72.44 [2.852]

MANY TERMINATION TYPES CAN BE SUPPLIED

Straight Solder or Compliant Press-Fit
Right Angle (90°) Solder
Crimp Removable
Different termination types can be mixed within a single connector

POPULAR OPTIONS

Sequential Mating
Recessed Female Contacts
Selective Loading



Positronic
connectpositronic.com

SPECIAL OPTIONS

Compact
Power
Connectors

Why Pay For More Than You Need?

The current carrying capability of the Compact Power Connector is considerable. In many applications a customer may be paying for unused capacity if a fully loaded connector is used. Connectors are available with fewer power contacts loaded to allow for a cost savings.

The **PICMG® 2.11 Power Interface Specification** allows for three loading options of male contact, right angle (90°), free board connectors. Female contact fixed board connectors may not be selectively loaded. Consult PICMG 2.11 for details.

	Output Contact Position Loaded*¹	Total Output Contacts*¹	Positronic Part Number
Option 1	1,3,4,5,6,7,8,9,11,12,13,15,16,17,19,20	16	PCIH47M400A1-259.2
Option 2	1,4,5,8,9,12,13,16,19,20	10	PCIH47M400A1-259.0
Option 3	1,5,9,13,19,20	6	PCIH47M400A1-259.1

*¹All input and signal contact positions are loaded.

Additional savings can be gained when female contact connectors are supplied selectively loaded for applications not specific to PICMG® 2.11.

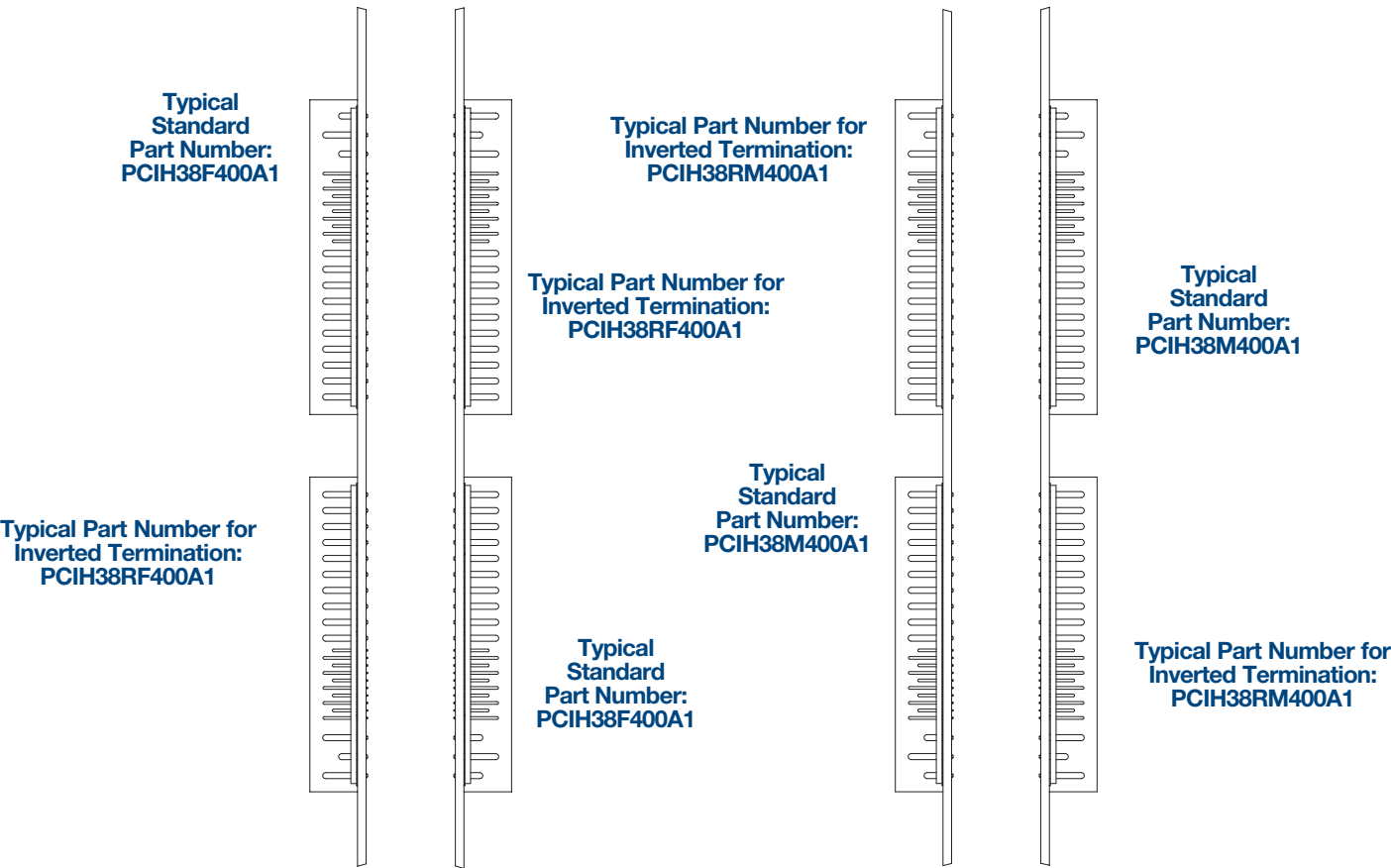
PCI INVERTED TERMINATION OPTIONS

FEMALE CONNECTORS

Available in
PCIH, PCIA, PCIM, PCIB, PCIC

MALE CONNECTORS

Available in
PCIH, PCIM, PCIB, PCIC



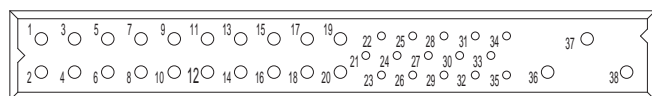
Inverted termination options allow flexibility in positioning the connector as best suited for specific applications.

The **PCIH** series was developed specifically for use with **CompactPCI®** in-rack modular power supplies. The package size is ideal for use in all 3U and 6U based platforms. The PCIH series is an excellent choice in **IEEE 1101.1**, **IEEE 1101.10**, and **VITA 30** applications where system power requirements have exceeded the capabilities of commonly used power connectors.

The **PCIH47** variant is fully compliant to the **PICMG® 2.11 Power Interface Specification**. This Specification details standardized power for use with **CompactPCI®** systems. Visit www.picmg.com for details.

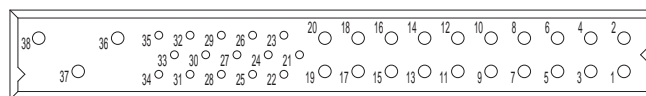
PCIH SERIES CONTACT VARIANTS

FACE VIEW OF MALE AND REAR VIEW OF FEMALE



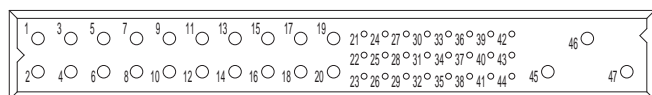
PCIH38 VARIANT

23 Size 16 Power Contacts and 15 Size 20 Signal Contacts



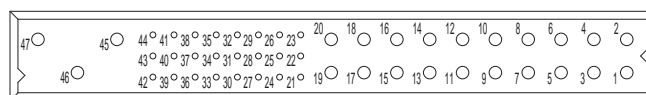
PCIH38R VARIANT (Inverted Termination)

CompactPCI®

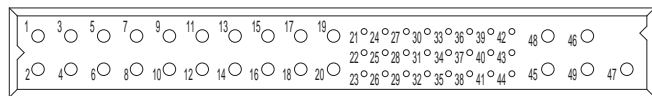


PCIH47 VARIANT

23 Size 16 Power Contacts and 24 Size 22 Signal Contacts

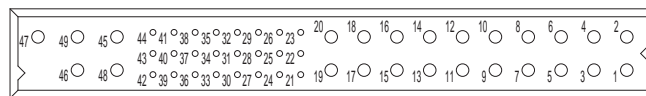


PCIH47R VARIANT (Inverted Termination)



PCIH49W25 VARIANT

25 Size 16 Power Contacts and 24 Size 22 Signal Contacts



PCIH49W25R VARIANT

Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog



MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Size 16 contacts: High conductivity precision-machined copper alloy. Size 20 and 22 contacts: Precision-machined copper alloy.
Plating:	Gold flash over nickel. Other plating options available, refer to Step 7 on page 36.
Mounting Screws:	Steel, zinc plated.

ELECTRICAL CHARACTERISTICS:

PCIH Contact Current Ratings, per UL 1977

See Temperature Rise Curves on page 4 for details.

PCIH38:

Size 16 Power Contacts: Positions 36, 37, and 38:	40 amperes continuous, all contacts under load.
Positions 1 - 20:	28 amperes continuous, all contacts under load.
Size 20 Signal Contacts:	5 amperes nominal rating.

PCIH47:

Size 16 Power Contacts: Positions 45, 46, and 47:	40 amperes continuous, all contacts under load.
Positions 1 - 20:	28 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.

PCIH49:

Size 16 Power Contacts: Positions 45 through 49:	37 amperes continuous, all contacts under load.
Positions 1 - 20:	28 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.

Initial Contact Resistance:

Size 16 Contact:	0.0007 ohms maximum.
Size 20 Contact:	0.004 ohms maximum.
Size 22 Contact:	0.005 ohms maximum.
	Per IEC 60512-2, Test 2b.
Insulation Resistance:	5 G ohms per IEC 60512-2, Test 3a.

Voltage Proof:

PCIH38:

Contacts 36, 37 and 38:	3,000 V r.m.s.
Contacts 1 through 20:	1,500 V r.m.s.
Contacts 21 through 35:	1,000 V r.m.s.

PCIH47:

Contacts 45, 46, and 47:	3,000 V r.m.s.
Contacts 1 through 20:	1,500 V r.m.s.
Contacts 21 through 44:	1,000 V r.m.s.

PCIH49:

Contacts 1 through 20:	1,500 V r.m.s.
Contacts 45 through 49:	1,500 V r.m.s.
Contacts 21 through 44:	1,000 V r.m.s.

Creepage and Clearance Distance; minimum:

PCIH38:

Contact 38 to Contact 36:	3.2mm [0.126 inch]
Contact 37 to Contact 36:	3.2mm [0.126 inch]
Contact 38 to Signal Contacts:	6.4mm [0.252 inch]
Contact 37 to Signal Contacts:	6.4mm [0.252 inch]
Contact 38 to Contact 37:	2.5mm [0.098 inch]
Contact 36 to Signal Contacts:	2.0mm [0.079 inch]

PCIH47:

Contact 47 to Contact 45:	3.2mm [0.126 inch]
Contact 46 to Contact 45:	3.2mm [0.126 inch]
Contact 47 to Signal Contacts:	6.4mm [0.252 inch]
Contact 46 to Signal Contacts:	6.4mm [0.252 inch]
Contact 47 to Contact 46:	2.5mm [0.098 inch]
Contact 45 to Signal Contacts:	2.0mm [0.079 inch]
Contact 36 to Signal Contacts:	2.0mm [0.079 inch]

Working Voltage:

PCIH38:

Contacts 36, 37 and 38:	1,000 V r.m.s.
Contacts 1 through 20:	500 V r.m.s.
Contacts 21 through 35:	333 V r.m.s.

PCIH47:

Contacts 45, 46, and 47:	1,000 V r.m.s.
Contacts 1 through 20:	500 V r.m.s.
Contacts 21 through 44:	333 V r.m.s.

PCIH49:

Contacts 1 through 20:	500 V r.m.s.
Contacts 45 through 49:	500 V r.m.s.
Contacts 21 through 44:	333 V r.m.s.

MECHANICAL CHARACTERISTICS:

Blind Mating System:

Male and female connector bodies provide "lead-in" for 1.3 mm [0.050 inch] diametral misalignment.

Polarization:

Provided by connector body design.

Removable Contacts:

Install contact from rear of insulator; release from front of insulator. Size 16, 20 and 22 female contacts feature "Closed Entry" design for highest reliability.

Removable Contact Retention in Connector Body:

Size 16 Contacts:	67 N [15 lbs.]
Size 20 Contacts:	45 N [10 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Fixed Contacts:

Printed board terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 20 and 22 feature rugged "Open Entry" contact design. "Closed Entry" contacts available, consult Technical Sales.

Fixed Contact Retention in Connector Body:

Size 16 Contacts: 45 N [10 lbs.]
Size 20 and 22 Contacts: 27 N [6 lbs.]

Resistance to Solder Heat:

260°C [500°F] for 10 seconds
duration per IEC 60512-6, Test
12e, 25-watt soldering iron.

Sequential Contact Mating System:

PCIH38: First mate contact 36 and last
mate contact positions 22, 25
and 28.

**PCIH47 and
PCIH49 with MOS:** First mate contact 45 and last
mate contact position 27.

Consult Technical Sales for customer specified sequential mating.

Safety "Recessed in Insulator" Contacts:

The following size 16 contacts
are recessed 5mm [0.197 inch]
below the face of the female
connector insulator per safety
requirements.

PCIH38: Contact positions 37 and 38.

**PCIH47 and
PCIH49 with MOS:** Contact positions 46 and 47.

Compliant Terminations:

Size 16, 20 and 22 contacts are
available with compliant contact
terminations. Average insertion
and extraction forces of size 16
contacts are 22N (5 lbs.) per
contact.

Printed Board

and Panel Mounting:

Mounting holes provided in
connector body for both printed
board and panel mounting.
Self-tapping screws are available.

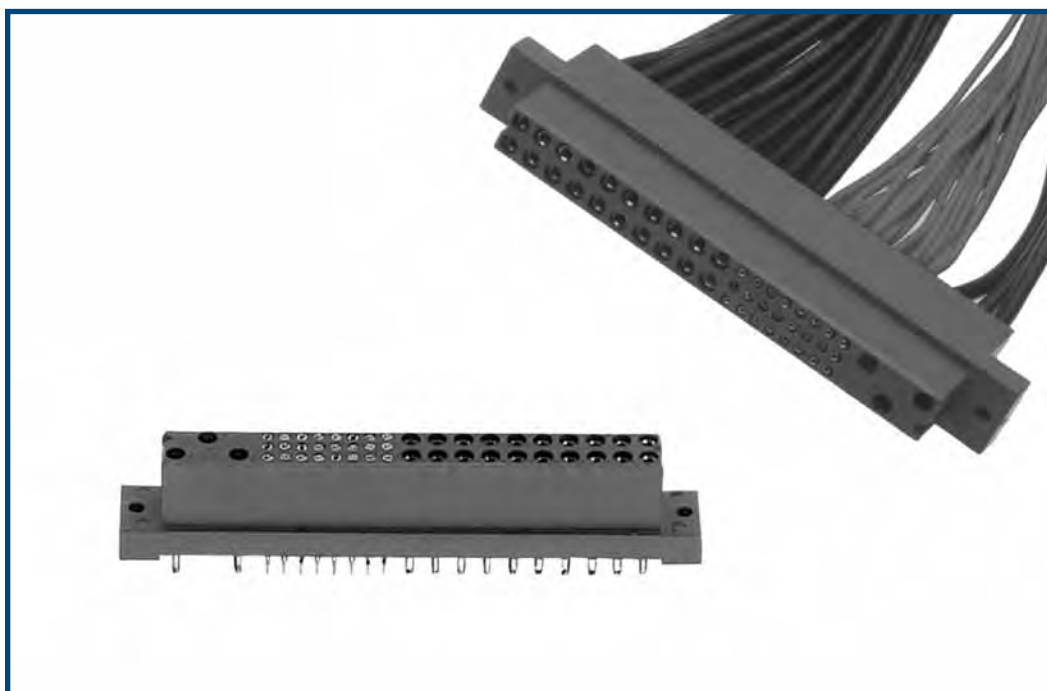
Mechanical Operations:

250 couplings, minimum.

CLIMATIC CHARACTERISTICS:

Working Temperature: -55°C to +125°C.

UL Recognized File #E49351
CSA Recognized File #LR54219
TUV Recognized File #215/99





Positronic
connectpositronic.com

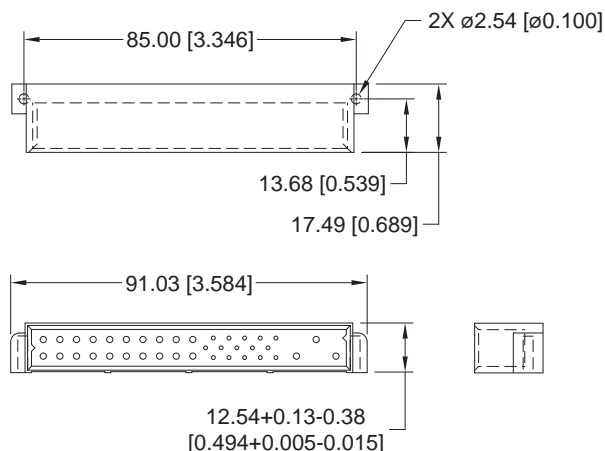
CONNECTOR OUTLINE AND MATING DIMENSIONS

Compact
Power
Connectors

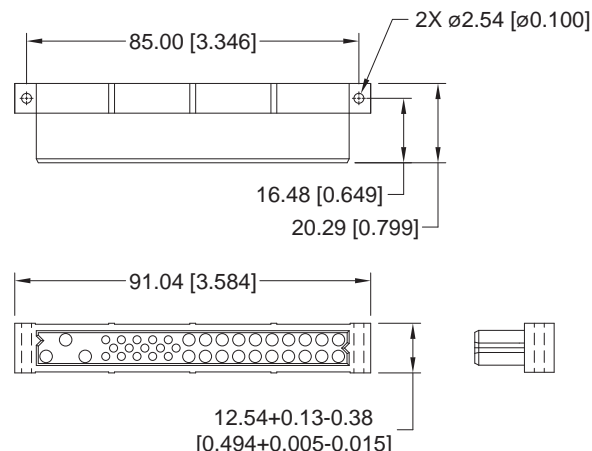
PCIH CONNECTOR OUTLINE DIMENSIONS

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR

MALE CONNECTOR

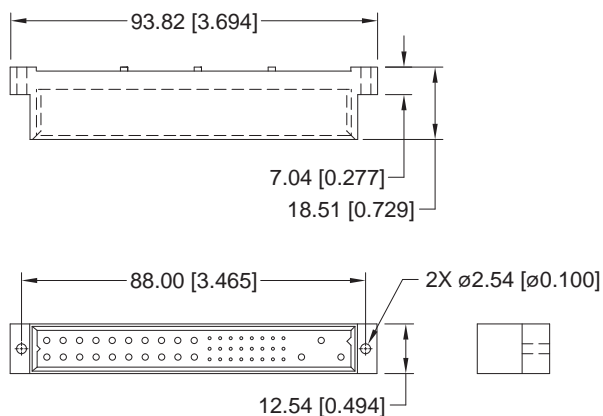


FEMALE CONNECTOR

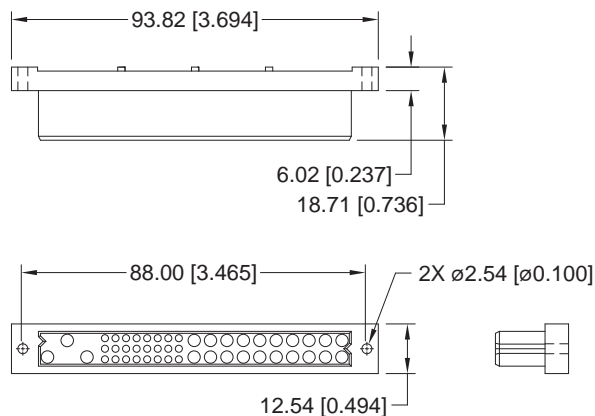


STRAIGHT BOARD MOUNT CONNECTOR

MALE CONNECTOR

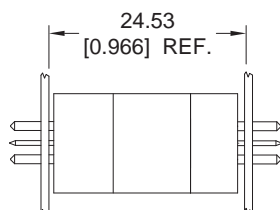


FEMALE CONNECTOR

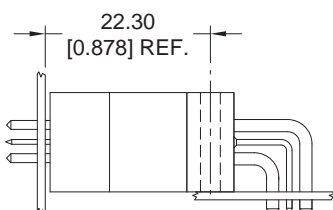


PCIH CONNECTOR MATING DIMENSIONS

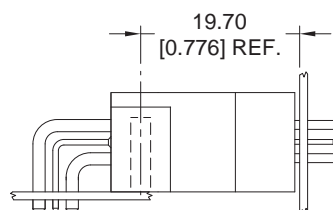
(FULLY MATED)



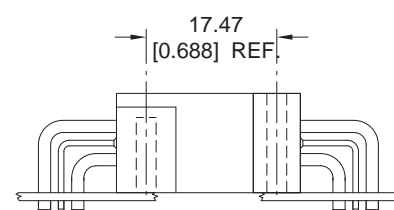
Straight Board
Mount Male to Straight
Board Mount or Panel
Mount Female



Straight Board
Mount Male to
Right Angle (90°)
Board Mount Female



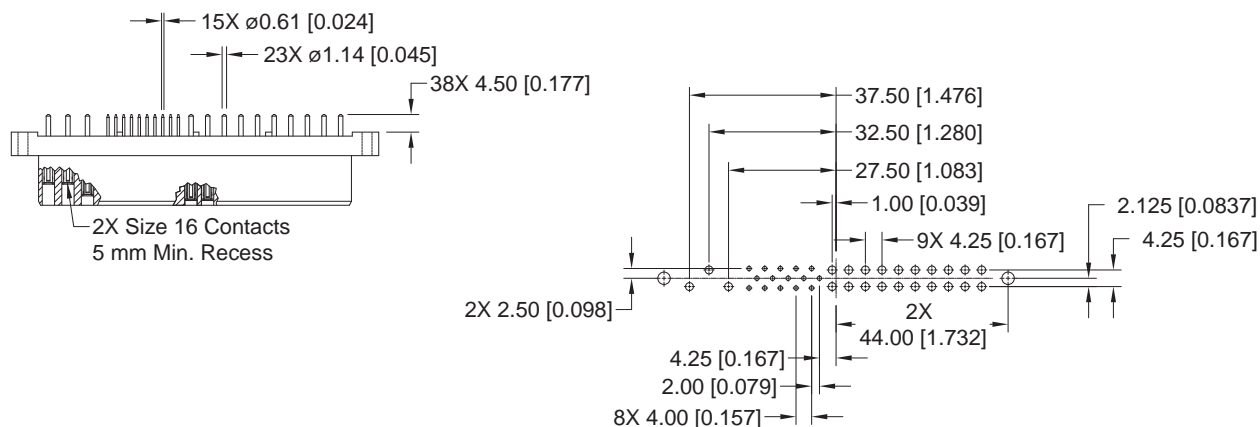
Right Angle (90°) Board
Mount Male to Straight
Board Mount or Panel
Mount Female



Right Angle (90°)
Board Mount Male to
Right Angle (90°)
Board Mount Female

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIH38F300A1



CONNECTOR DIMENSIONS

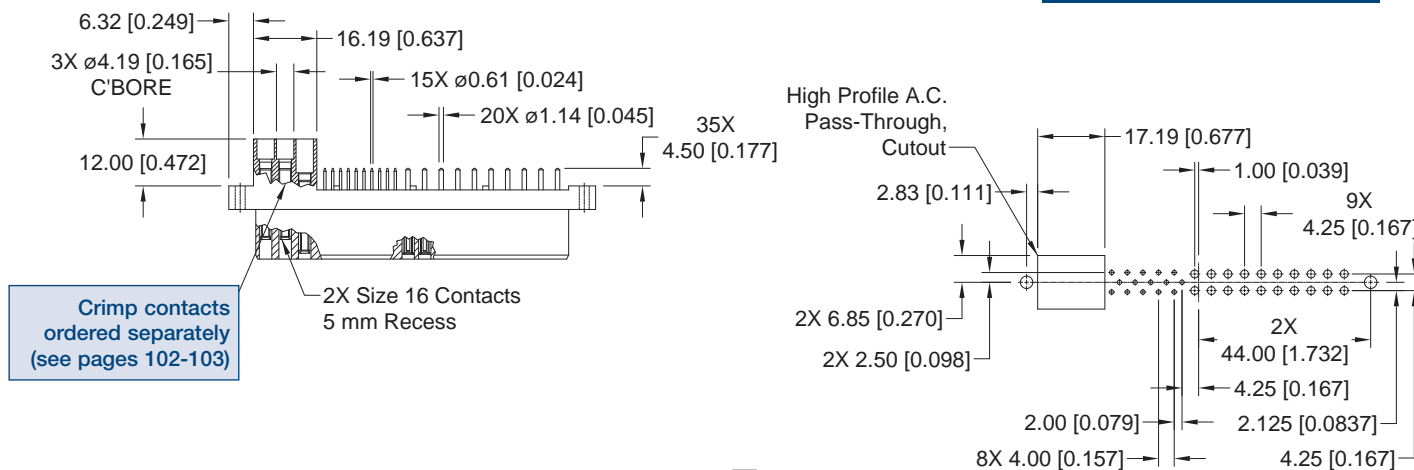
Note: See below for suggested printed board hole sizes.

FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*¹ -245.0

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

HIGH PROFILE PART NUMBER
PCIH38F300A1-245.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS

CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.00$ [0.039] holes for size 20 and size 22 contact holes.
Suggest $\varnothing 1.60$ [0.063] holes for size 16 contact holes.
Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. **16**



Positronic
connectpositronic.com

STRAIGHT SOLDER CONNECTOR, FEMALE

Compact
Power
Connectors

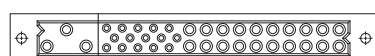
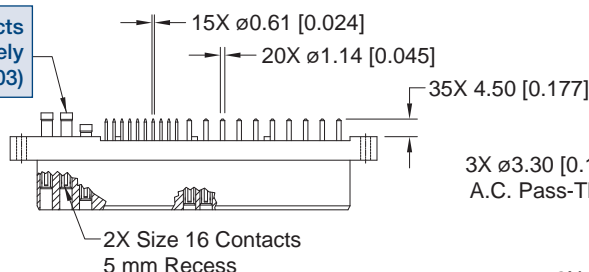
FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*1 -246.1

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

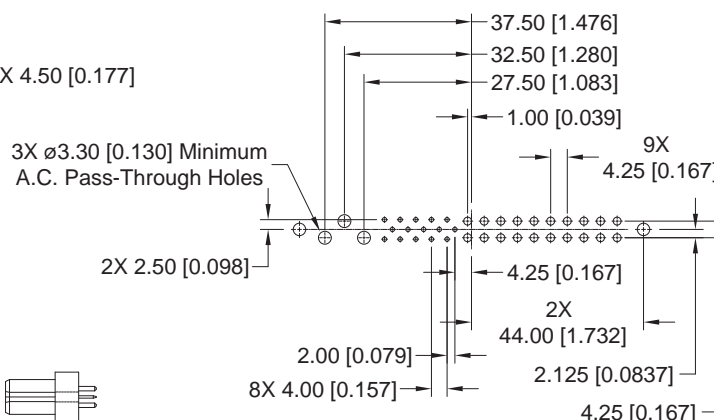
LOW PROFILE PART NUMBER
PCIH38F300A1-246.1

*1 For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS

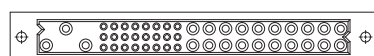
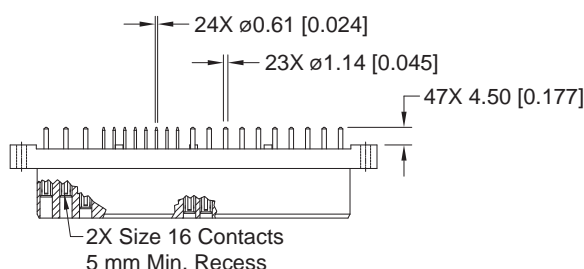


CONTACT HOLE PATTERN

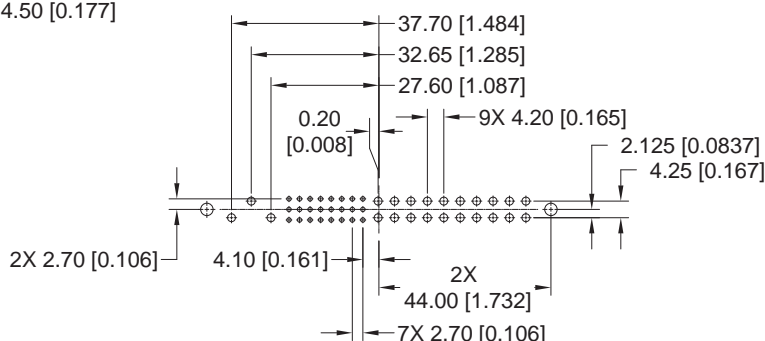
Note: See below for suggested printed board hole sizes.

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIH47F300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 20 and size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

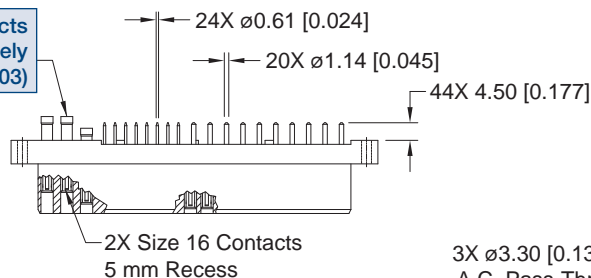
FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*¹ -246.0

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

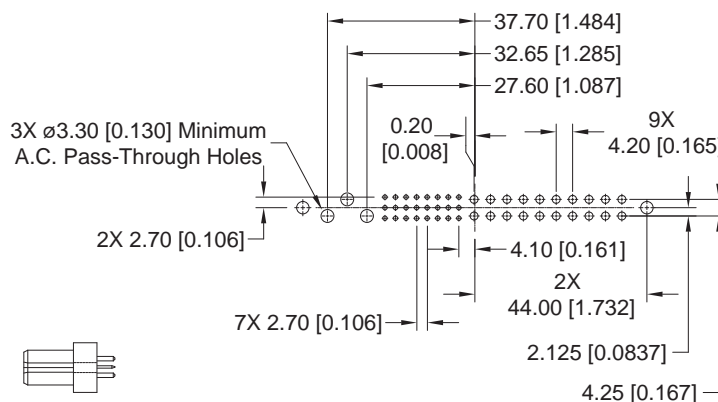
LOW PROFILE PART NUMBER
PCIH47F300A1-246.0

*¹ For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes.

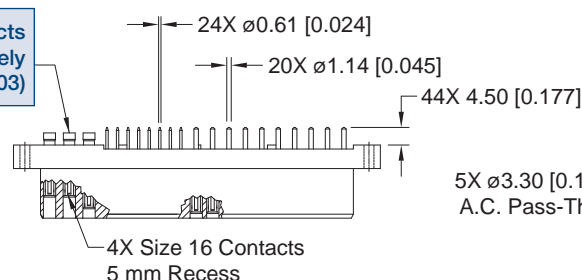
FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*¹ -246.3

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

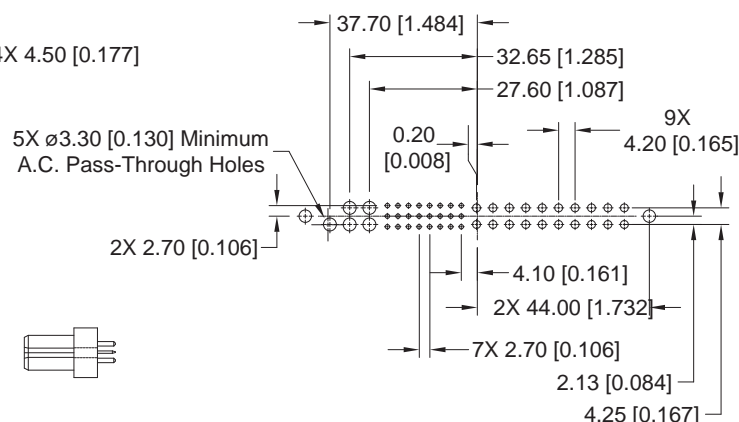
LOW PROFILE PART NUMBER
PCIH49W25F300A1-246.3

*¹ For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.00$ [0.039] holes for size 20 and size 22 contact holes.

Suggest $\varnothing 1.60$ [0.063] holes for size 16 contact holes.

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

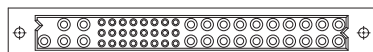
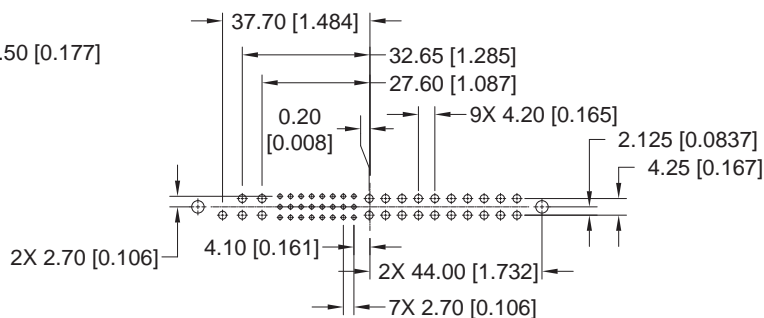
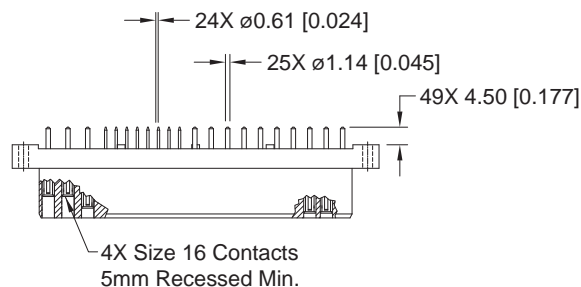
STRAIGHT SOLDER CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3 WITH MOS*¹ -379.0

STANDARD PART NUMBER
PCIH49W25F300A1-379.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



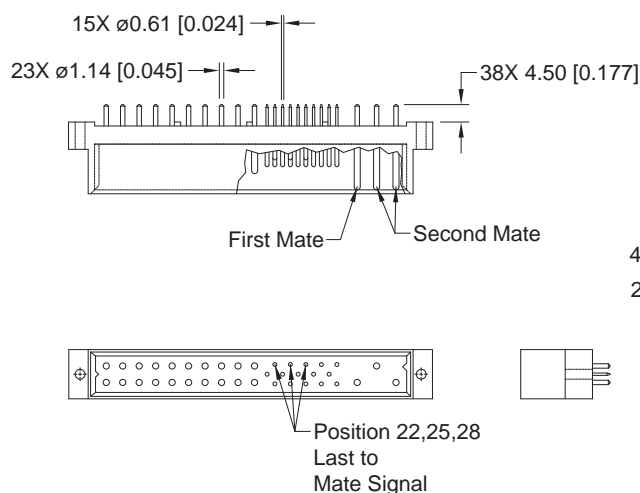
CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

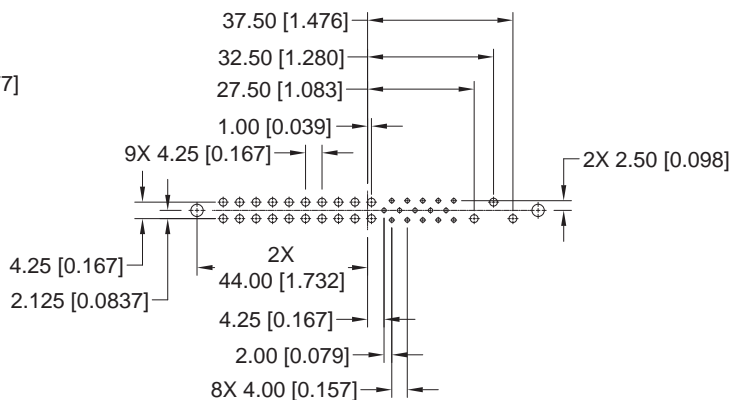
Suggest $\varnothing 1.00$ [0.039] holes for size 20 and size 22 contact holes.
Suggest $\varnothing 1.60$ [0.063] holes for size 16 contact holes.
Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIH38M300A1



CONNECTOR DIMENSIONS

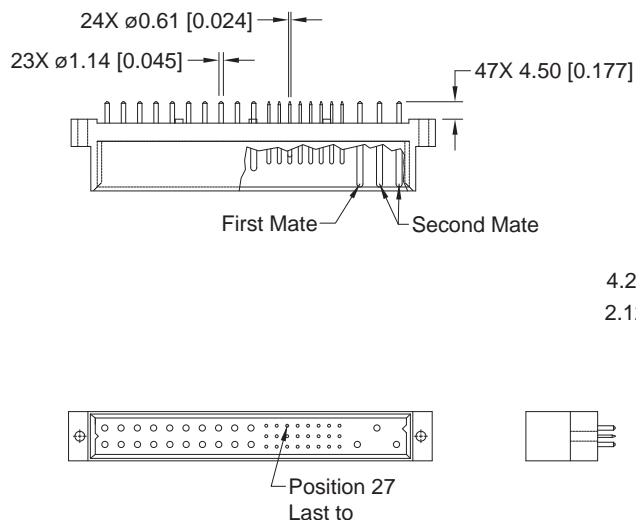


CONTACT HOLE PATTERN

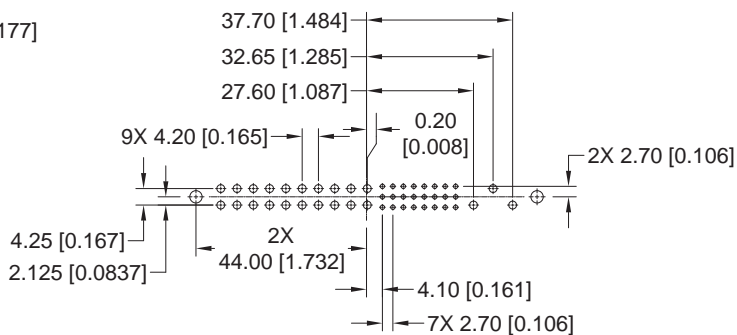
Note: See below for suggested printed board hole sizes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIH47M300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.00$ [0.039] holes for size 20 and size 22 contact holes.

Suggest $\varnothing 1.60$ [0.063] holes for size 16 contact holes.

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

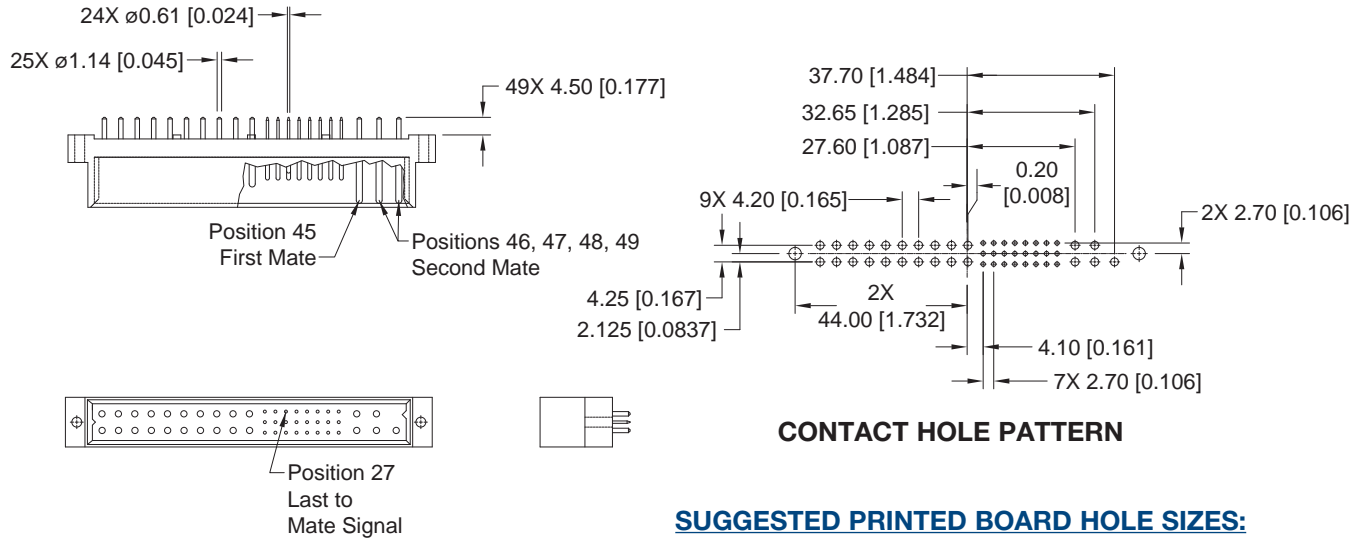
STRAIGHT SOLDER CONNECTOR, MALE

Compact
Power
Connectors

MALE STRAIGHT SOLDER CONNECTOR CODE 3 WITH MOS*¹ -378.0

STANDARD PART NUMBER
PCIH49W25M300A1-378.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS

CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

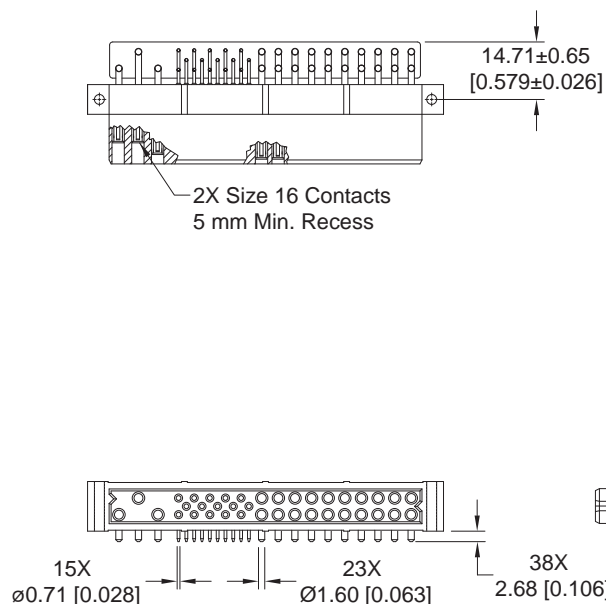
Suggest Ø1.00 [0.039] holes for size 20 and size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

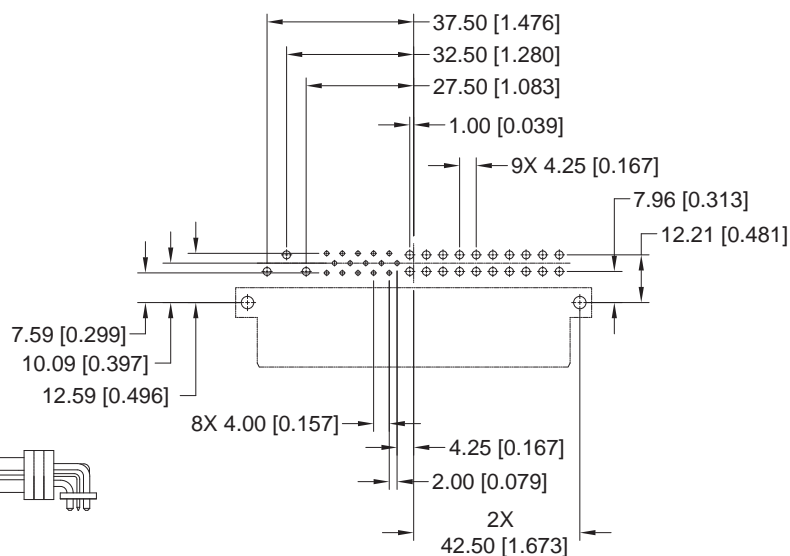
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4

STANDARD PART NUMBER
PCIH38F400A1



CONNECTOR DIMENSIONS

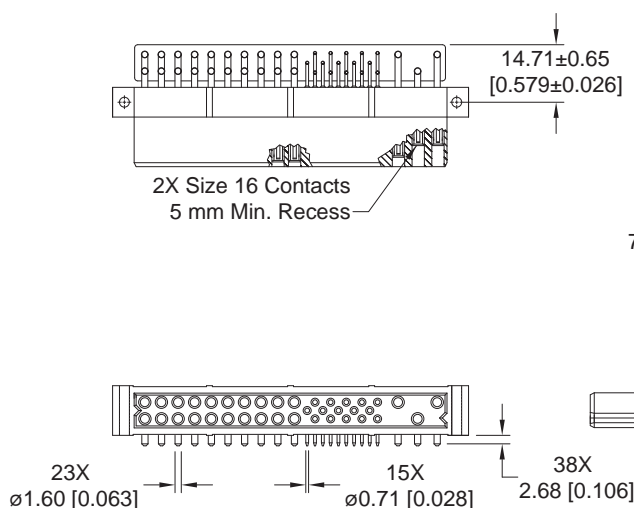


CONTACT HOLE PATTERN

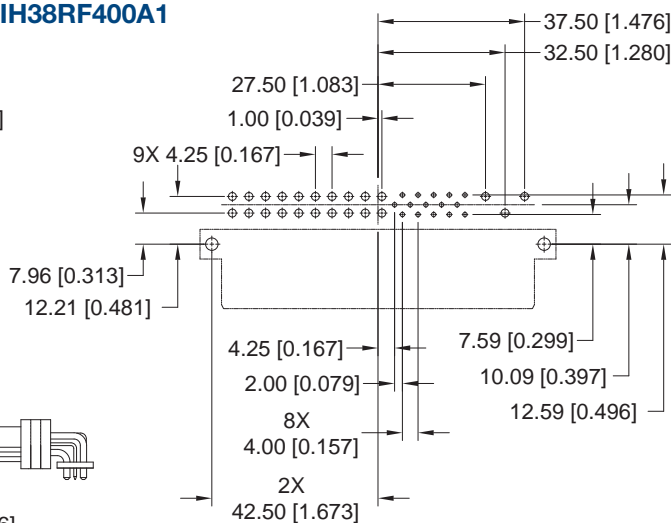
Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIH38RF400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 20 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



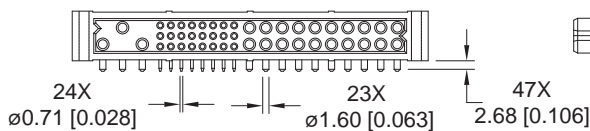
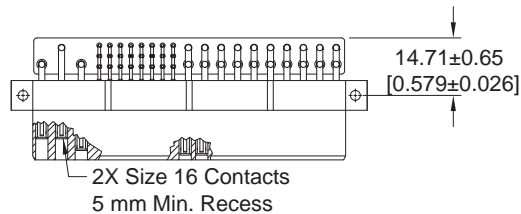
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

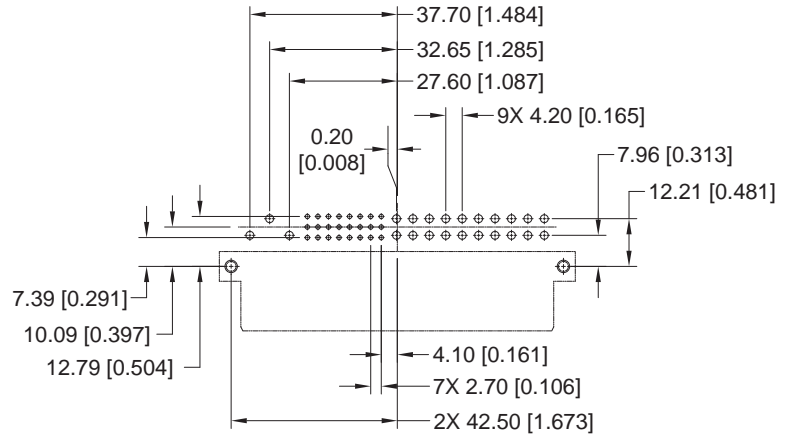
Compact
Power
Connectors

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIH47F400A1



CONNECTOR DIMENSIONS

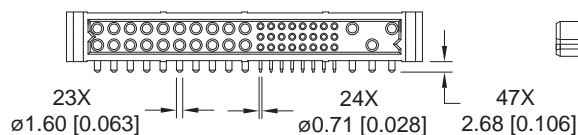
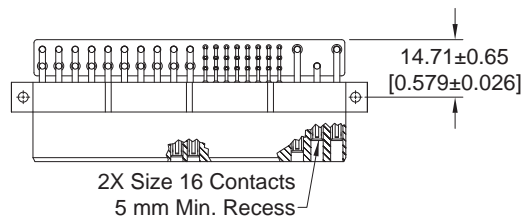


CONTACT HOLE PATTERN

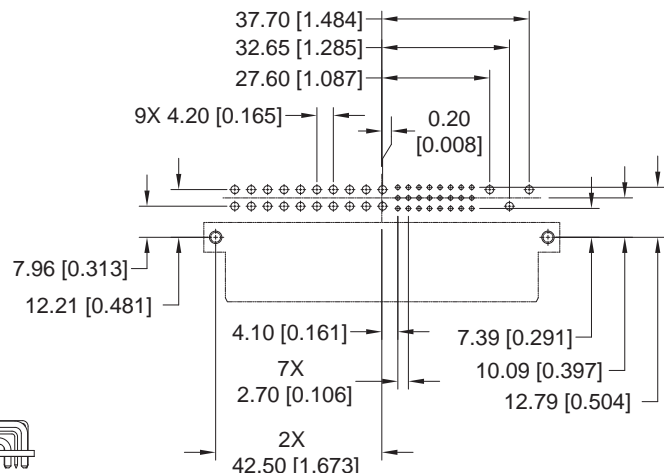
Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIH47RF400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.14$ [0.045] holes for size 22 contact holes.

Suggest $\varnothing 2.03$ [0.080] holes for size 16 contact holes.

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

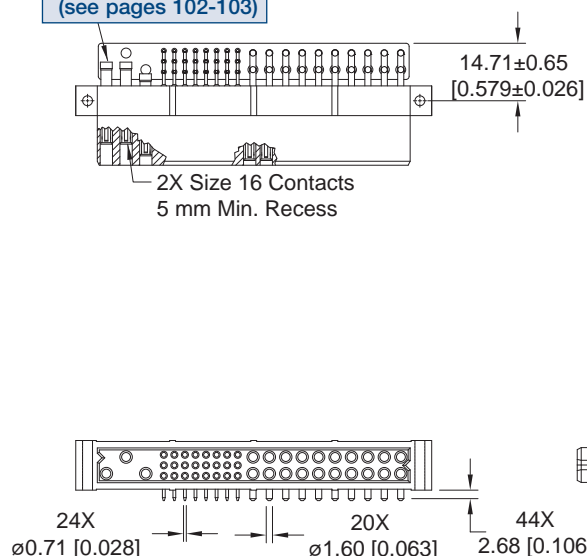
**FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR WITH A.C. PASS-THROUGH
CODE 4 WITH MOS*¹ -246.4**

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

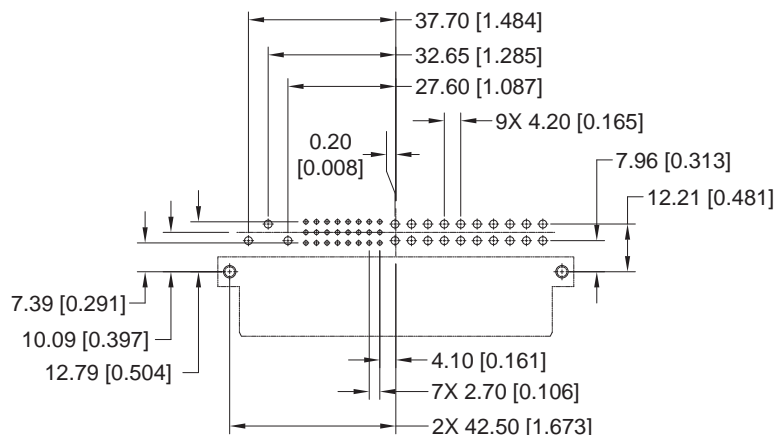
**STANDARD PART NUMBER
PCIH47F400A1-246.4**

*¹ For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes.

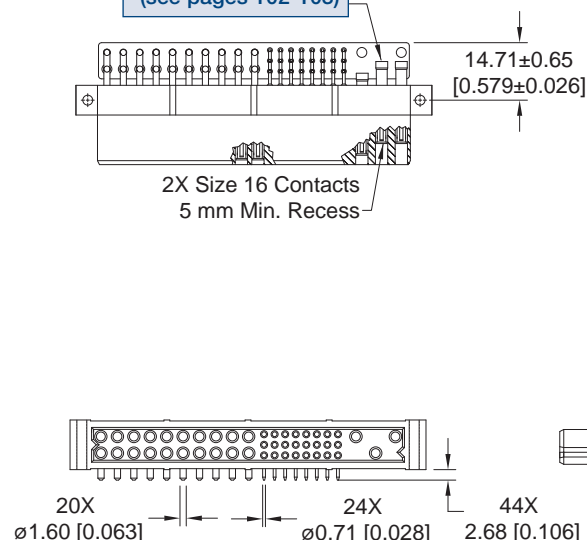
**FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR WITH A.C. PASS-THROUGH
CODE 4 WITH MOS*¹ -246.4**

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

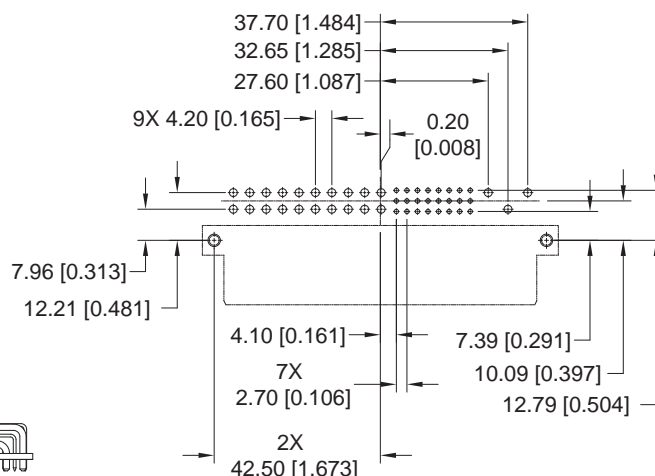
**PART NUMBER FOR INVERTED TERMINATION
PCIH47RF400A1-246.4**

*¹ For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

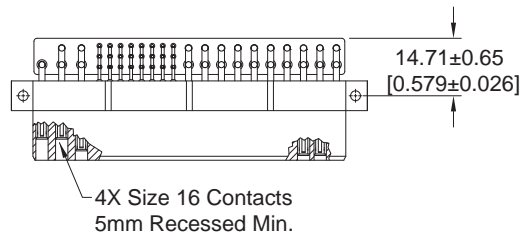
RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

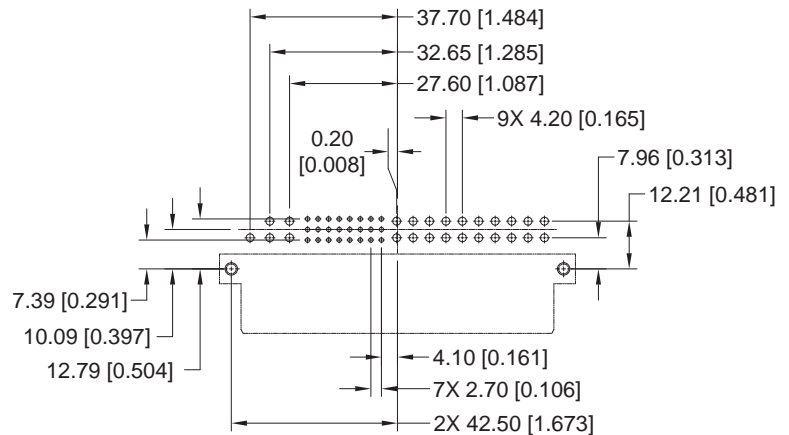
FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4 WITH MOS*¹ -379.0

STANDARD PART NUMBER
PCIH49W25F400A1-379.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



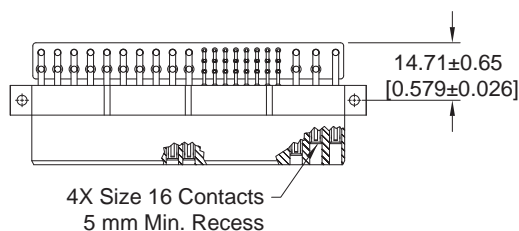
CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes.

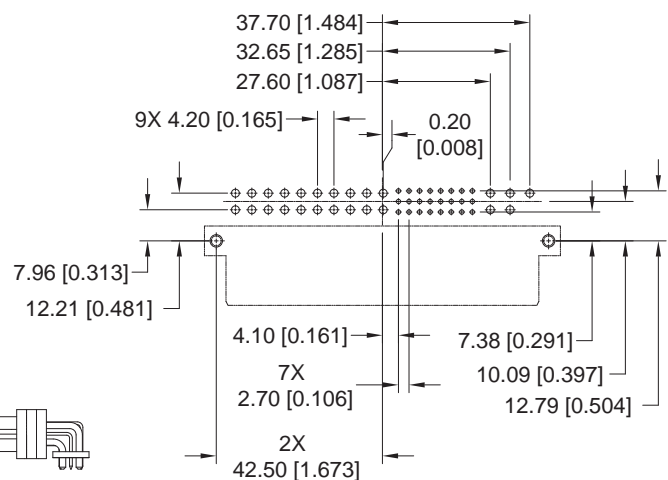
FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4 WITH MOS*¹ -379.0

PART NUMBER FOR INVERTED TERMINATION
PCIH49W25RF400A1-379.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.

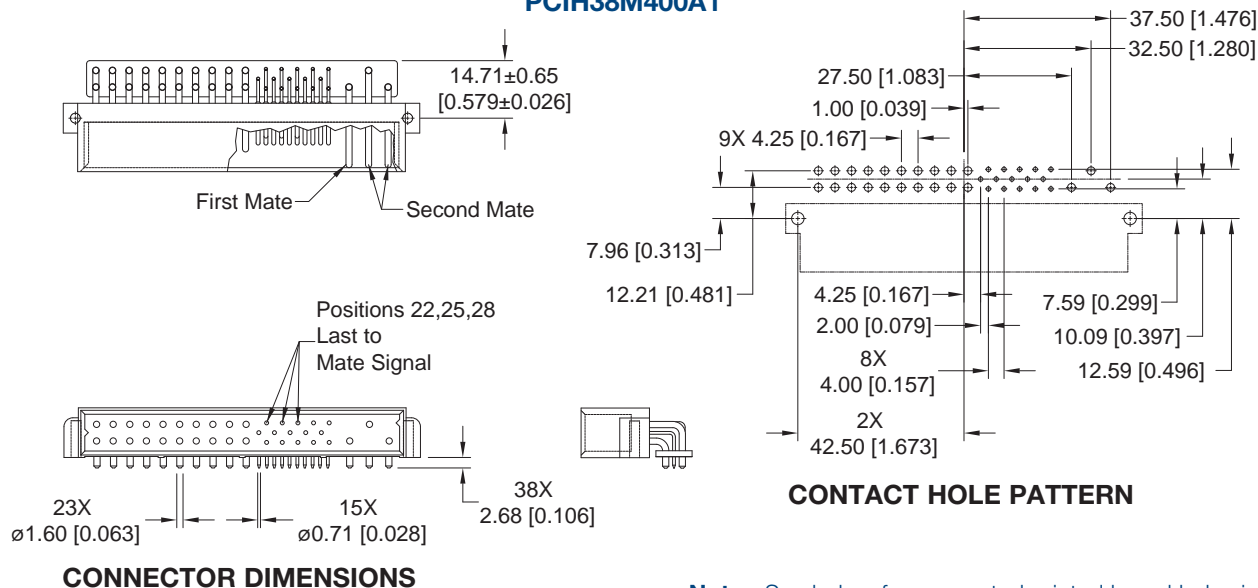
Suggest Ø2.03 [0.080] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4

STANDARD PART NUMBER

PCIH38M400A1

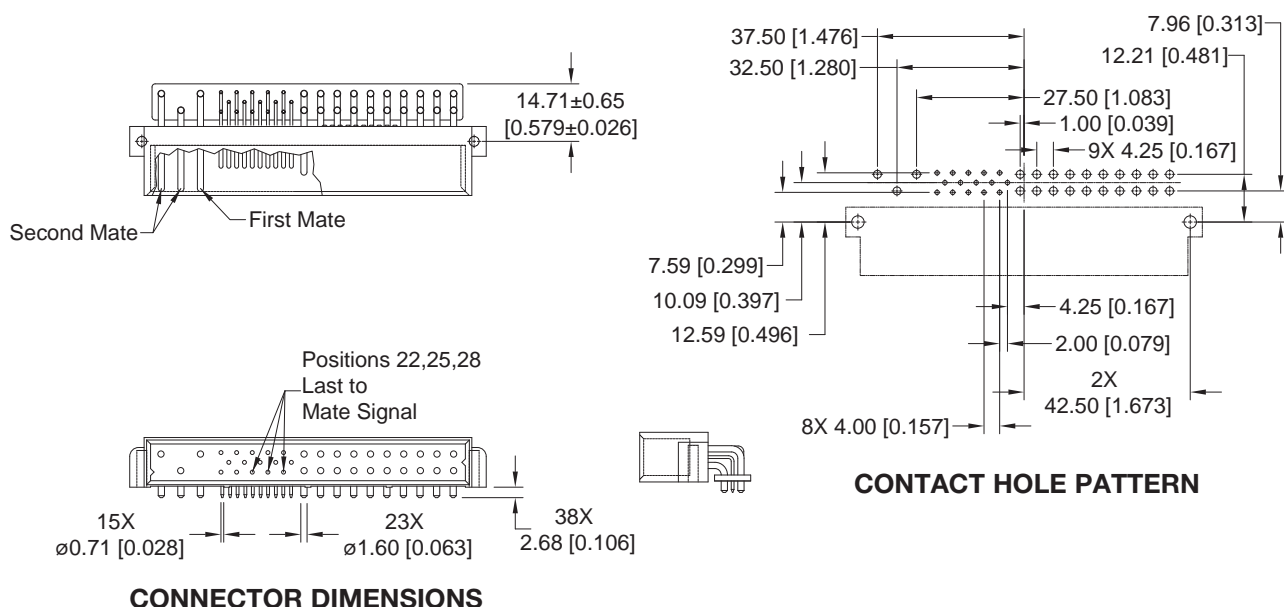


Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4

PART NUMBER FOR INVERTED TERMINATION

PCIH38RM400A1



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\phi 1.14$ [0.045] holes for size 20 contact holes.

Suggest $\phi 2.03$ [0.080] holes for size 16 contact holes.

Suggest $\phi 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



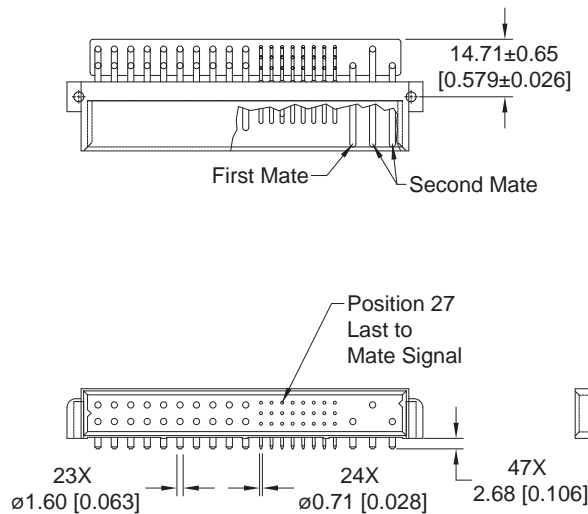
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, MALE

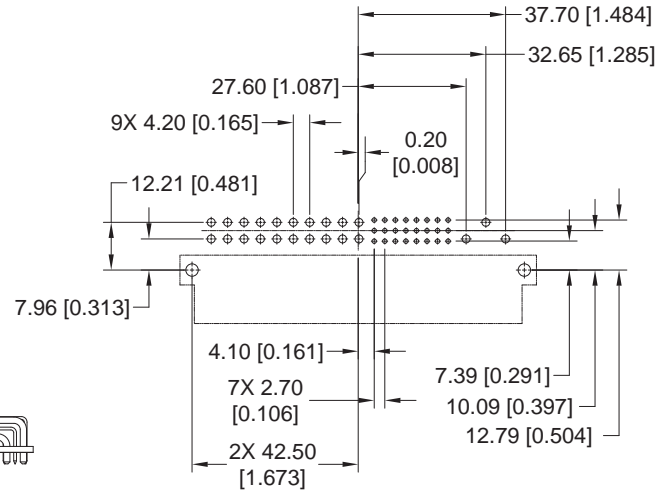
Compact
Power
Connectors

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIH47M400A1



CONNECTOR DIMENSIONS

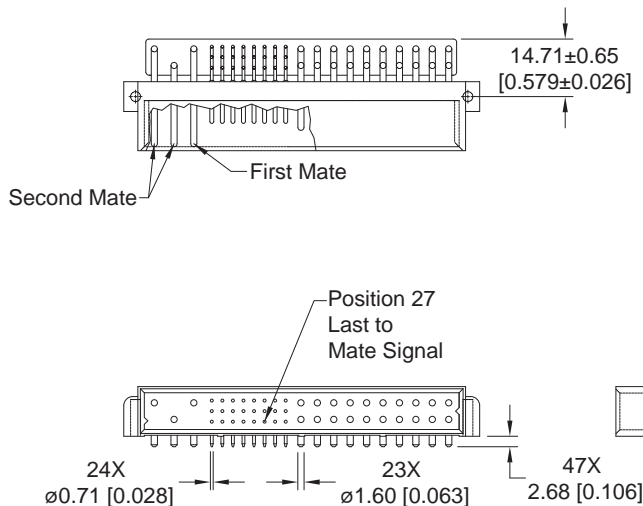


CONTACT HOLE PATTERN

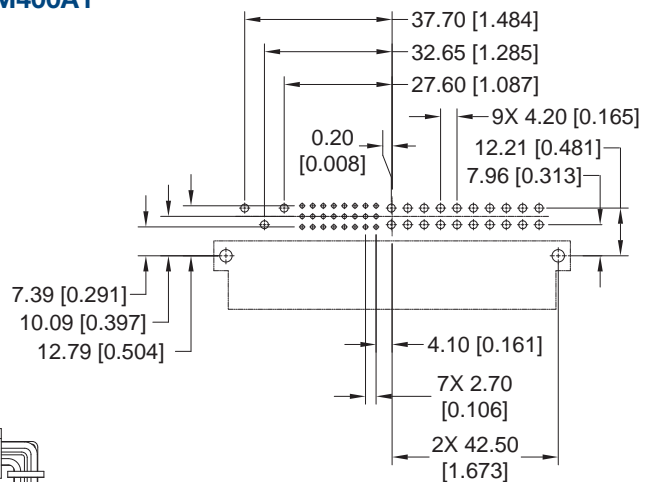
Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIH47RM400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.

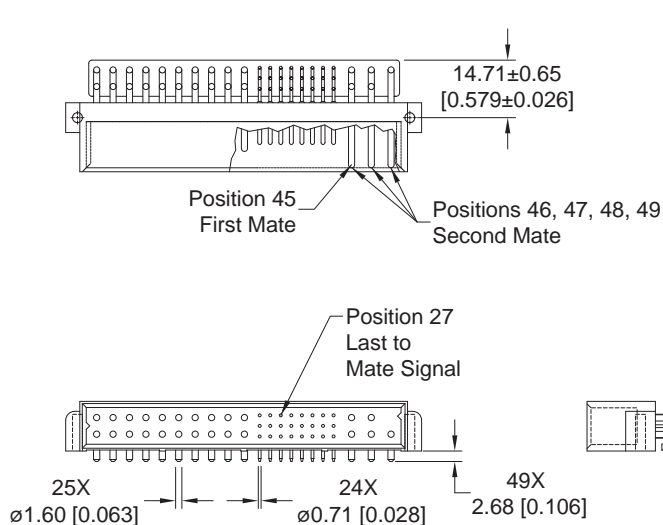
Suggest Ø 2.03 [0.080] holes for size 16 contact holes.

Suggest Ø 3.56±0.08 [0.140±0.003] holes for connector mounting holes.

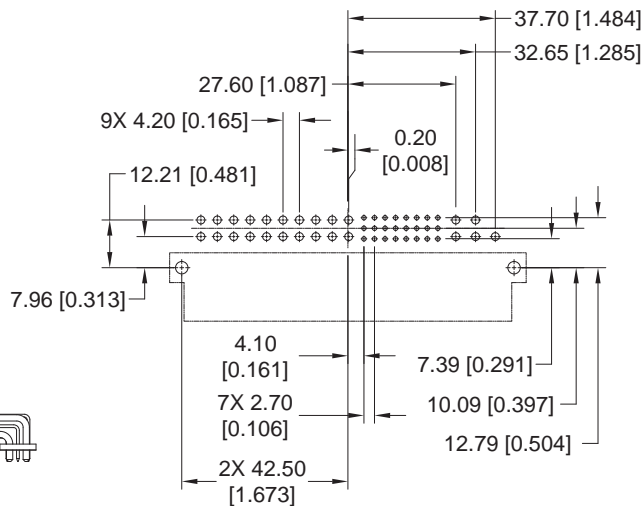
MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4 WITH MOS*¹ -378.0

STANDARD PART NUMBER
PCIH49W25M400A1-378.0

*¹ For MOS descriptions,
see chart on pages 107-108.



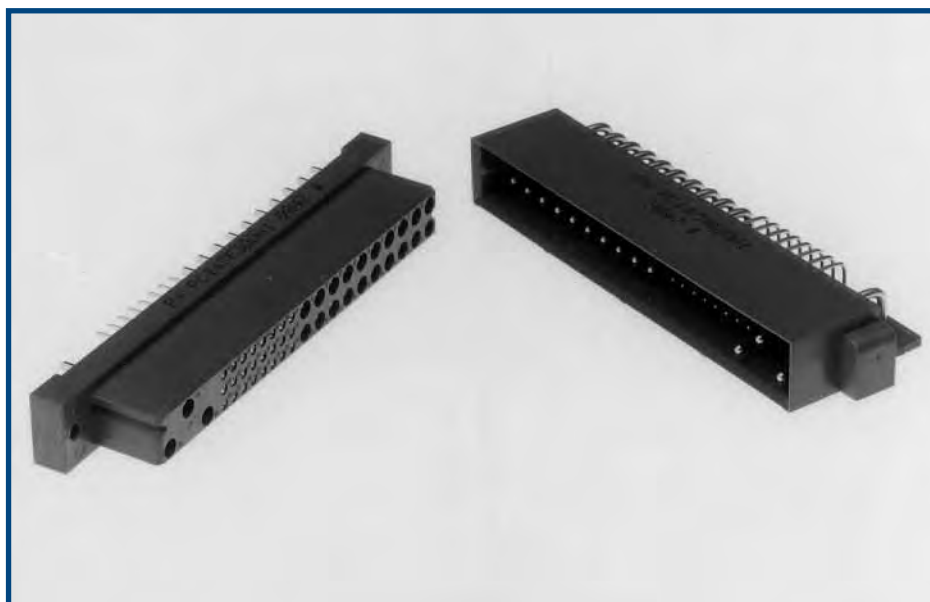
CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 20 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.





Positronic
connectpositronic.com

PANEL MOUNT CONNECTORS, FEMALE

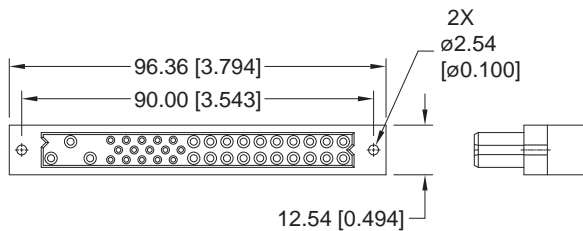
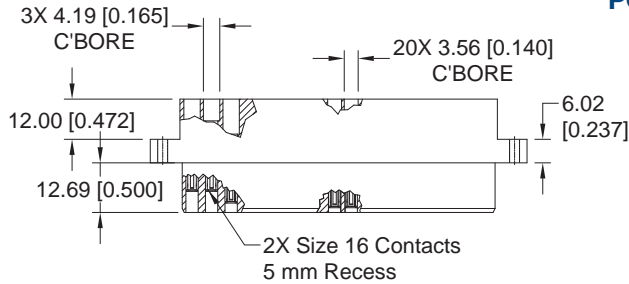
Compact
Power
Connectors

FEMALE PANEL MOUNT CRIMP CONTACT CONNECTORS CODE 8

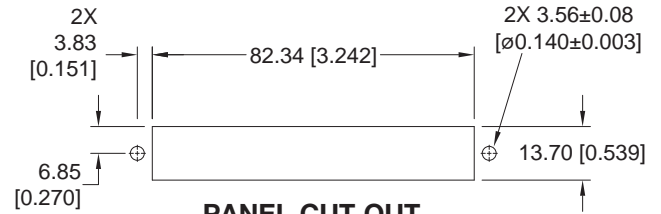
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER

PCIH38F8000



CONNECTOR DIMENSIONS

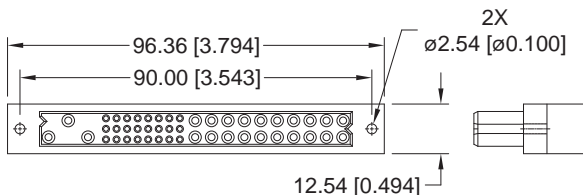
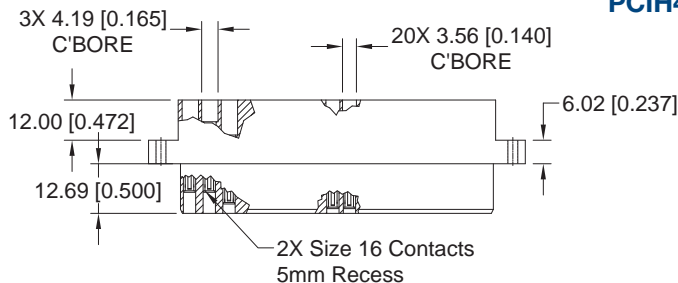


FEMALE PANEL MOUNT CRIMP CONTACT CONNECTORS CODE 8

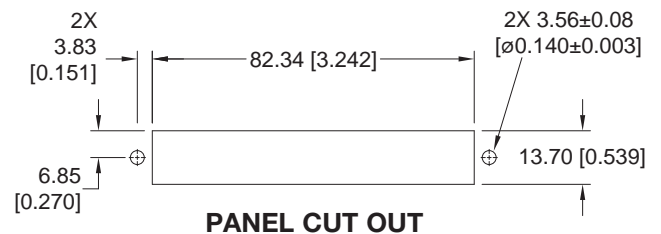
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER

PCIH47F8000



CONNECTOR DIMENSIONS



For information regarding removable contacts, see Removable Contact section, pages 102-103.

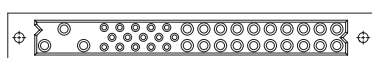
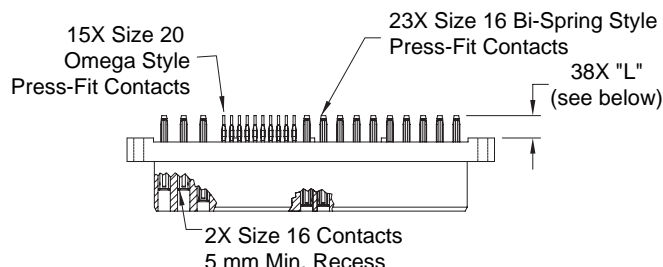
FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

PCIH38F9300A1

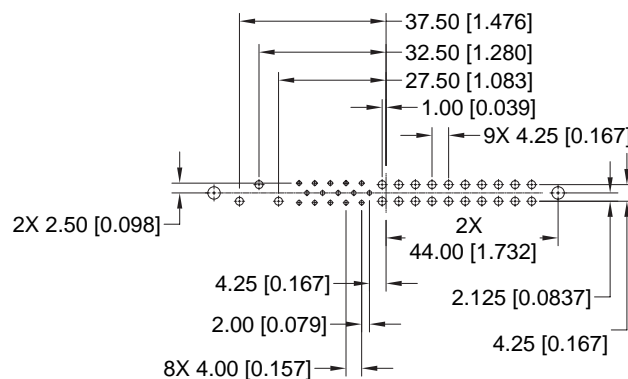
PCIH38F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH CODE 93 OR 94 WITH MOS*1 -245.0

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

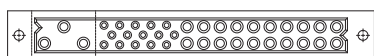
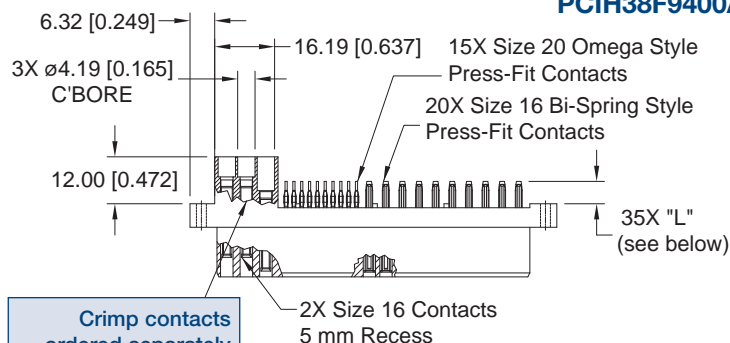
*1 For MOS descriptions, see chart on pages 107-108.

HIGH PROFILE PART NUMBER

PCIH38F9300A1-245.0

PCIH38F9400A1-245.0

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

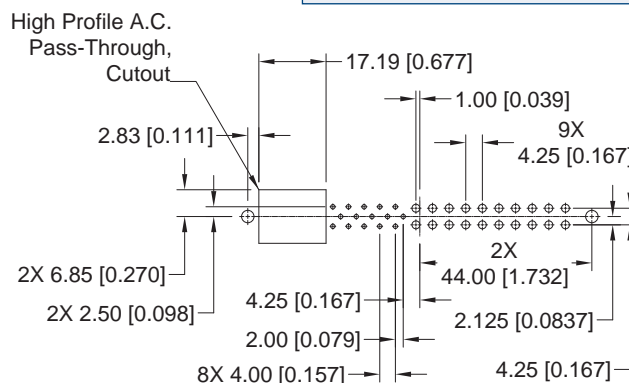
SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest ϕ 3.56 \pm 0.08 [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH CODE 93 OR 94 WITH MOS*¹ -246.1

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

*¹ For MOS descriptions,
see chart on pages 107-108.

LOW PROFILE PART NUMBER

PCIH38F9300A1-246.1

PCIH38F9400A1-246.1

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.

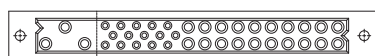
15X Size 20 Omega Style
Press-fit Contacts

20X Size 16 Bi-Spring
Style Press-Fit Contacts

35X "L"
(see below)

Crimp
contacts
ordered
separately
(see pages
102-103)

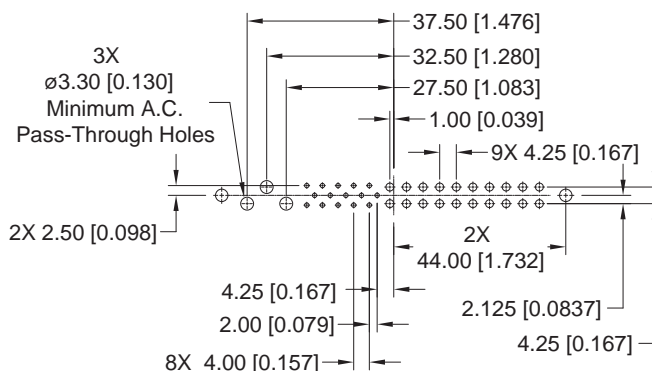
2X Size 16 Contacts
5 mm Recess



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes,
press-fit connector installation tools, and mounting
screw options.

FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

PCIH47F9300A1

PCIH47F9400A1

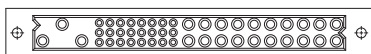
Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.

24X Size 22
Omega Style
Press-Fit Contacts

23X Size 16 Bi-Spring
Style Press-Fit Contacts

47X "L"
(see below)

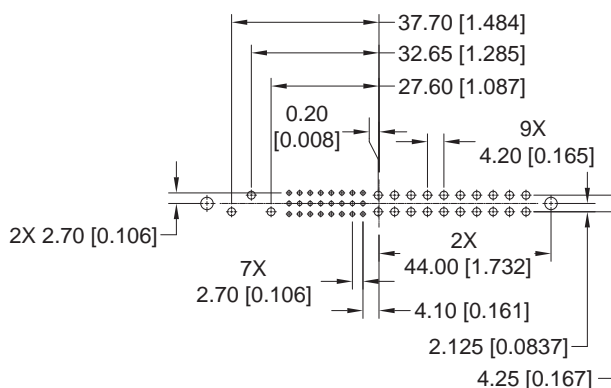
2X Size 16 Contacts
5 mm Min. Recess



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended
plating and finished hole sizes for compliant contact termination positions.
For press-fit connector installation tools, see pages 105-106.
For mounting screw options, see page 105.

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH CODE 93 OR 94 WITH MOS*¹ -246.0

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

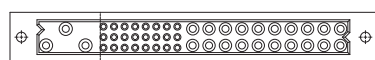
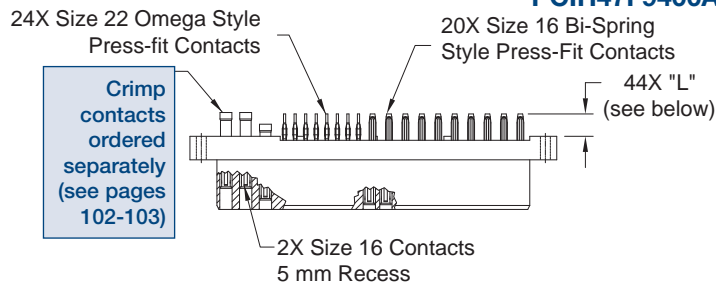
*¹ For MOS descriptions,
see chart on pages 107-108.

LOW PROFILE PART NUMBER

PCIH47F9300A1-246.0

PCIH47F9400A1-246.0

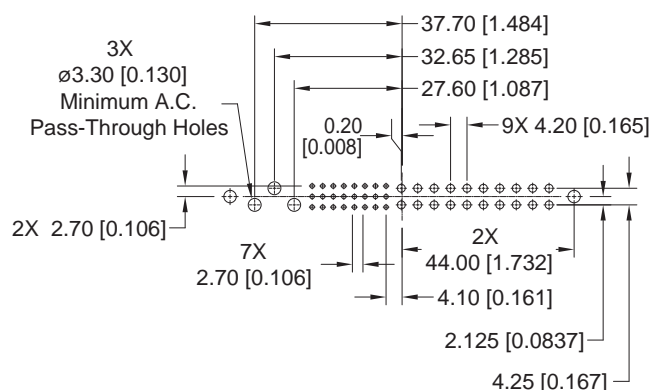
Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes,
press-fit connector installation tools, and mounting
screw options.

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH CODE 93 OR 94 WITH MOS*¹ -246.3

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

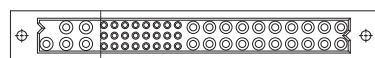
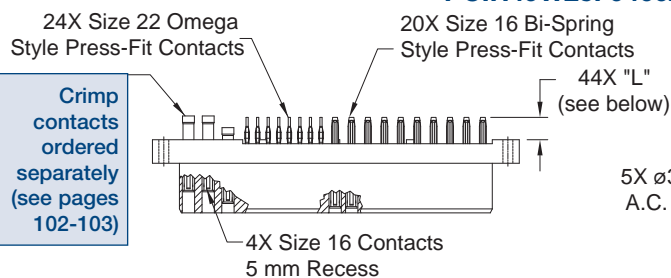
*¹ For MOS descriptions,
see chart on pages 107-108.

LOW PROFILE PART NUMBER

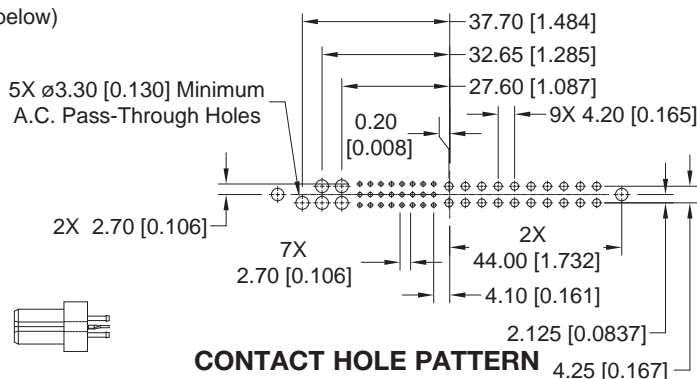
PCIH49W25F9300A1-246.3

PCIH49W25F9400A1-246.3

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended
plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, FEMALE

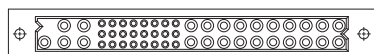
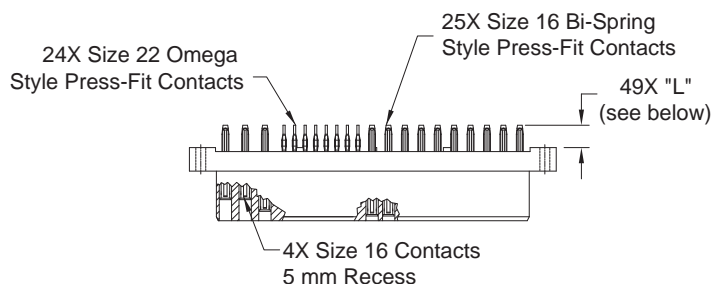
Compact
Power
Connectors

FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94 WITH MOS*¹ -379.0

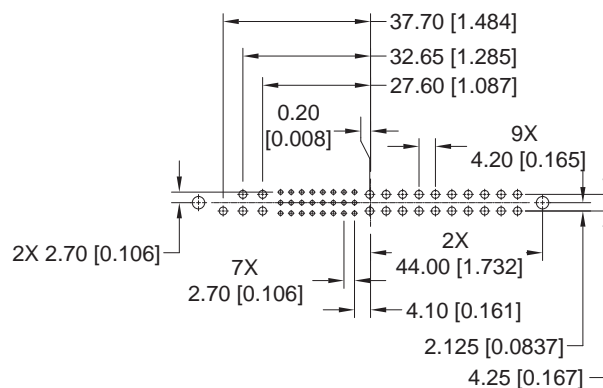
*¹ For MOS descriptions,
see chart on pages 107-108.

STANDARD PART NUMBER
PCIH49W25F9300A1-379.0
PCIH49W25F9400A1-379.0

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.



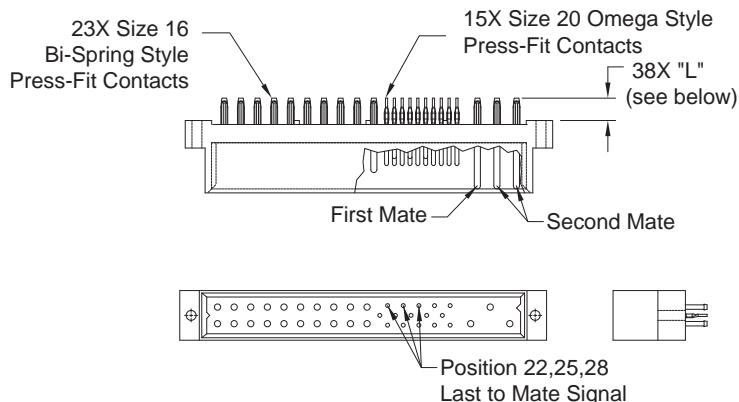
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

PCIH38M9300A1

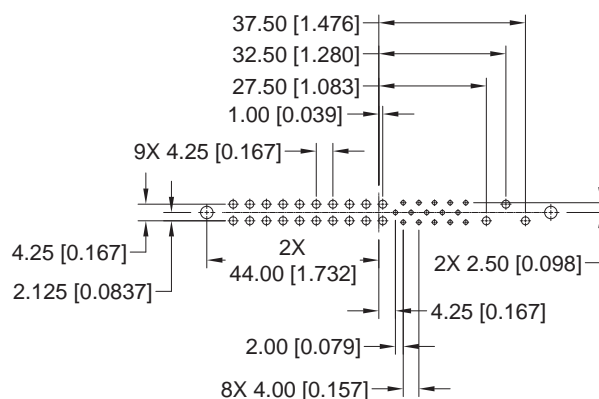
PCIH38M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

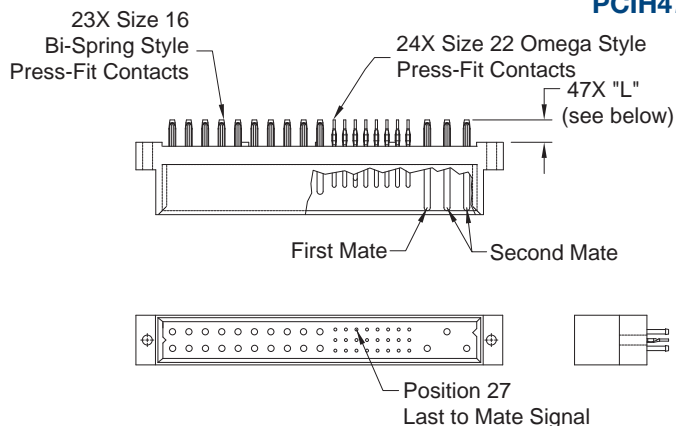
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

PCIH47M9300A1

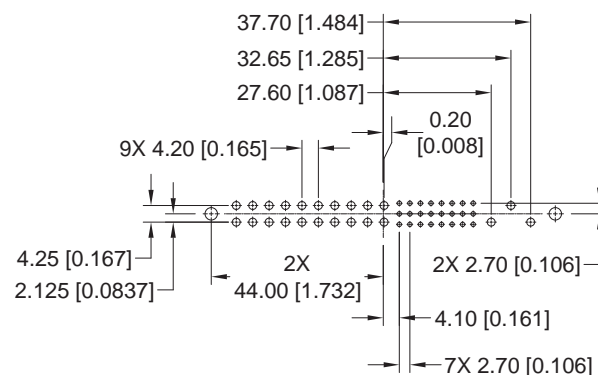
PCIH47M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, MALE

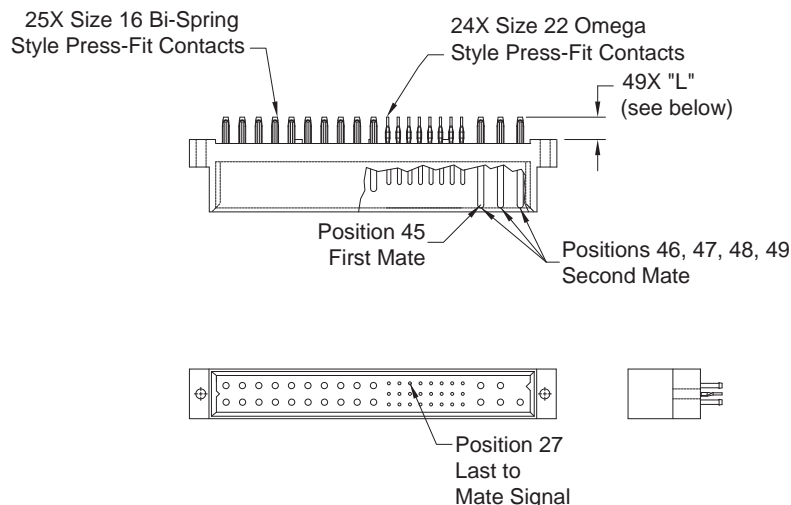
Compact
Power
Connectors

MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94 WITH MOS*1 -378.0

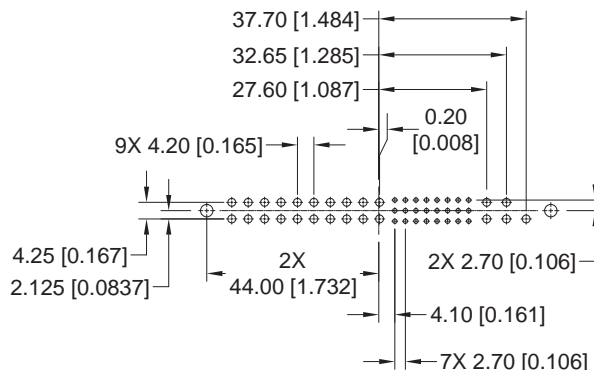
*1 For MOS descriptions,
see chart on pages 107-108.

STANDARD PART NUMBER
PCIH49W25M9300A1-378.0
PCIH49W25M9400A1-378.0

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

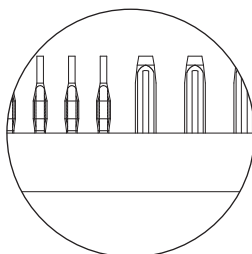
SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.



**ENLARGED DETAIL OF COMPLIANT
CONTACT TERMINATIONS**

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PCIH	47	F	93	0	0	A1	/AA	

STEP 1 - BASIC SERIES

PCIH - PCIH Series

STEP 2 - CONNECTOR VARIANTS

- 38 - 23 size 16 contacts and 15 size 20 contacts
- 38R - 23 size 16 contacts and 15 size 20 contacts inverted termination style, use with contact type "4"
- 47 - 23 size 16 contacts and 24 size 22 contacts
- 47R - 23 size 16 contacts and 24 size 22 contacts inverted termination style, use with contact type "4"
- 49W25 - 25 size 16 contacts and 24 size 22 contacts
- *149W25R - 25 size 16 contacts and 24 size 22 contacts inverted termination style, use with contact type "4"

STEP 3 - CONNECTOR GENDER

- F - Female
- M - Male

STEP 4 - CONTACT TERMINATION TYPE

- 3 - Solder, Straight Printed Board Mount with 4.50 [0.177] tail extension for connection systems 1 and 2.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 2.68 [0.106] tail extension for connection systems 1, 2, 3 and 4.
- *8 - Contacts must be ordered separately for Panel Mount Cable Connectors, connection system 3, see pages 102-103. Female connector only.
- 93 - Press-Fit, Compliant Termination size 16 and size 20 or size 22 Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection systems 1 and 2.
- 94 - Press-Fit, Compliant Termination size 16 and size 20 or size 22 Straight Printed Board Mount for use with board thickness of 4.45 minimum [0.175 minimum]. Connection systems 1 and 2.

STEP 5 - MOUNTING STYLE

- 0 - Not Applicable
- See page 105 for mounting screw options.

STEP 6 - HOODS

- 0 - Not applicable

STEP 9 - SPECIAL OPTIONS

FOR LISTING OF SPECIAL OPTIONS,
SEE SPECIAL OPTIONS APPENDIX
ON PAGES 107-108.

STEP 8 - ENVIRONMENTAL
COMPLIANCE OPTIONS

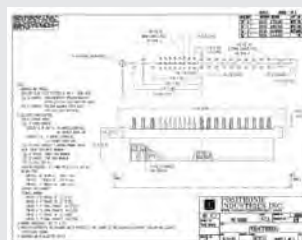
/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: PCIH47F9300A1

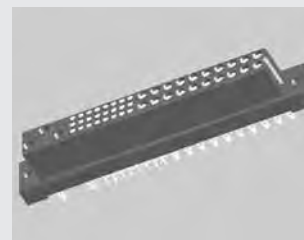
STEP 7 - CONTACT PLATING FOR PRINTED
BOARD TYPE CONNECTORS

- 0 - Crimp contacts ordered separately
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model

*1 Female contact variants are readily available. Contact Technical Sales for availability of male contact variants.

*2 Available for 38 and 47 variants. Contact Technical Sales for availability of 49W25 variant.



Positronic
connectpositronic.com

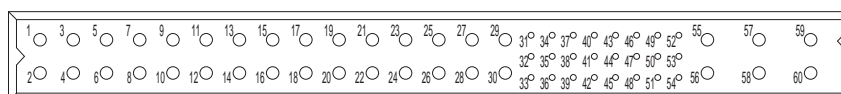
GENERAL PRODUCT INFORMATION

Compact
Power
Connectors

The PCIA Series encompasses all of the features of the PCIH Series and provides greater input and output current capacity in a slightly larger package. The package size is suitable for 6U and larger based systems or in systems which do not conform to a particular standard. Reliability, high current capacity and many system management connections make the PCIA Series ideal for higher wattage power supplies which are used in telecom, computer, information systems and industrial applications.

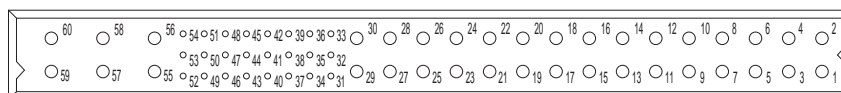
PCIA SERIES CONTACT VARIANTS

FACE VIEW OF MALE AND REAR VIEW OF FEMALE



PCIA60W36 VARIANT

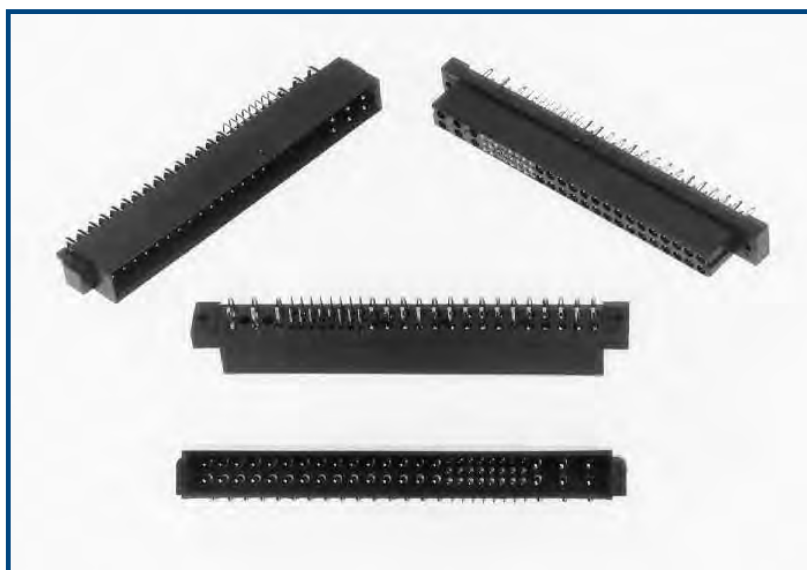
36 Size 16 Power Contacts and 24 Size 22 Signal Contacts



PCIA60W36R VARIANT (Inverted Termination)

36 Size 16 Power Contacts and 24 Size 22 Signal Contacts

Currently available in female only, use with contact type 4.



Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog



MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Size 16 contacts: High conductivity precision-machined copper alloy. Size 22 contacts: Precision-machined copper alloy.
Plating:	Gold flash over nickel. Other plating options available, refer to Step 7 on page 45.
Mounting Screws:	Steel, zinc plated.

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Male and female connector bodies provide "lead-in" for 1.3mm [0.050 inch] diametral misalignment.
Polarization:	Provided by connector body design.
Removable Contacts:	Install contact from rear of insulator; release from front of insulator. Size 16 and 22 female contacts feature "Closed Entry" design for highest reliability.
Removable Contact Retention in Connector Body:	
Size 16 Contacts:	67 N [15 lbs.]
Size 22 Contacts:	27 N [6 lbs.]
Fixed Contacts:	Printed board terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 22 feature rugged "Open Entry" contact design. "Closed Entry" contacts available, consult Technical Sales.
Fixed Contact Retention in Connector Body:	
Size 16 Contacts:	45 N [10 lbs.]
Size 22 Contacts:	27 N [6 lbs.]
Resistance to Solder Heat:	260°C [500°F] for 10 seconds duration per IEC 60512-6, Test 12e, 25-watt soldering iron.
Sequential Contact Mating System:	
PCIA60W36:	First mate contacts 55 and 56 and last mate contact position 37.
<i>Consult Technical Sales for customer specified sequential mating.</i>	
Safety "Recessed in Insulator" Contacts:	The following size 16 contacts are recessed 5mm [0.197 inch] below the face of the female connector insulator per safety requirements.
PCIA60W36:	Contact positions 57 through 60.
Compliant Terminations:	Size 16 and 22 contacts are available with compliant contact terminations. Average insertion and extraction forces of size 16 contacts are 22N (5 lbs.) per contact.

Printed Board Mounting:	Mounting holes provided in connector body for printed board mounting. Self-tapping screws are available.
Mechanical Operations:	250 couplings, minimum.

ELECTRICAL CHARACTERISTICS:

PCIA Contact Current Ratings, per UL 1977

See Temperature Rise Curves on page 4 for details.

Size 16 Power Contacts:

Positions 55 through 60:	38 amperes continuous, all contacts under load.
Positions 1 through 30:	28 amperes continuous, all contacts under load.
	3 amperes nominal rating.

Size 22 Signal Contacts:

Initial Contact Resistance:

Size 16 Contact:	0.0007 ohms maximum.
Size 22 Contact:	0.005 ohms maximum.
	Per IEC 60512-2, Test 2b.

Insulation Resistance:

5 G ohms per IEC 60512-2, Test 3a.

Voltage Proof:

PCIA60W36:

Contacts 55 through 60:	3,000 V r.m.s.
Contacts 1 through 30:	1,500 V r.m.s.
Contacts 31 through 54:	1,000 V r.m.s.

Creepage and Clearance

Distance; minimum:

PCIA60W36:

Contacts 59 and 60 to	
Contacts 55 and 56:	3.2mm [0.126 inch]
Contacts 57 and 58 to	
Contacts 55 and 56:	3.2mm [0.126 inch]
Contacts 59 and 60 to	
Signal Contacts:	6.4mm [0.252 inch]
Contacts 57 and 58 to	
Signal Contacts:	6.4mm [0.252 inch]
Contacts 59 and 60 to	
Contacts 57 and 58:	2.5mm [0.098 inch]
Contacts 55 and 56 to	
Signal Contacts:	2.0mm [0.079 inch]

Working Voltage:

PCIA60W36:

Contacts 55 through 60:	1,000 V r.m.s.
Contacts 1 through 30:	500 V r.m.s.
Contacts 31 through 54:	333 V r.m.s.

CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
-----------------------------	------------------

UL Recognized File #E49351
CSA Recognized File #LR54219



Positronic
connectpositronic.com

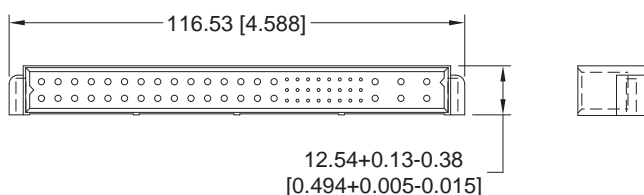
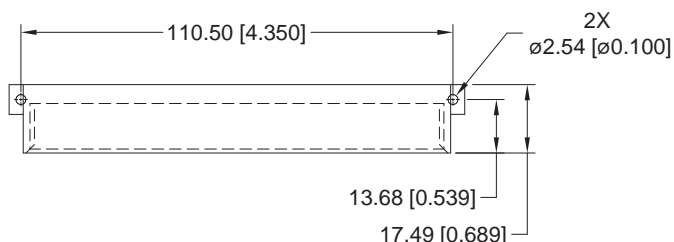
CONNECTOR OUTLINE AND MATING DIMENSIONS

Compact
Power
Connectors

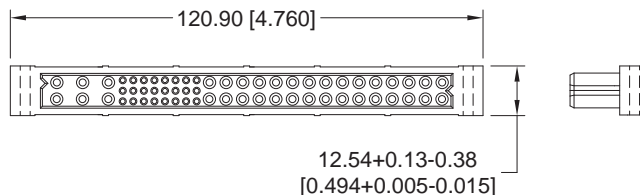
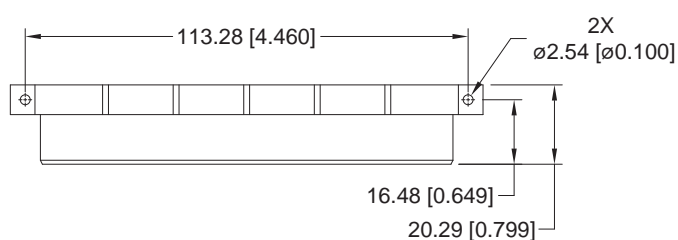
PCIA CONNECTOR OUTLINE DIMENSIONS

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR

MALE CONNECTOR

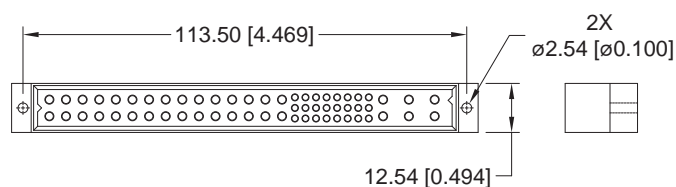
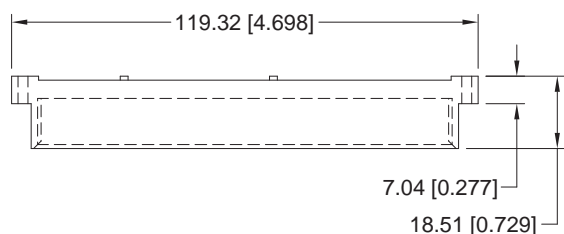


FEMALE CONNECTOR

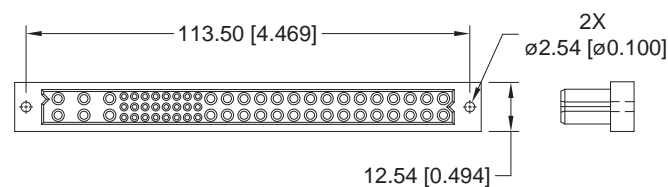
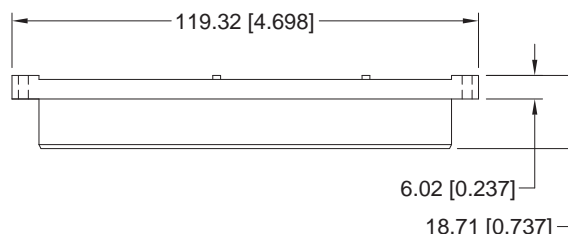


STRAIGHT BOARD MOUNT CONNECTOR

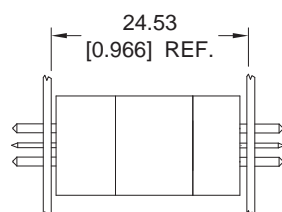
MALE CONNECTOR



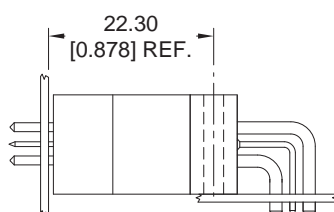
FEMALE CONNECTOR



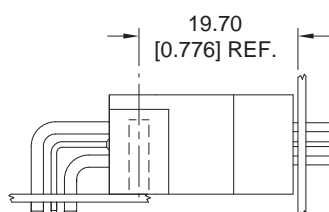
PCIA CONNECTOR MATING DIMENSIONS (FULLY MATED)



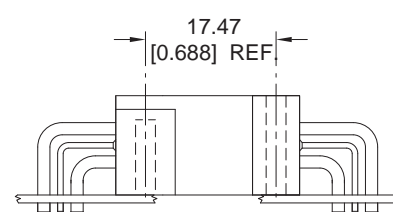
**Straight Board
Mount Male to Straight
Board Mount or Panel
Mount Female**



**Straight Board
Mount Male to
Right Angle (90°)
Board Mount Female**



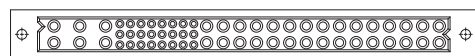
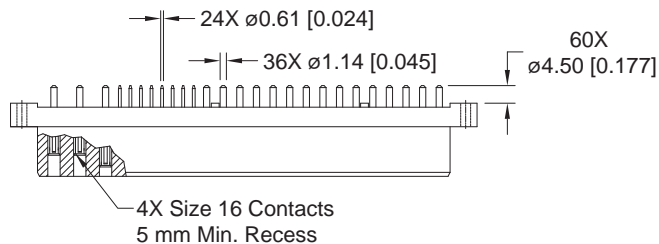
**Right Angle (90°) Board
Mount Male to Straight
Board Mount or Panel
Mount Female**



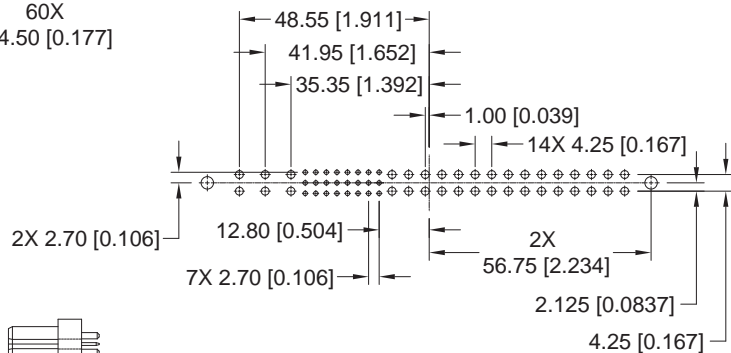
**Right Angle (90°)
Board Mount Male to
Right Angle (90°)
Board Mount Female**

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIA60W36F300A1



CONNECTOR DIMENSIONS

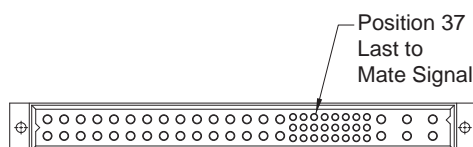
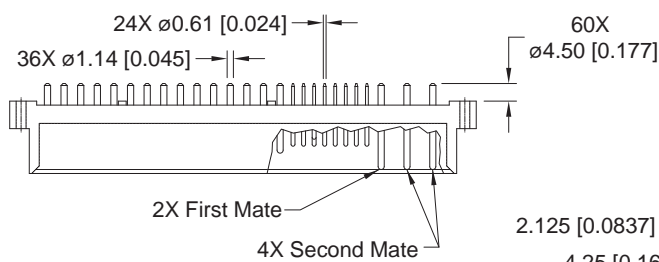


CONTACT HOLE PATTERN

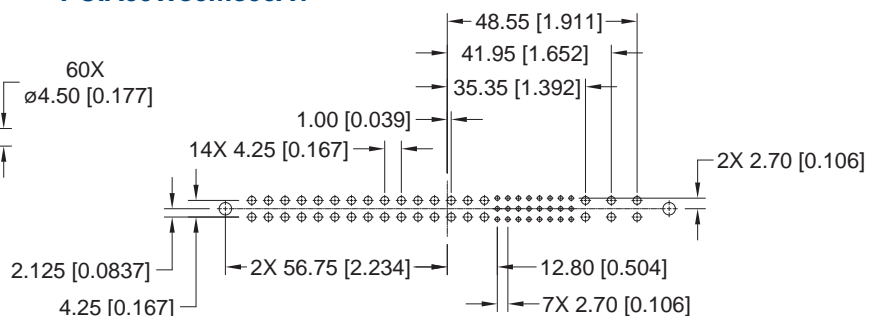
Note: See below for suggested printed board hole sizes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIA60W36M300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 22 contact holes.
Suggest Ø1.60 [0.063] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.



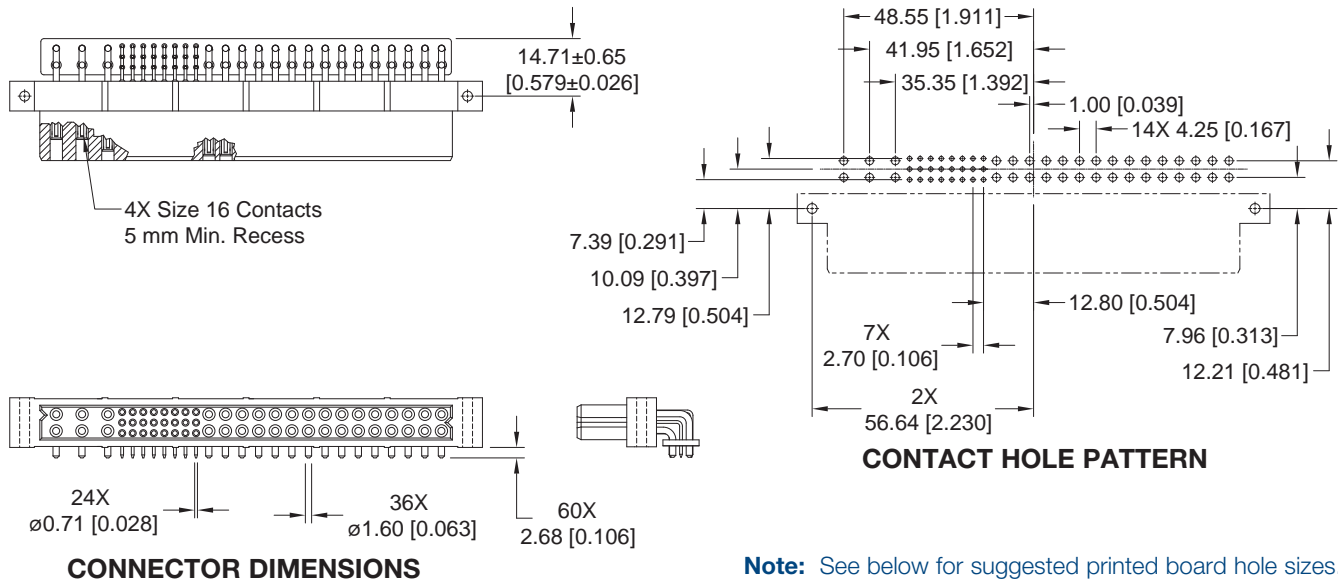
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

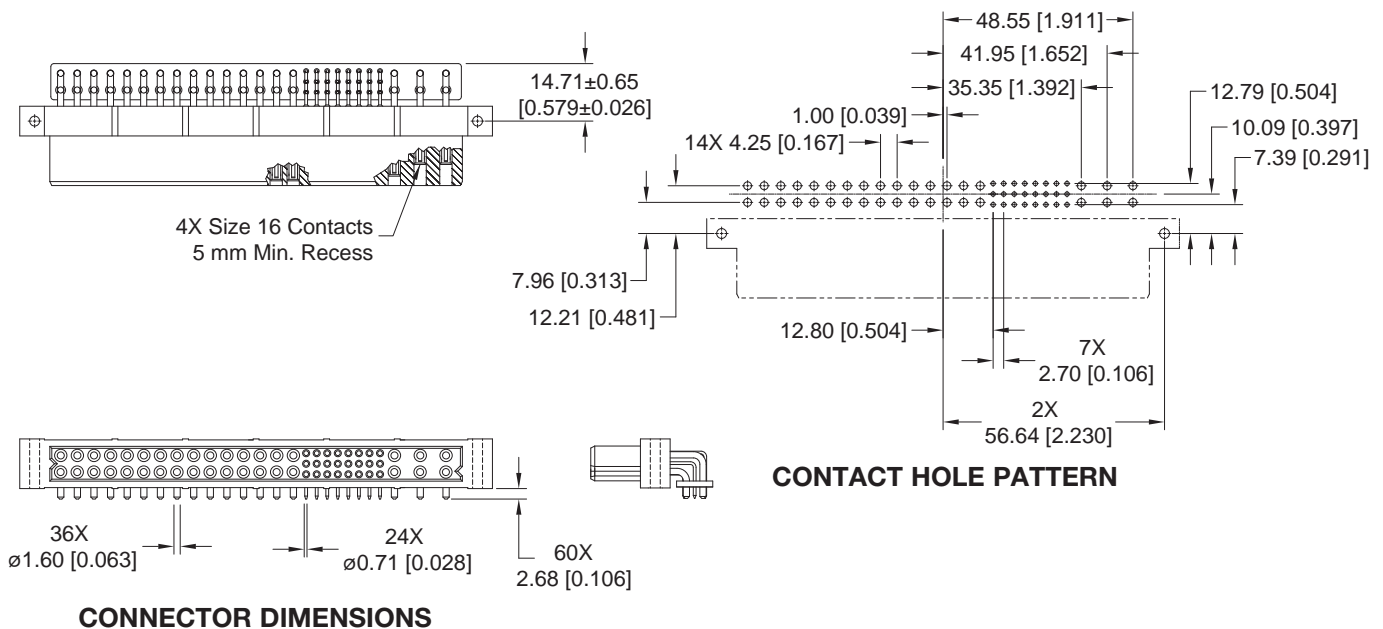
FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIA60W36F400A1



FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIA60W36RF400A1



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.

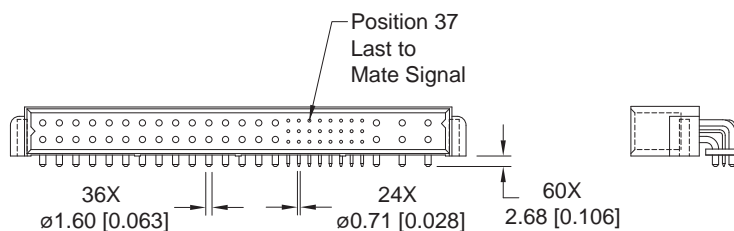
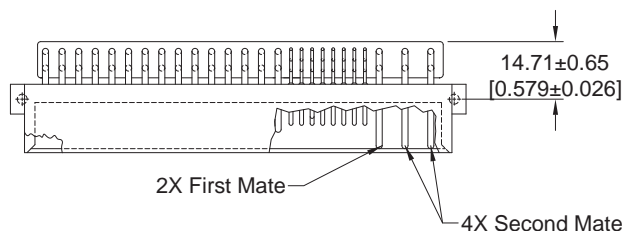
Suggest Ø2.03 [0.080] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

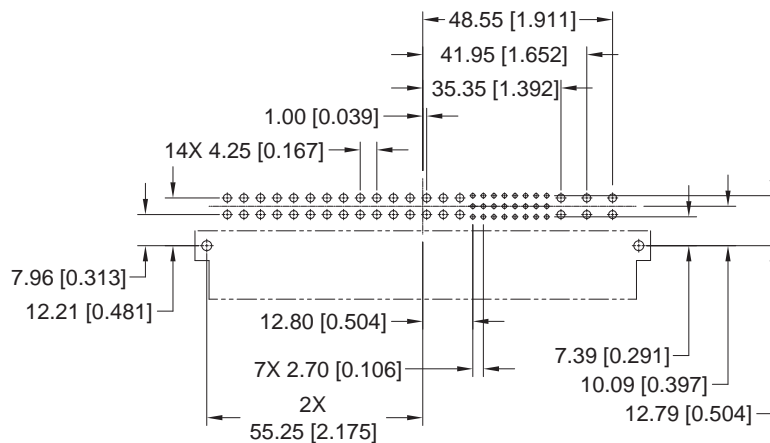
**MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4**

STANDARD PART NUMBER

PCIA60W36M400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.14$ [0.045] holes for size 22 contact holes.

Suggest $\varnothing 2.03$ [0.080] holes for size 16 contact holes.

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 ± 0.003] holes for connector mounting holes.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

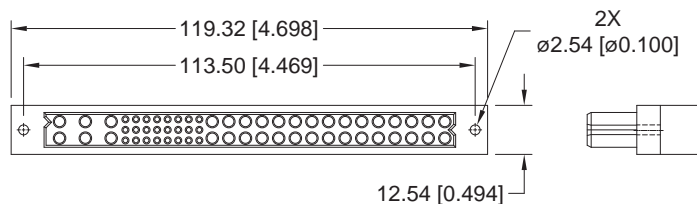
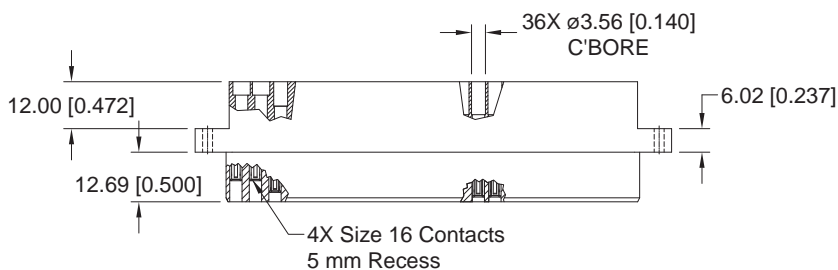
PANEL MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

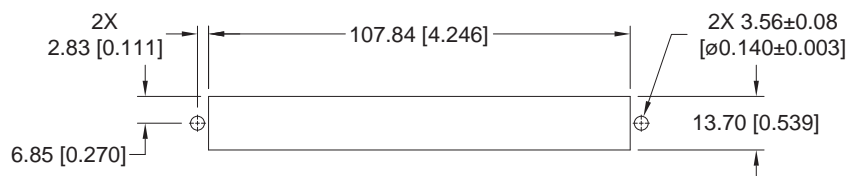
FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER
PCIA60W36F8000



CONNECTOR DIMENSIONS



PANEL CUT OUT

For information regarding removable contacts, see Removable Contact section, pages 102-103.

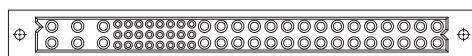
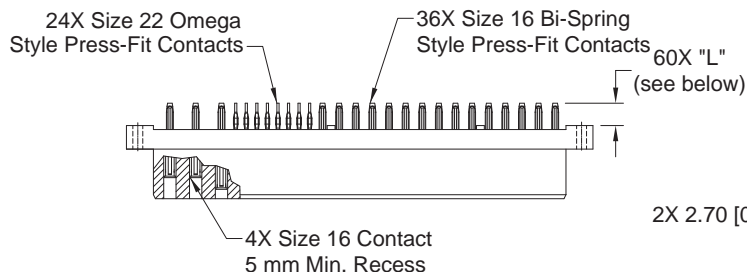
FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

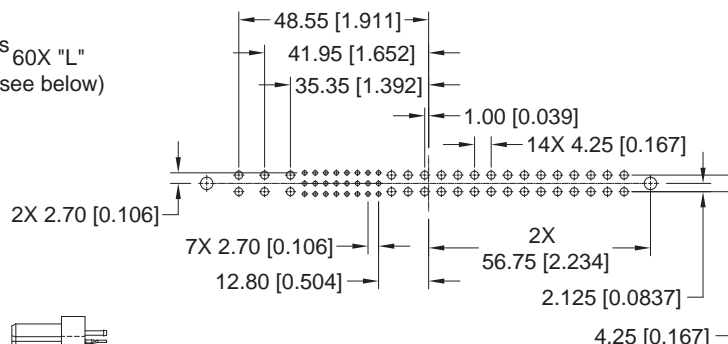
PCIA60W36F9300A1

PCIA60W36F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

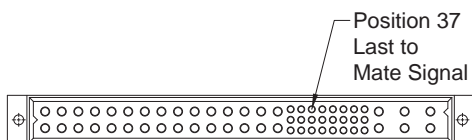
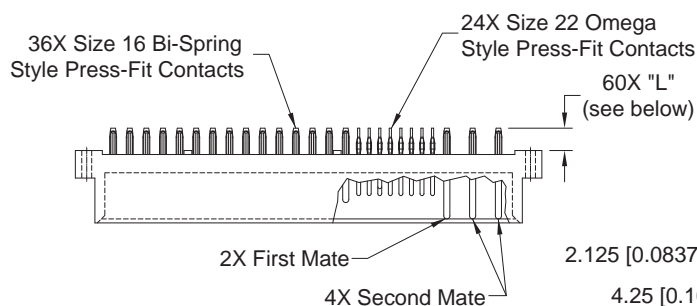
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

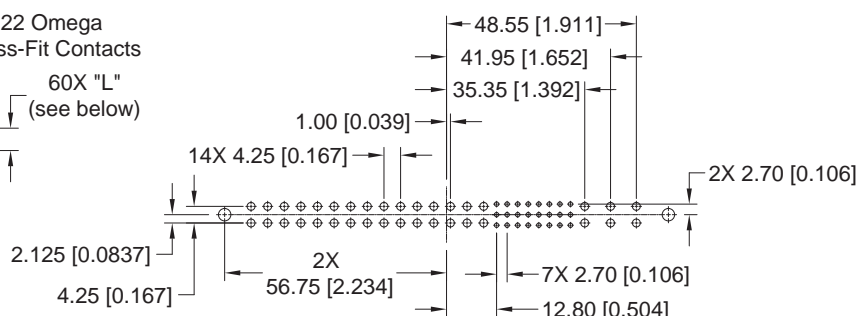
PCIA60W36M9300A1

PCIA60W36M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.



Positronic
connectpositronic.com

PCIA ORDERING INFORMATION

Compact
Power
Connectors

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PCIA	60W36	M	93	0	0	A1	/AA	

STEP 1 - BASIC SERIES

PCIA - PCIA Series

STEP 2 - CONNECTOR VARIANTS

60W36 - 36 size 16 contacts and 24 size 22 contacts

60W36R - 36 size 16 contacts and 24 size 22 contacts. Inverted termination style, use with contact Type "4". Currently available in female only.

STEP 3 - CONNECTOR GENDER

F - Female
M - Male

STEP 4 - CONTACT TERMINATION TYPE

- 3 - Solder, Straight Printed Board Mount with 4.50 [0.177] tail extension for connection system 1.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 2.68 [0.106] tail extension for connection systems 1, 3 and 4.
- 8 - Contacts must be ordered separately for Panel Mount Cable Connectors, connection system 3, see pages 102-103. Female connector only.
- 93 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection system 1.
- 94 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thickness of 4.45 minimum [0.175 minimum]. Connection system 1.

STEP 5 - MOUNTING STYLE

0 - Not Applicable
See page 105 for mounting screw options.

STEP 6 - HOODS

0 - Not applicable

STEP 9 - SPECIAL OPTIONS

FOR LISTING OF SPECIAL OPTIONS,
SEE SPECIAL OPTIONS APPENDIX
ON PAGES 107-108.

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

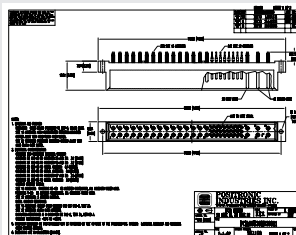
/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: PCIA60W36M9300A1

STEP 7 - CONTACT PLATING FOR PRINTED BOARD TYPE CONNECTORS

- 0 - Crimp contacts ordered separately
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- C1 - 0.76µ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76µ [0.000030 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- D1 - 1.27µ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27µ [0.000050 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing

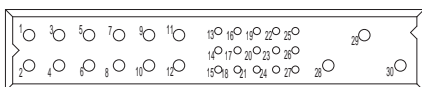


3D Model

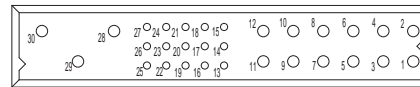
The PCIM Series encompasses all of the features of the PCIH Series in a smaller package. Reliability, high current capacity and many system management connections make the PCIM Series ideal for use in telecom, computer, information systems and industrial applications.

PCIM SERIES CONTACT VARIANTS

FACE VIEW OF MALE AND REAR VIEW OF FEMALE

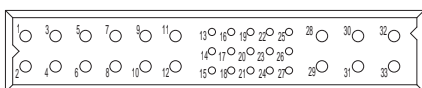


PCIM30W15 VARIANT

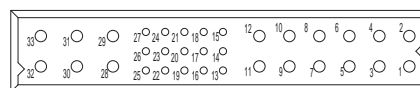


PCIM30W15R VARIANT (Inverted Termination)

15 Size 16 Power Contacts and 15 Size 22 Signal Contacts

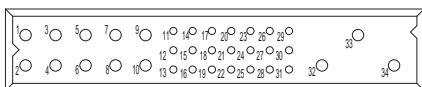


PCIM33W18 VARIANT

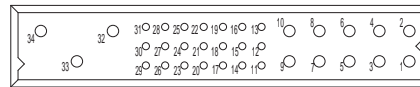


PCIM33W18R VARIANT (Inverted Termination)

18 Size 16 Power Contacts and 15 Size 22 Signal Contacts

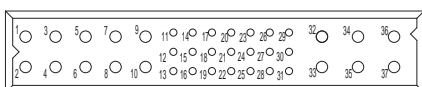


PCIM34W13 VARIANT

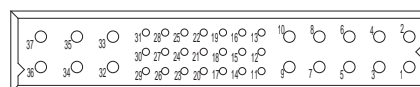


PCIM34W13R VARIANT (Inverted Termination)

13 Size 16 Power Contacts and 21 Size 22 Signal Contacts



PCIM37W16 VARIANT



PCIM37W16R VARIANT (Inverted Termination)

16 Size 16 Power Contacts and 21 Size 22 Signal Contacts

Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog



Positronic
connectpositronic.com

TECHNICAL CHARACTERISTICS

Compact
Power
Connectors

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Size 16 contacts: High conductivity precision-machined copper alloy. Size 22 contacts: Precision-machined copper alloy
Plating:	Gold flash over nickel. Other plating options available, refer to Step 7 on page 70.
Mounting Screws:	Steel, zinc plated.

ELECTRICAL CHARACTERISTICS:

PCIM Contact Current Ratings, per UL 1977

See Temperature Rise Curves on page 5 for details.

PCIM30W15:

Size 16 Power Contacts:	
Positions 28, 29, and 30:	45 amperes continuous, all contacts under load.
Positions 1 through 12:	32 amperes continuous, all contacts under load.
	3 amperes nominal rating.

Size 22 Signal Contacts:

PCIM33W18:

Size 16 Power Contacts:	30 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.

PCIM34W13:

Size 16 Power Contacts:	
Positions 32, 33, and 34:	45 amperes continuous, all contacts under load.
Positions 1 through 10:	32 amperes continuous, all contacts under load.
	3 amperes nominal rating.

Size 22 Signal Contacts:

PCIM37W16:

Size 16 Power Contacts:	30 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.

Initial Contact Resistance:

Size 16 Contact:	0.0007 ohms maximum.
Size 22 Contact:	0.005 ohms maximum.
	Per IEC 60512-2, Test 2b.

Insulation Resistance:	5 G ohms per IEC 60512-2, Test 3a.
-------------------------------	------------------------------------

Voltage Proof:

PCIM30W15:

Contacts 28, 29, and 30:	3,000 V r.m.s.
Contacts 1 through 12:	1,500 V r.m.s.
Contacts 13 through 27:	1,000 V r.m.s.

PCIM33W18:

Contacts 1 through 12 and 28 through 33:	1,500 V r.m.s.
Contacts 13 through 27:	1,000 V r.m.s.

PCIM34W13:

Contacts 32, 33, and 34:	3,000 V r.m.s.
Contacts 1 through 10:	1,500 V r.m.s.
Contacts 11 through 31:	1,000 V r.m.s.

PCIM37W16:

Contacts 1 through 10 and 32 through 37:	1,500 V r.m.s.
Contacts 11 through 31:	1,000 V r.m.s.

Creepage and Clearance

Distance; minimum:

PCIM30W15:

Contact 30 to Contact 28:	3.2mm [0.126 inch]
Contact 29 to Contact 28:	3.2mm [0.126 inch]
Contact 30 to Signal Contacts:	6.4mm [0.252 inch]
Contact 29 to Signal Contacts:	6.4mm [0.252 inch]
Contact 30 to Contact 29:	2.5mm [0.098 inch]
Contact 28 to Signal Contacts:	2.0mm [0.079 inch]

PCIM33W18:

Contact 28 to Signal Contacts:	2.0mm [0.079 inch]
--------------------------------	--------------------

PCIM34W13:

Contact 34 to Contact 32:	3.2mm [0.126 inch]
Contact 33 to Contact 32:	3.2mm [0.126 inch]
Contact 34 to Signal Contacts:	6.4mm [0.252 inch]
Contact 33 to Signal Contacts:	6.4mm [0.252 inch]
Contact 34 to Contact 33:	2.5mm [0.098 inch]
Contact 32 to Signal Contacts:	2.0mm [0.079 inch]

PCIM37W16:

Contact 32 to Signal Contacts:	2.0mm [0.079 inch]
--------------------------------	--------------------

Working Voltage:

PCIM30W15:

Contacts 28 through 30:	1,000 V r.m.s.
Contacts 1 through 12:	500 V r.m.s.
Contacts 13 through 27:	333 V r.m.s.

PCIM33W18:

Contacts 1 through 12 and 28 through 33:	500 V r.m.s.
Contacts 13 through 27:	333 V r.m.s.

PCIM34W13:

Contacts 32 through 34:	1,000 V r.m.s.
Contacts 1 through 10:	500 V r.m.s.
Contacts 11 through 31:	333 V r.m.s.

PCIM37W16:

Contacts 1 through 12 and 32 through 37:	500 V r.m.s.
Contacts 13 through 31:	333 V r.m.s.

MECHANICAL CHARACTERISTICS:

Blind Mating System:

Male and female connector bodies provide "lead-in" for 1.3mm [0.050 inch] diametral misalignment.

Polarization:

Provided by connector body design.

Removable Contacts:

Install contact from rear of insulator; release from front of insulator. Size 16 and 22 female contacts feature "Closed Entry" design for highest reliability.

Removable Contact Retention in Connector Body:

Size 16 Contacts:	67 N [15 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Fixed Contacts:

Printed board terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 22 feature rugged "Open Entry" contact design. "Closed Entry" contacts available, consult Technical Sales.

DIMENSIONS ARE IN MILLIMETERS [INCHES].

47 ALL DIMENSIONS ARE SUBJECT TO CHANGE.

Fixed Contact Retention in Connector Body:

Size 16 Contacts:	45 N [10 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Resistance to Solder Heat:

260°C [500°F] for 10 seconds
duration per IEC 60512-6, Test
12e, 25-watt soldering iron.

Sequential Contact Mating System:

PCIM30W15:	First mate contact 28 and last mate contact position 13.
PCIM33W18:	Last mate contact position 13.
PCIM34W13:	First mate contact 32 and last mate contact position 17.
PCIM37W16:	Last mate contact position 17.

Consult Technical Sales for customer specified sequential mating.

Safety "Recessed in Insulator" Contacts:

The following size 16 contacts
are recessed 5mm [0.197 inch]
below the face of the female
connector insulator per safety
requirements.

PCIM30W15:	Contact positions 29 and 30.
PCIM33W18:	None
PCIM34W13:	Contact positions 33 and 34.
PCIM37W16:	None

Compliant Terminations:

Size 16 and 22 contacts are
available with compliant contact
terminations. Average insertion
and extraction forces of size 16
contacts are 22N (5 lbs.) per
contact.

Printed Board Mounting:

Mounting holes provided in
connector body for printed board
mounting. Self-tapping screws
are available.

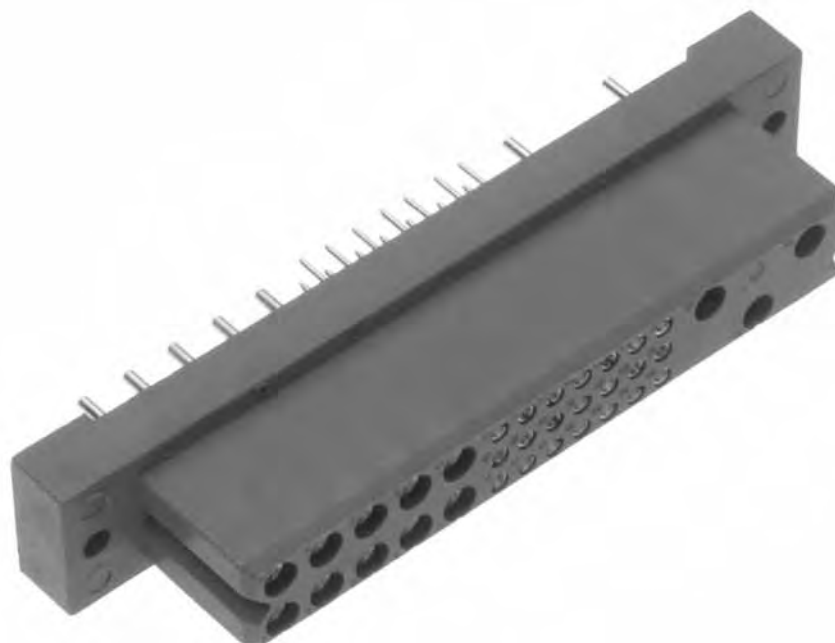
Mechanical Operations:

250 couplings, minimum.

CLIMATIC CHARACTERISTICS:

Working Temperature: -55°C to +125°C.

UL Recognized File #E49351
CSA Recognized File #LR54219



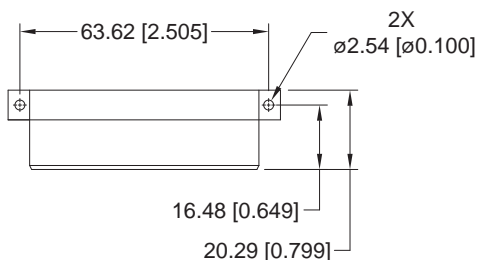


CONNECTOR OUTLINE AND MATING DIMENSIONS

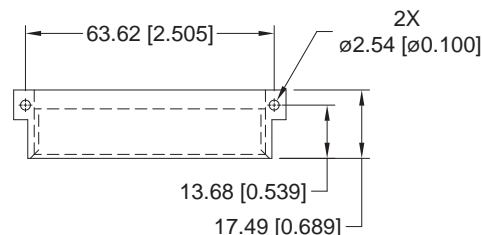
PCIM CONNECTOR OUTLINE DIMENSIONS

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR

FEMALE CONNECTOR

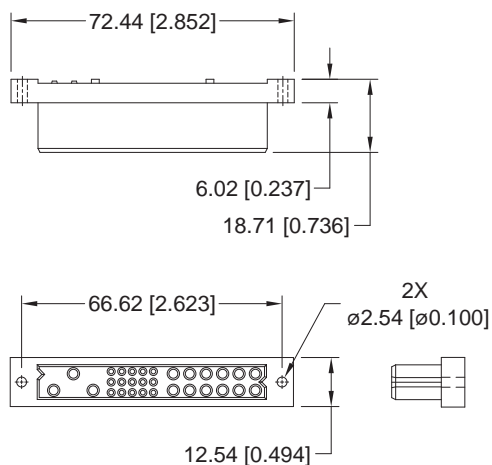


MALE CONNECTOR

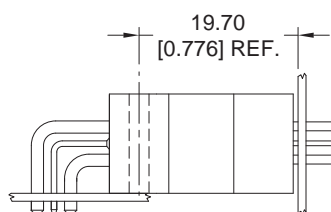


STRAIGHT BOARD MOUNT CONNECTOR

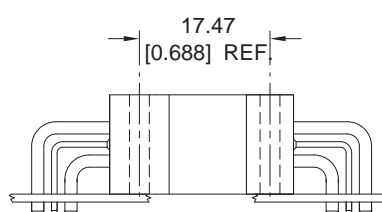
FEMALE CONNECTOR



PCIM CONNECTOR MATING DIMENSIONS (FULLY MATED)



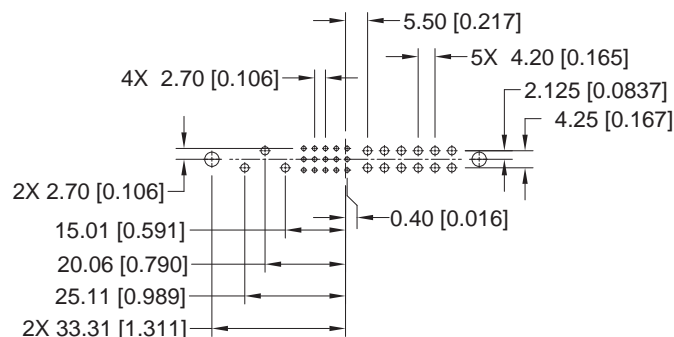
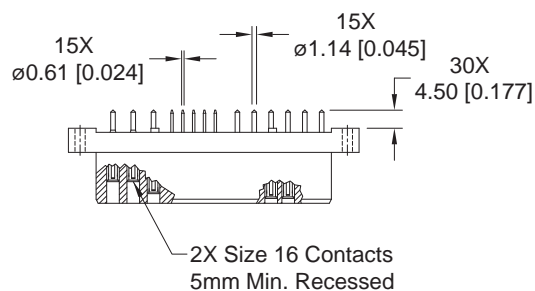
Right Angle (90°) Board
Mount Male to Straight
Board Mount or Panel
Mount Female



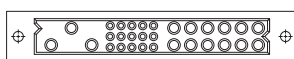
Right Angle (90°)
Board Mount Male to
Right Angle (90°)
Board Mount Female

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM30W15F300A1



CONTACT HOLE PATTERN

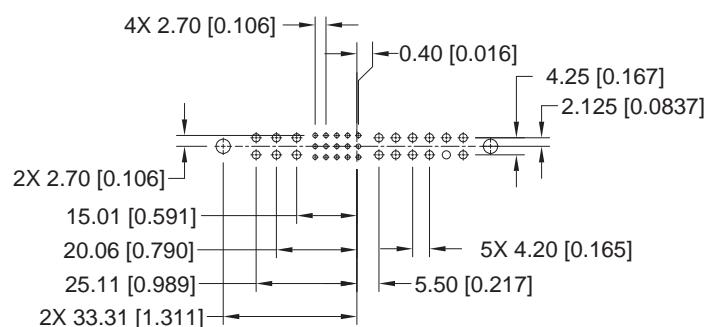
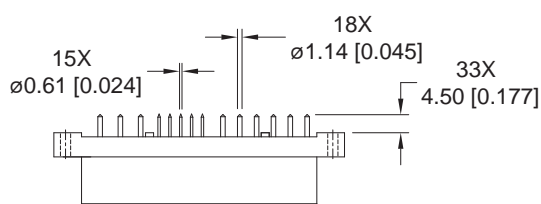


CONNECTOR DIMENSIONS

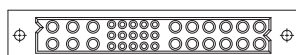
Note: See below for suggested printed board hole sizes.

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM33W18F300A1



CONTACT HOLE PATTERN



CONNECTOR DIMENSIONS

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 22 contact holes.
Suggest Ø1.60 [0.063] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 50



Positronic
connectpositronic.com

STRAIGHT SOLDER CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH

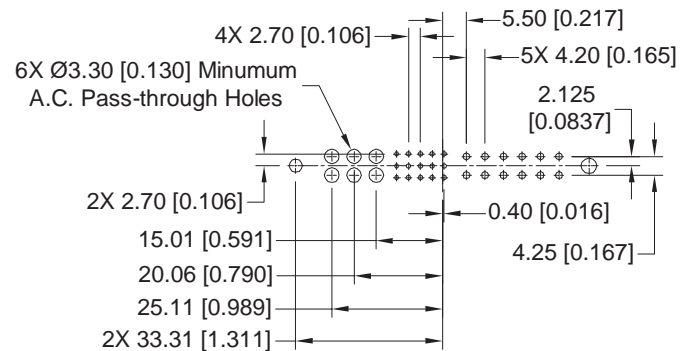
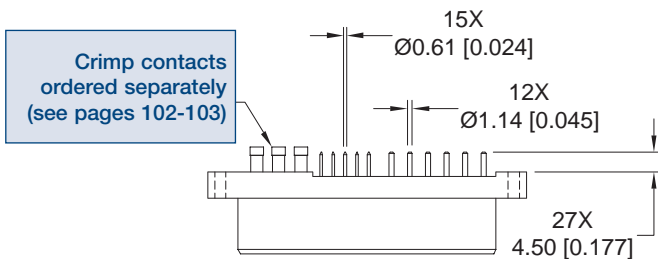
CODE 3 WITH MOS*¹ -246.10

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

LOW PROFILE PART NUMBER

PCIM33W18F300A1-246.10

*¹ For MOS descriptions,
see chart on pages 107-108.



CONTACT HOLE PATTERN

CONNECTOR DIMENSIONS

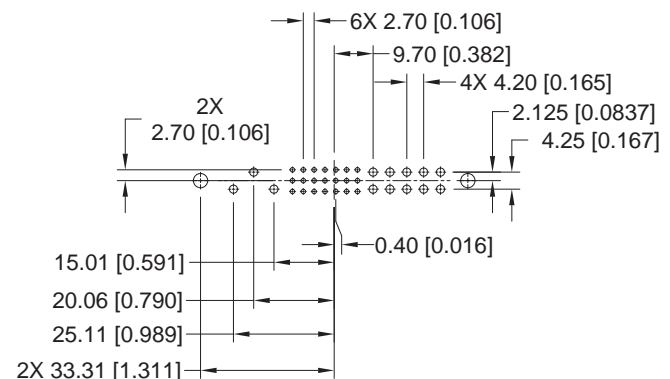
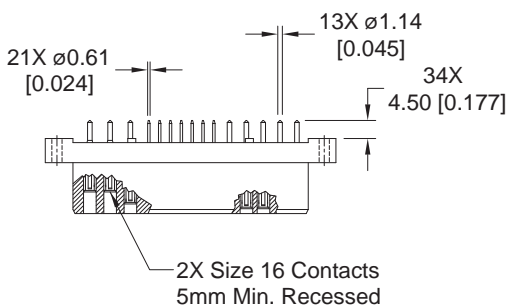
Note: See below for suggested printed board hole sizes.

FEMALE STRAIGHT SOLDER CONNECTOR

CODE 3

STANDARD PART NUMBER

PCIM34W13F300A1



CONTACT HOLE PATTERN

CONNECTOR DIMENSIONS

SUGGESTED PRINTED BOARD HOLE SIZES:

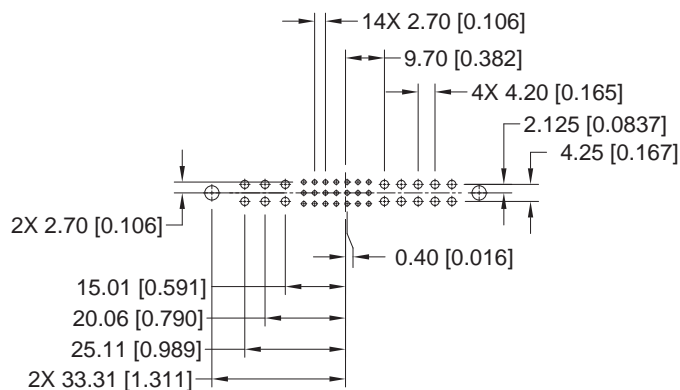
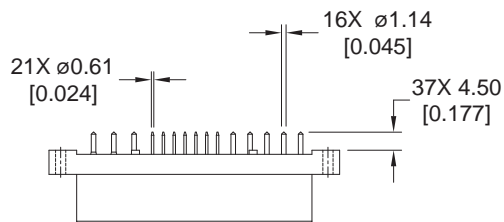
Suggest Ø1.00[0.039] holes for size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

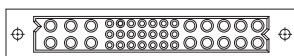
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM37W16F300A1



CONTACT HOLE PATTERN



CONNECTOR DIMENSIONS

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.00 [0.039]$ holes for size 22 contact holes.

Suggest $\varnothing 1.60 [0.063]$ holes for size 16 contact holes.

Suggest $\varnothing 3.56 \pm 0.08 [0.140 \pm 0.003]$ holes for connector mounting holes.



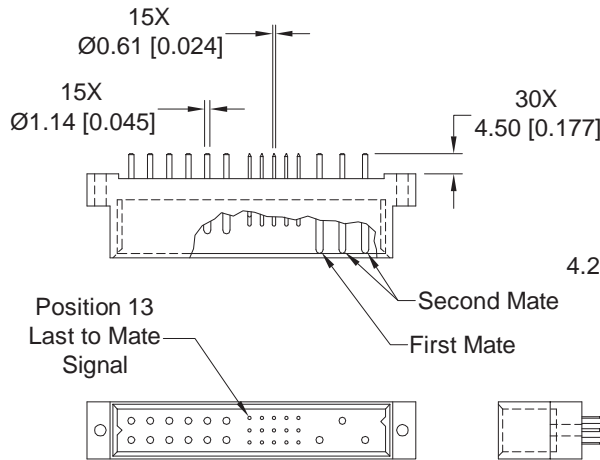
Positronic
connectpositronic.com

STRAIGHT SOLDER CONNECTOR, MALE

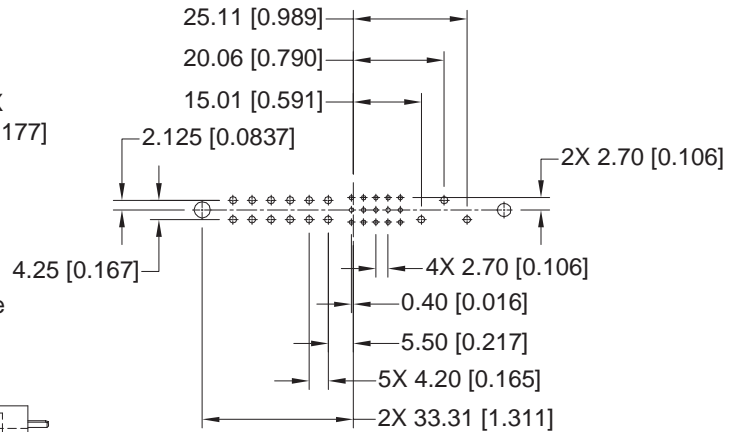
Compact
Power
Connectors

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM30W15M300A1



CONNECTOR DIMENSIONS

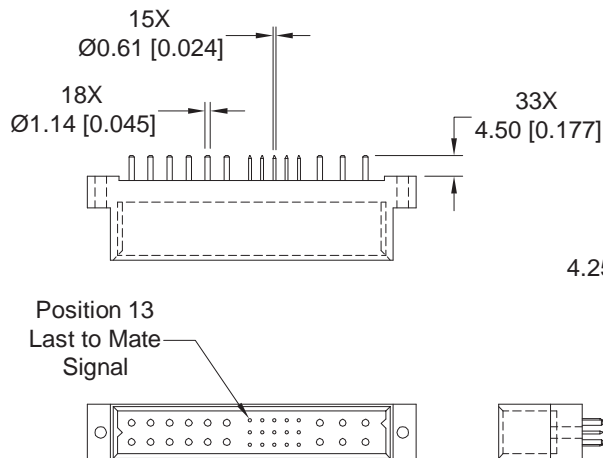


CONTACT HOLE PATTERN

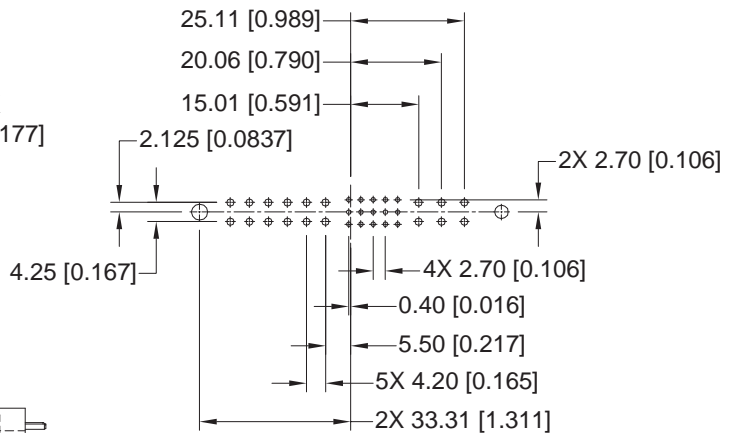
Note: See below for suggested printed board hole sizes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM33W18M300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

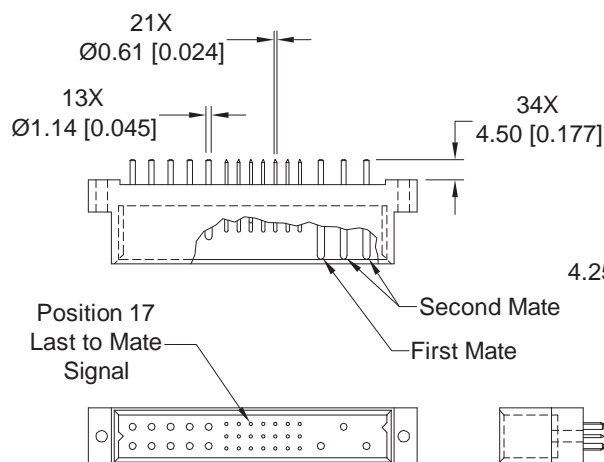
Suggest Ø1.00 [0.039] holes for size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

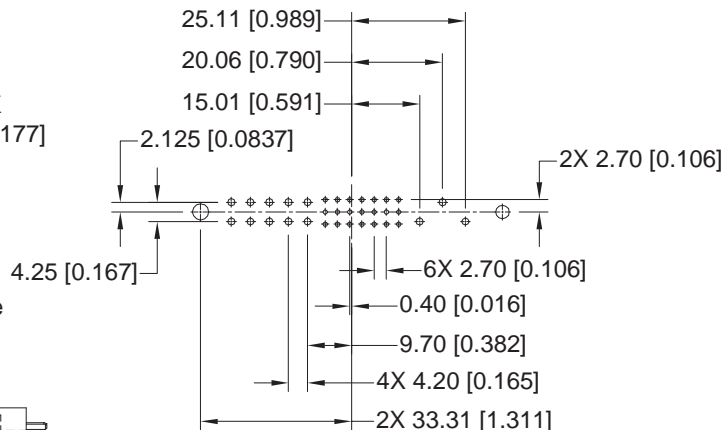
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM34W13M300A1



CONNECTOR DIMENSIONS

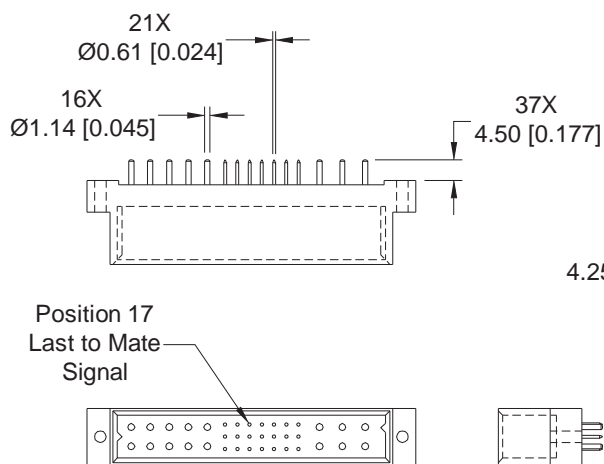


CONTACT HOLE PATTERN

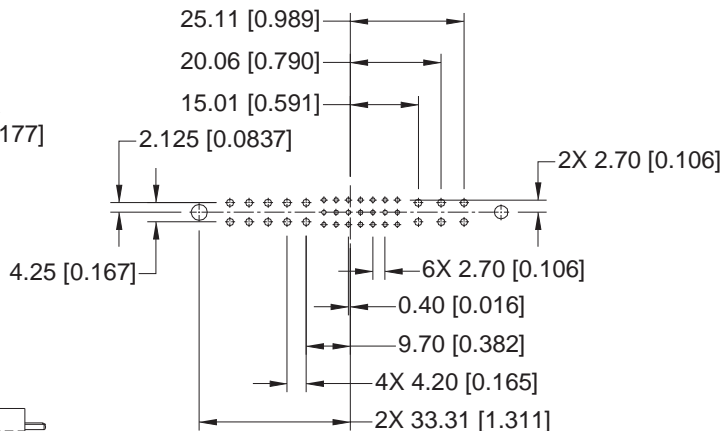
Note: See below for suggested printed board hole sizes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIM37W16M300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 22 contact holes.
Suggest Ø1.60 [0.063] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



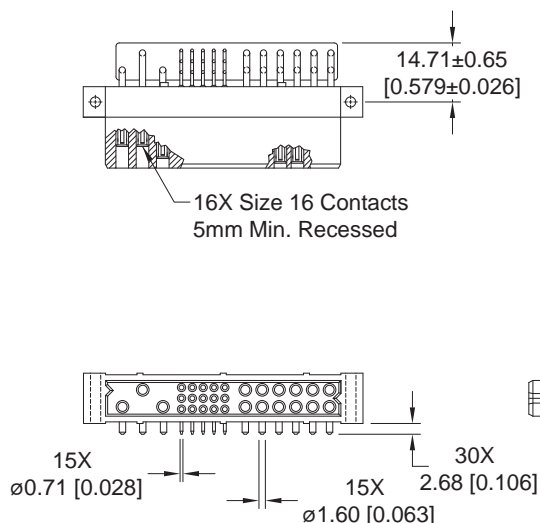
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

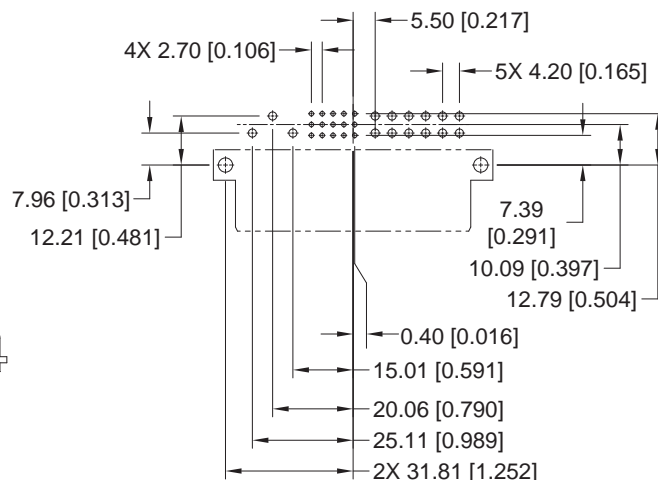
Compact
Power
Connectors

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIM30W15F400A1



CONNECTOR DIMENSIONS

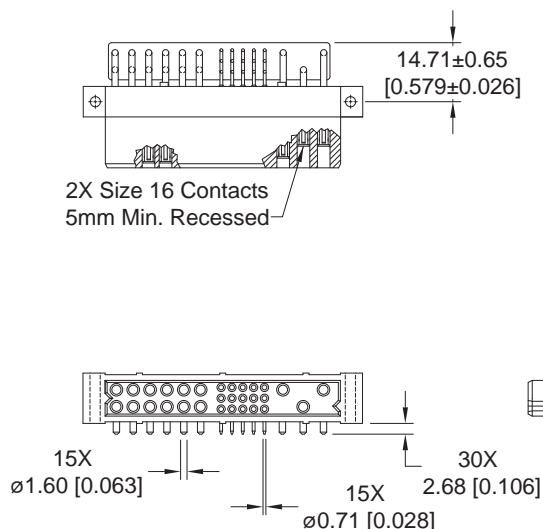


CONTACT HOLE PATTERN

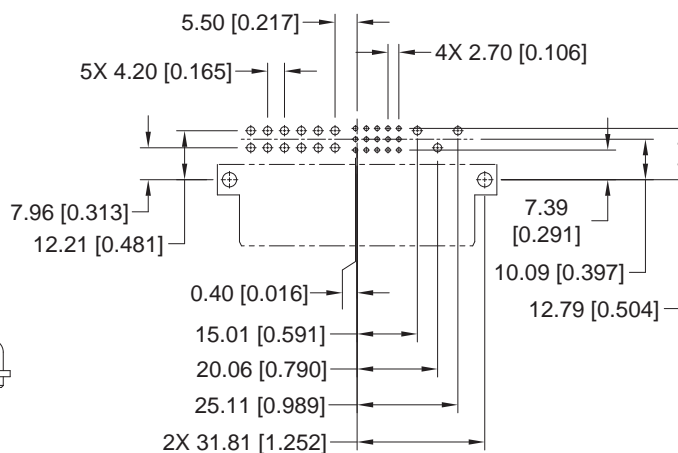
Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM30W15RF400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

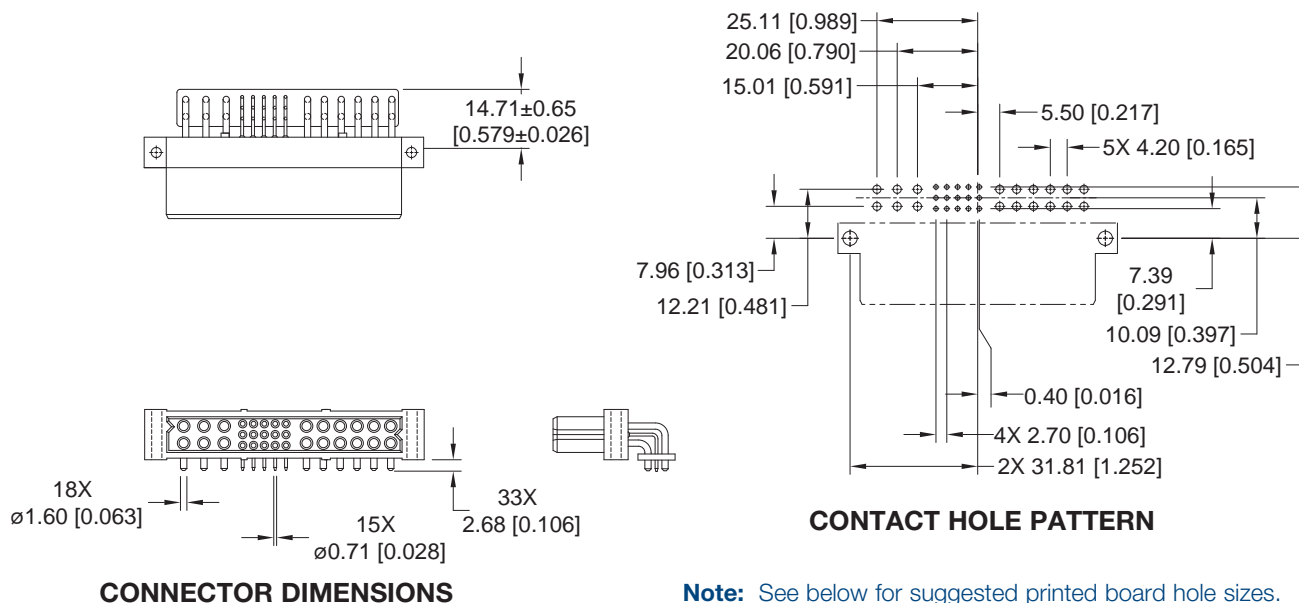
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

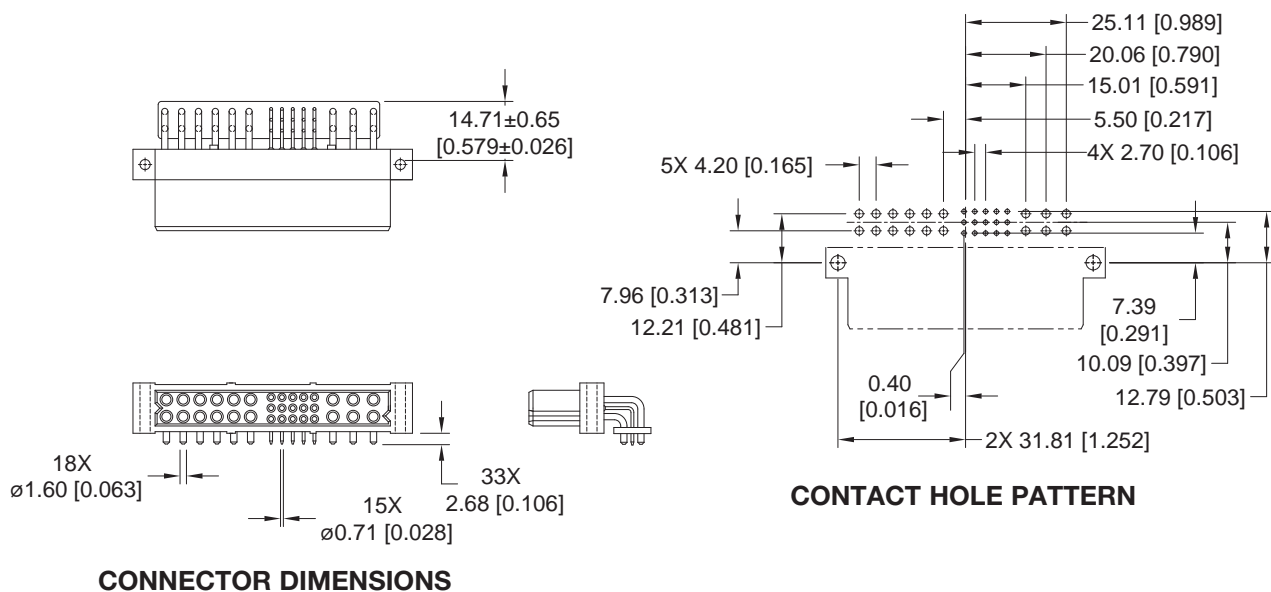
FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTORS
CODE 4

STANDARD PART NUMBER
PCIM33W18F400A1



FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTORS
CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM33W18RF400A1



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



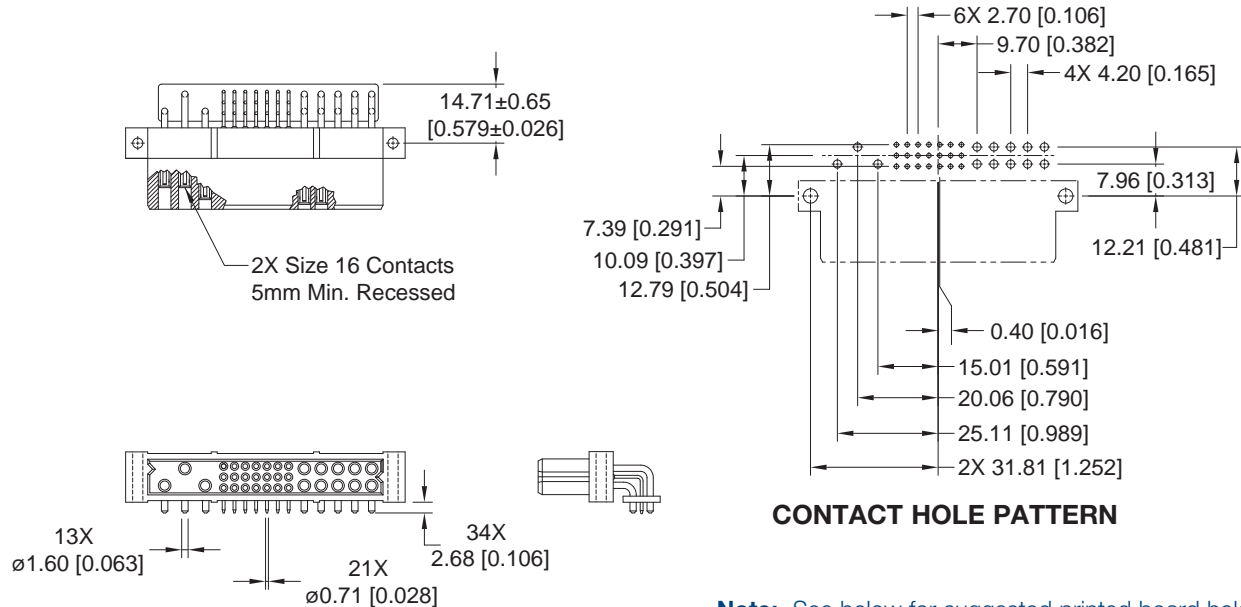
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

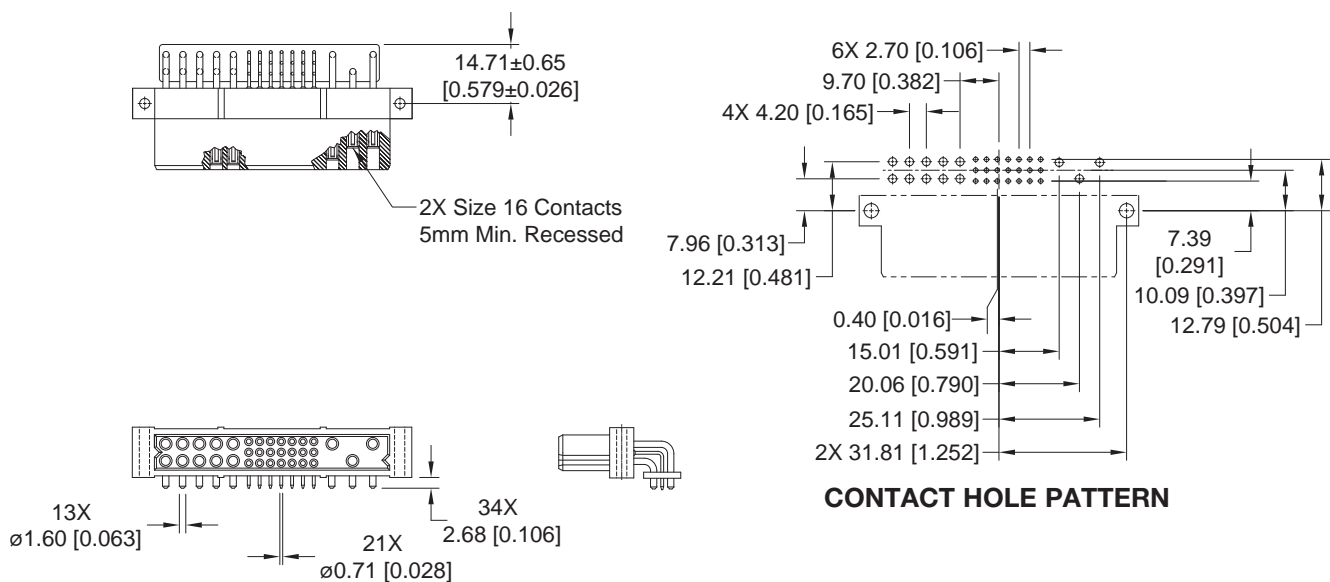
STANDARD PART NUMBER
PCIM34W13F400A1



Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM34W13RF400A1



SUGGESTED PRINTED BOARD HOLE SIZES:

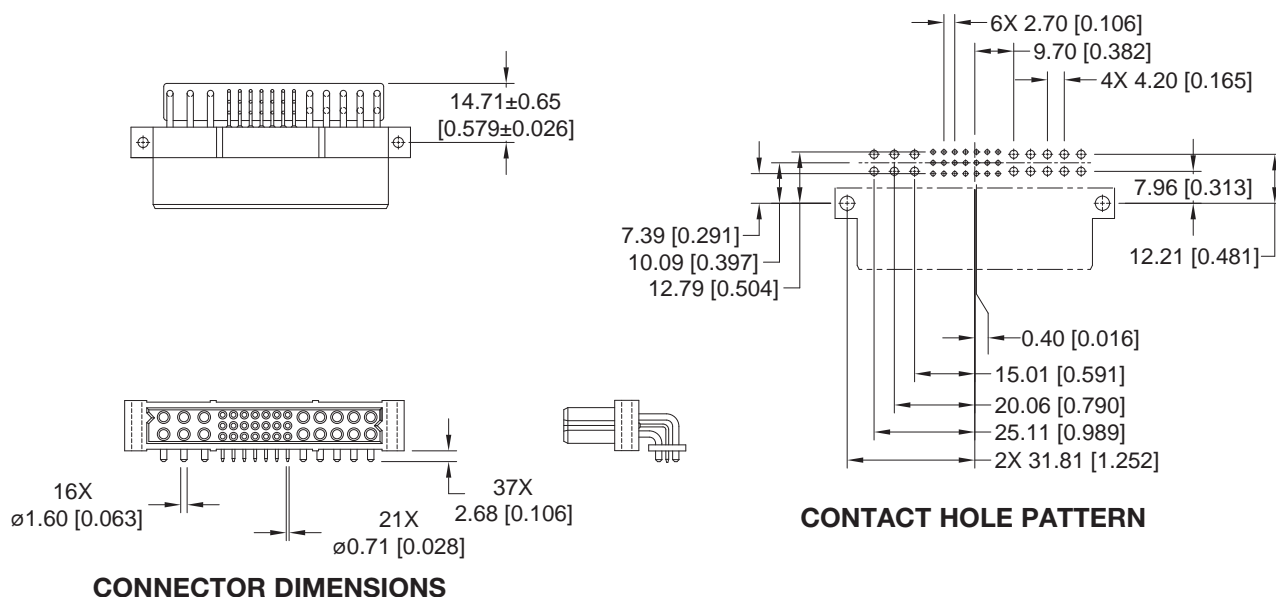
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

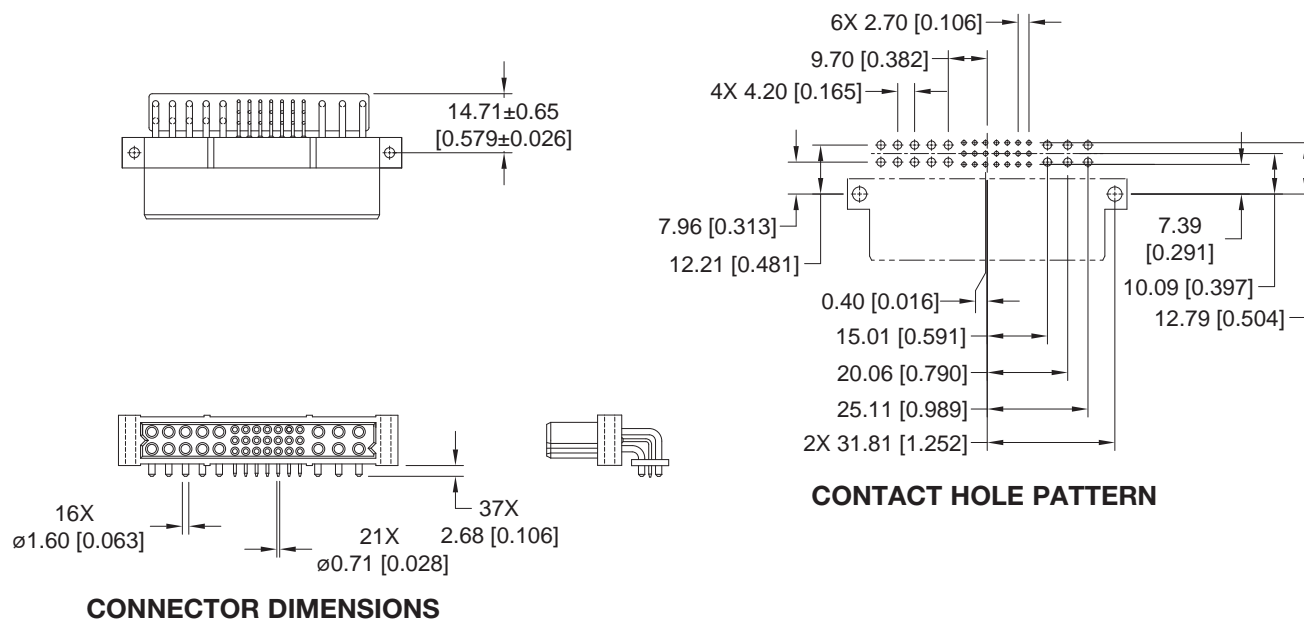
STANDARD PART NUMBER
PCIM37W16F400A1



Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM37W16RF400A1



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.14$ [0.045] holes for size 22 contact holes.
Suggest $\varnothing 2.03$ [0.080] holes for size 16 contact holes.
Suggest $\varnothing 3.56 \pm 0.08$ [0.140 ± 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



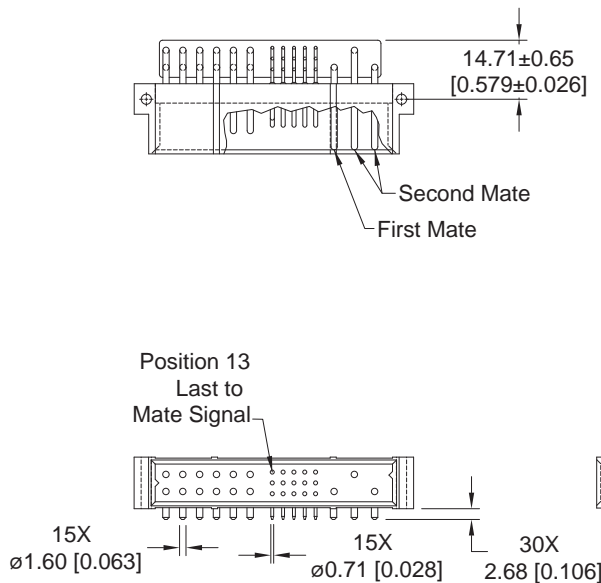
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, MALE

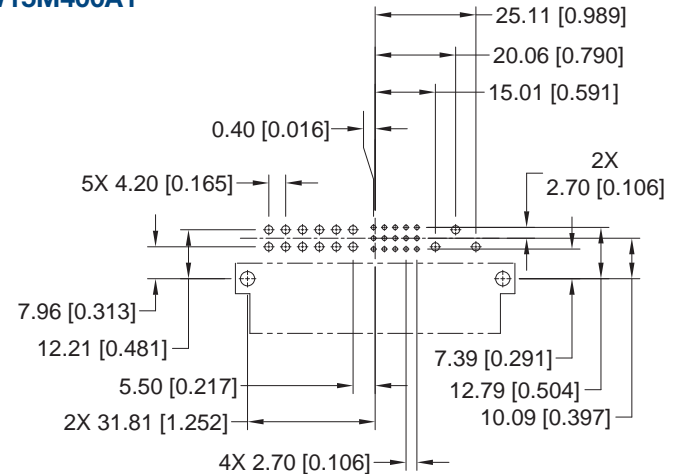
Compact
Power
Connectors

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIM30W15M400A1



CONNECTOR DIMENSIONS

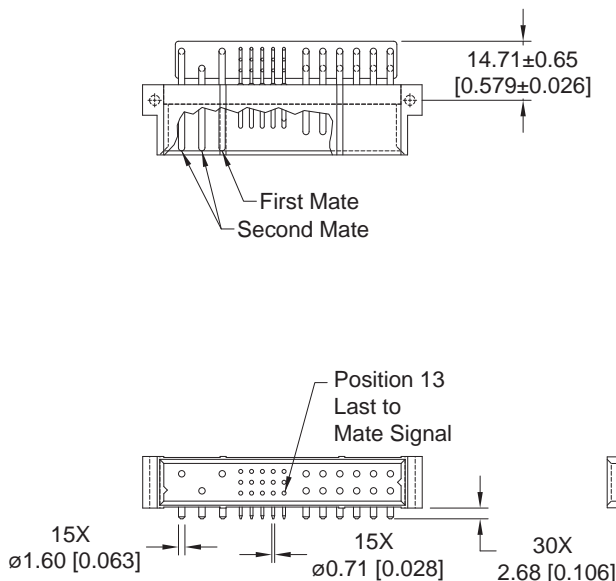


CONTACT HOLE PATTERN

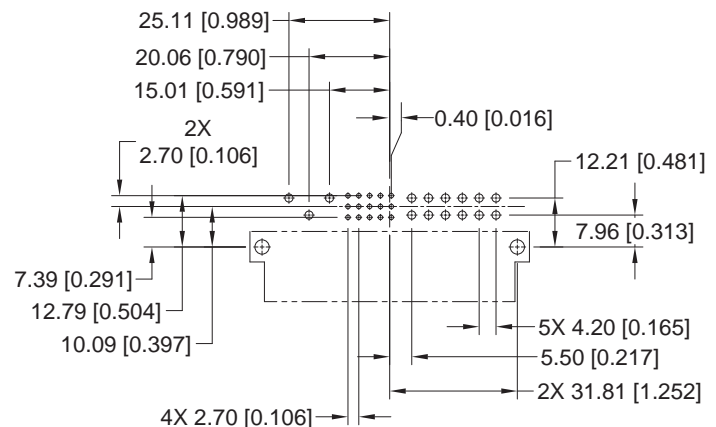
Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM30W15RM400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

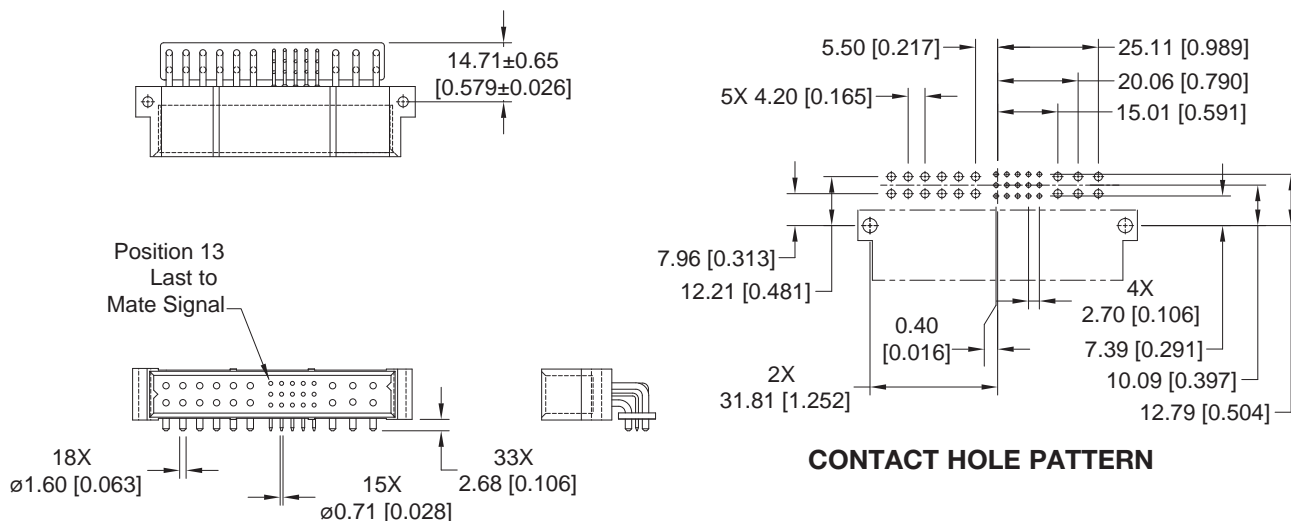
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER:
PCIM33W18M400A1

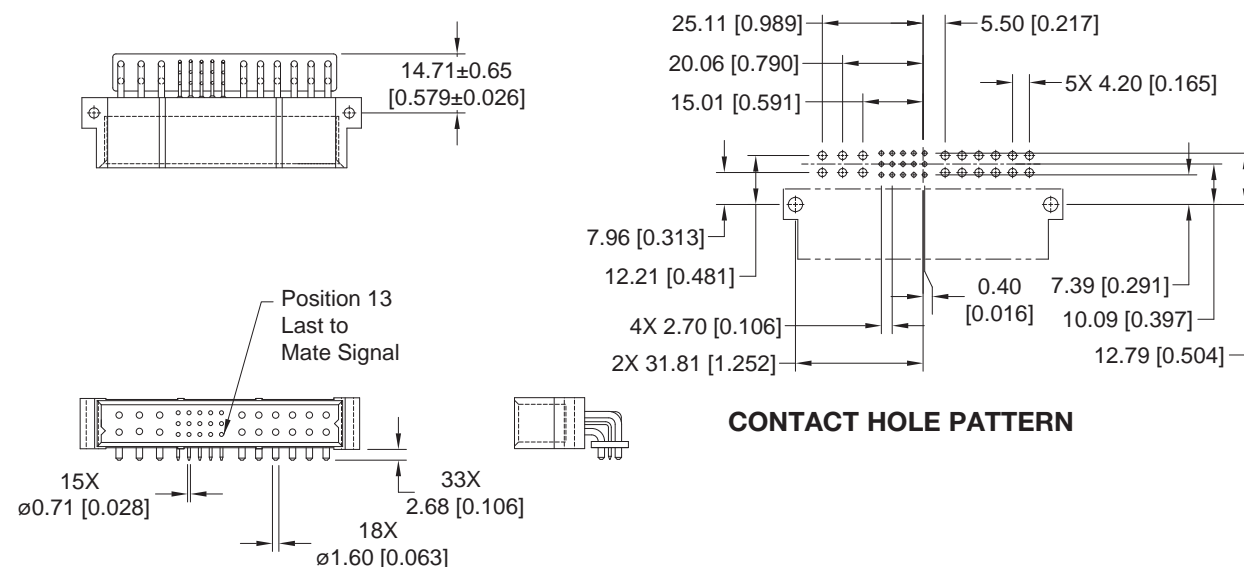


CONNECTOR DIMENSIONS

Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM33W18RM400A1



CONNECTOR DIMENSIONS

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 60**



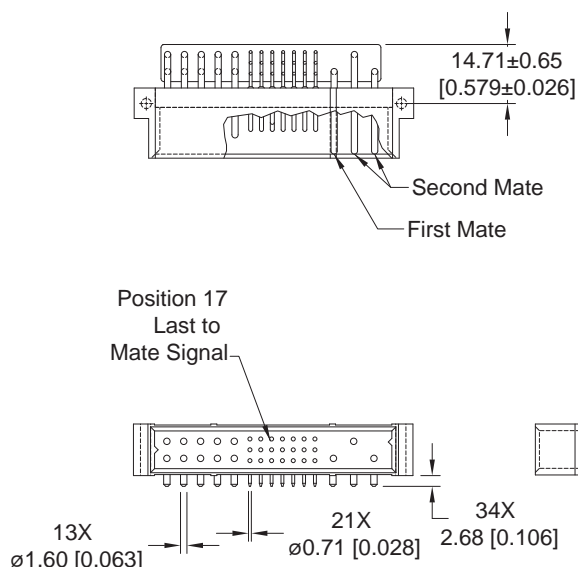
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, MALE

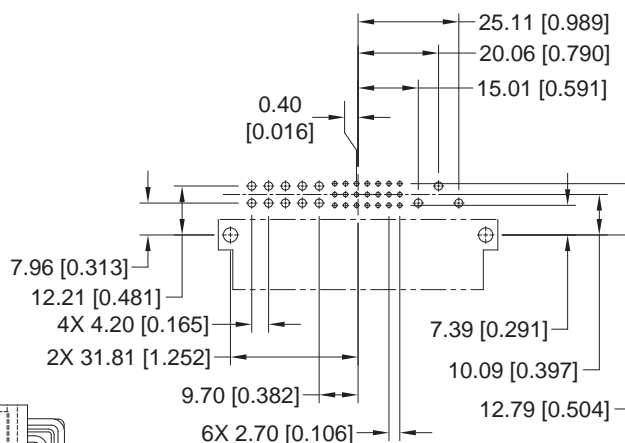
Compact
Power
Connectors

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER:
PCIM34W13M400A1



CONNECTOR DIMENSIONS

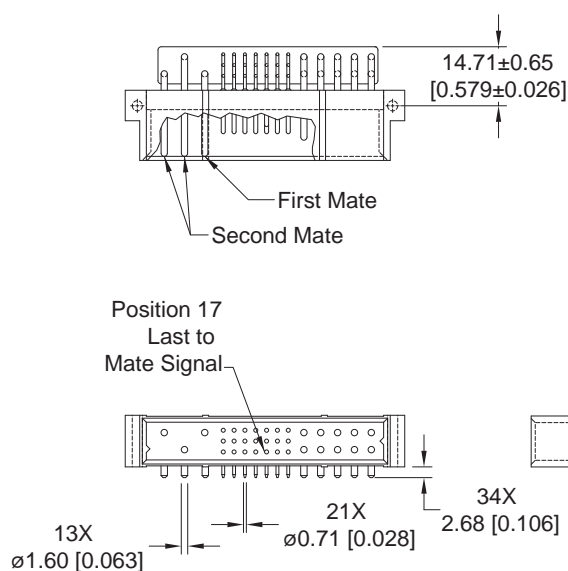


CONTACT HOLE PATTERN

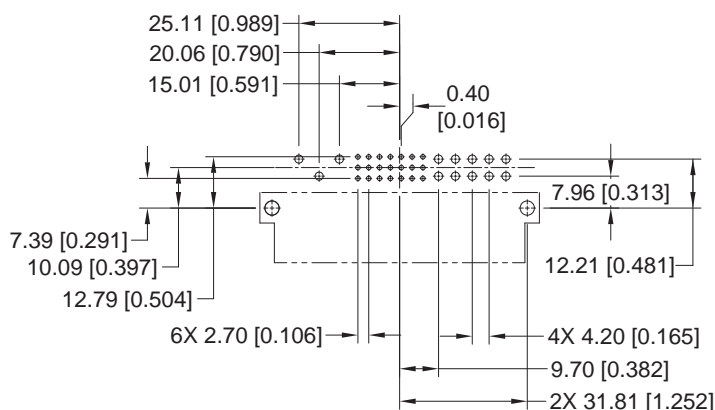
Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION:
PCIM34W13RM400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

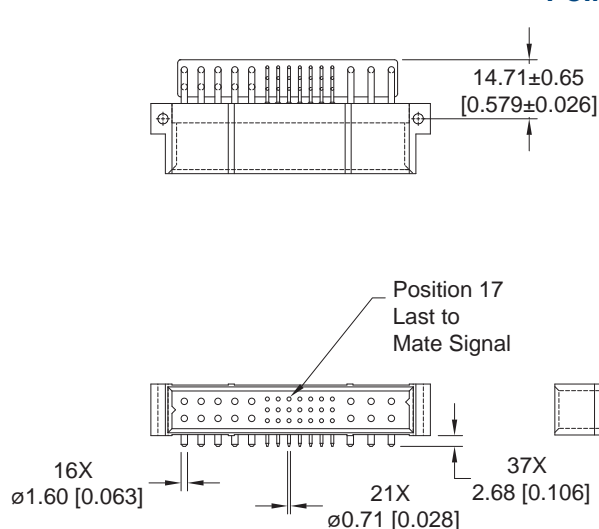
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

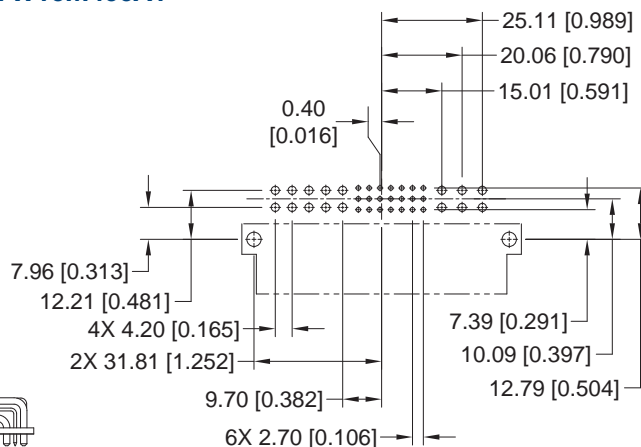
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIM37W16M400A1



CONNECTOR DIMENSIONS

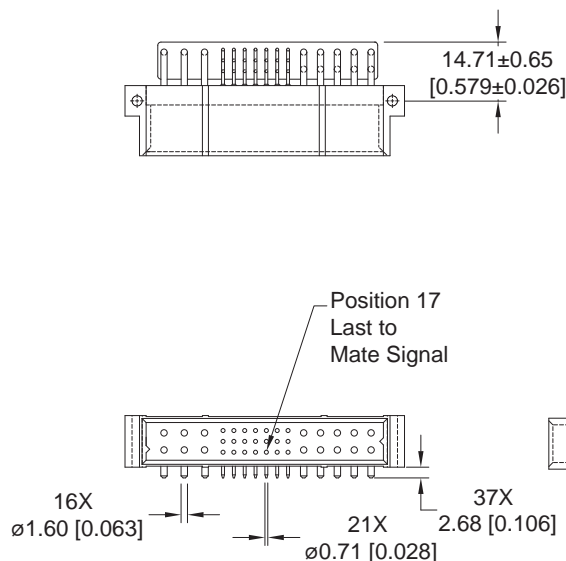


CONTACT HOLE PATTERN

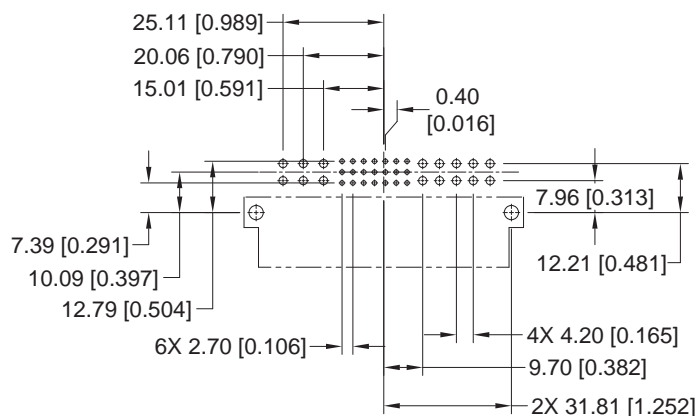
Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIM37W16RM400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

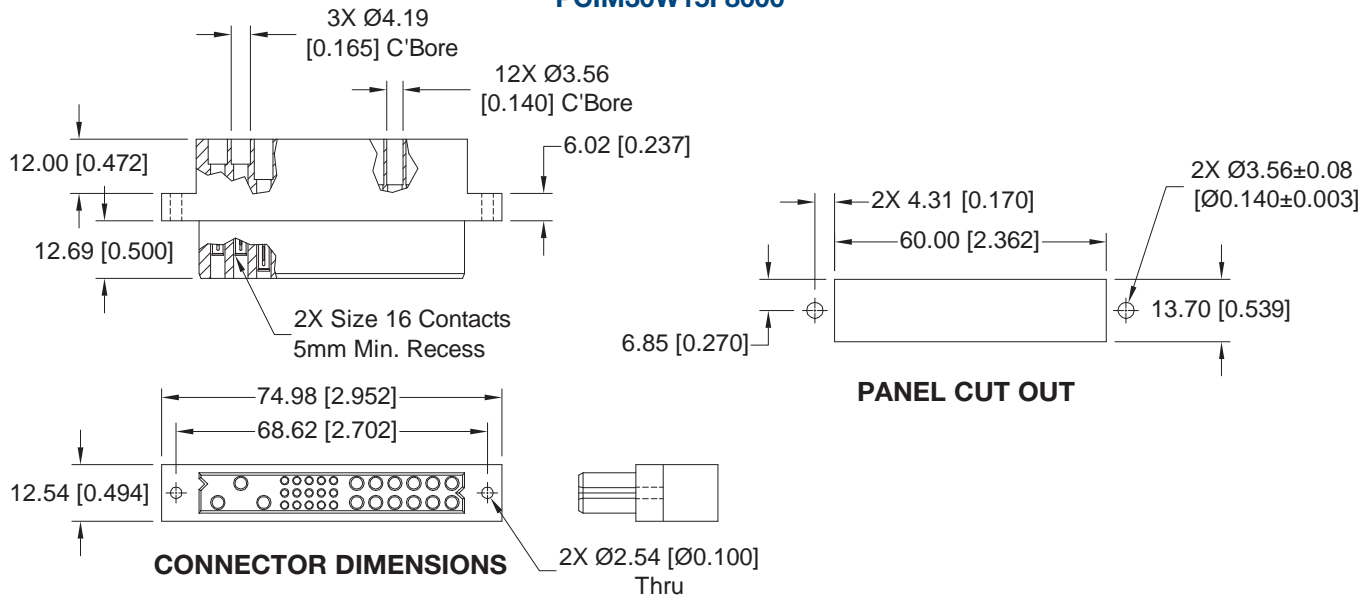
PANEL MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

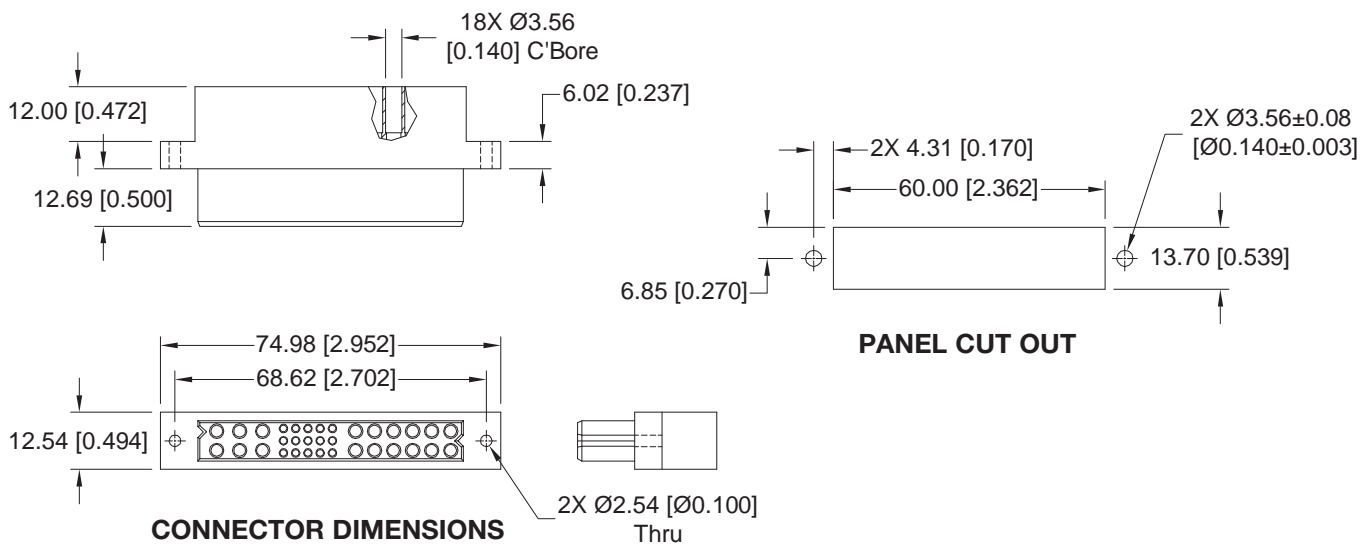
STANDARD PART NUMBER
PCIM30W15F8000



FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER
PCIM33W18F8000

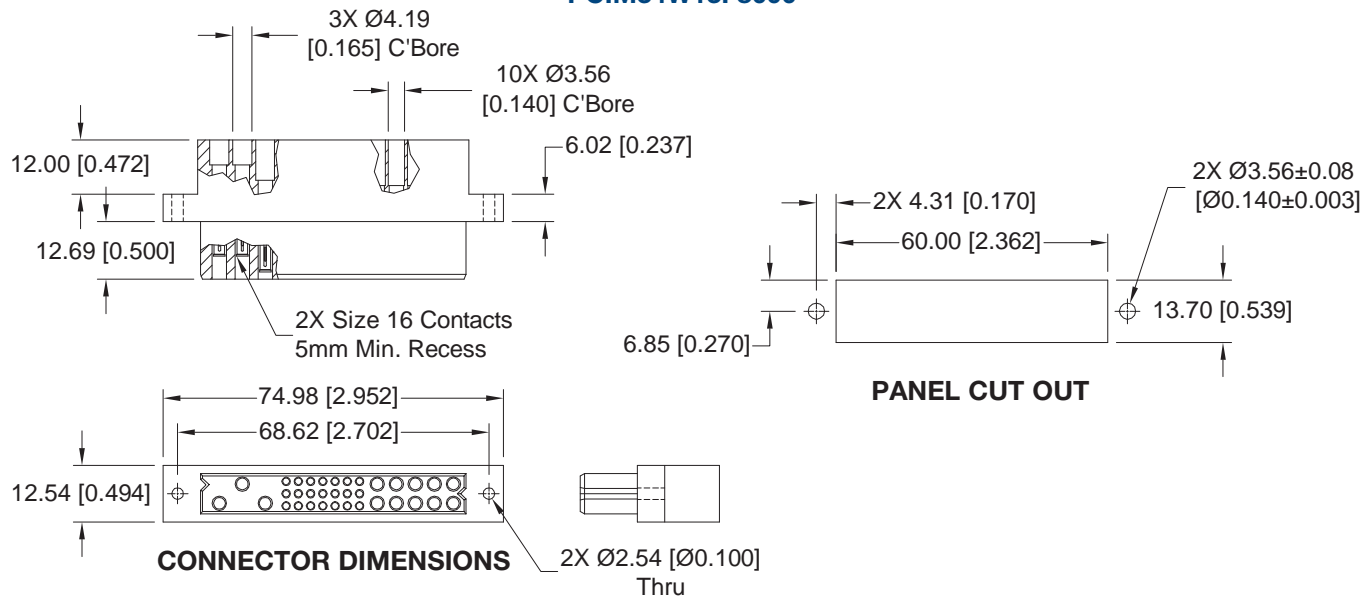


For information regarding removable contacts, see Removable Contact section, pages 102-103.

FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

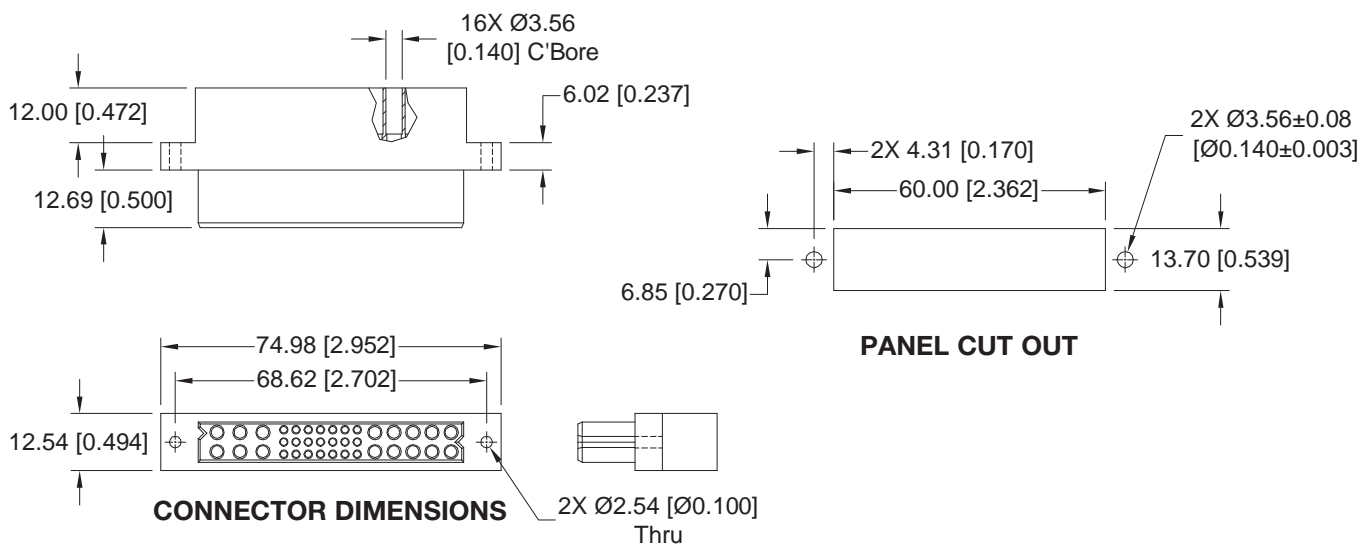
STANDARD PART NUMBER
PCIM34W13F8000



FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER
PCIM37W16F8000



For information regarding removable contacts, see Removable Contact section, pages 102-103.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

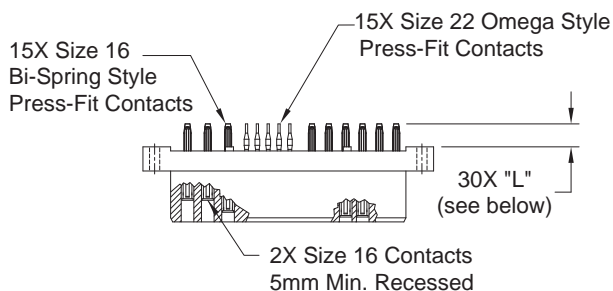
FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

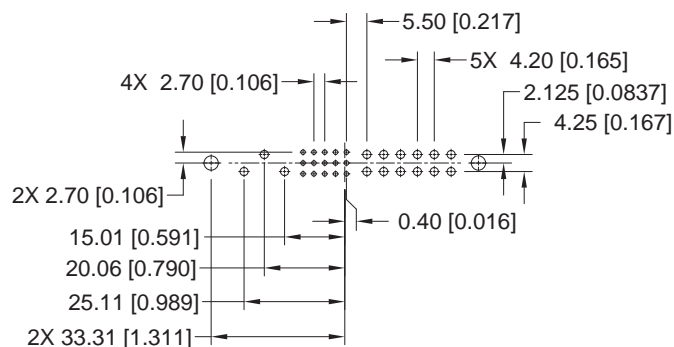
PCIM30W15F9300A1

PCIM30W15F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

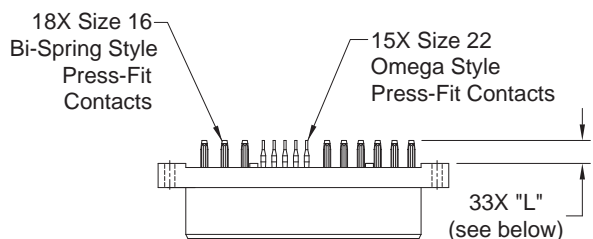
FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

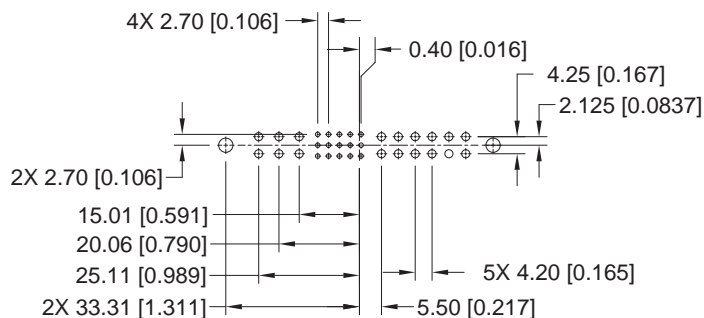
PCIM33W18F9300A1

PCIM33W18F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

DIMENSIONS ARE IN MILLIMETERS [INCHES].

65 ALL DIMENSIONS ARE SUBJECT TO CHANGE.

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH

CODE 93 OR 94 WITH MOS*¹ -246.10

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

*¹ For MOS descriptions,
see chart on pages 107-108.

LOW PROFILE PART NUMBER

PCIM33W18F9300A1-246.10

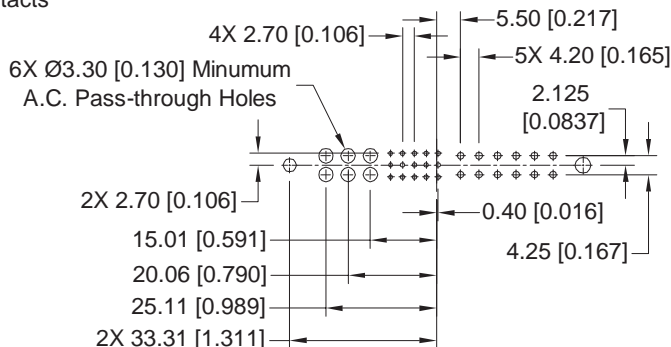
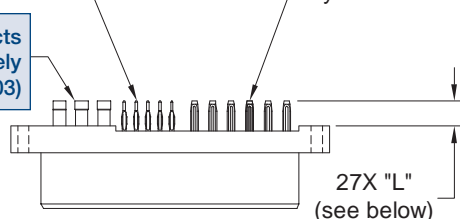
PCIM33W18F9400A1-246.10

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.

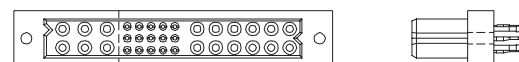
15X Size 22 Omega
Style Press-Fit Contacts

12X Size 16 Bi-Spring
Style Press-Fit Contacts

Crimp contacts
ordered separately
(see pages 102-103)



CONTACT HOLE PATTERN



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

FEMALE COMPLIANT PRESS-FIT CONNECTOR

CODE 93 OR 94

STANDARD PART NUMBER

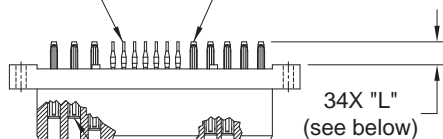
PCIM34W13F9300A1

PCIM34W13F9400A1

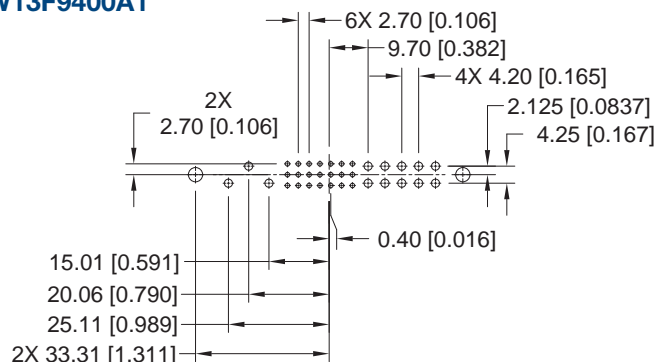
Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.

21X Size 22
Omega Style
Press-Fit Contacts

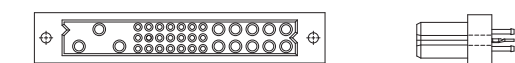
13X Size 16
Bi-Spring Style
Press-Fit Contacts



2X Size 16 Contacts
5mm Min. Recessed



CONTACT HOLE PATTERN



CONNECTOR DIMENSIONS

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

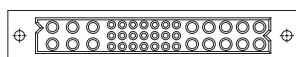
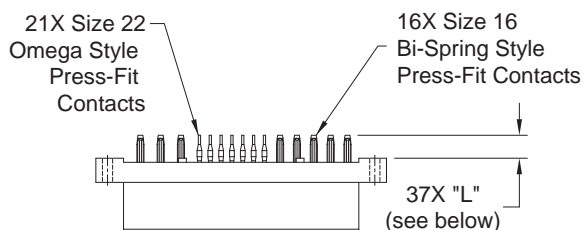
FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

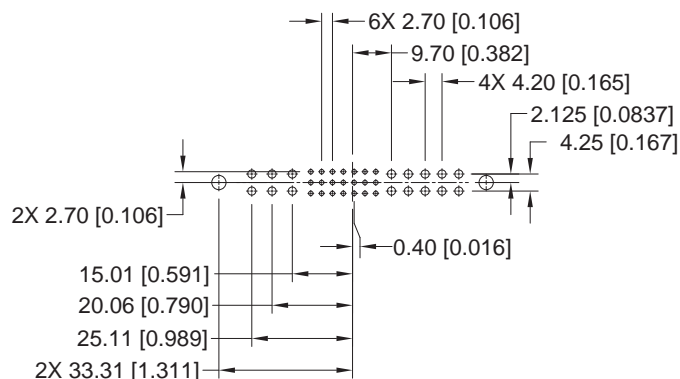
PCIM37W16F9300A1

PCIM37W16F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

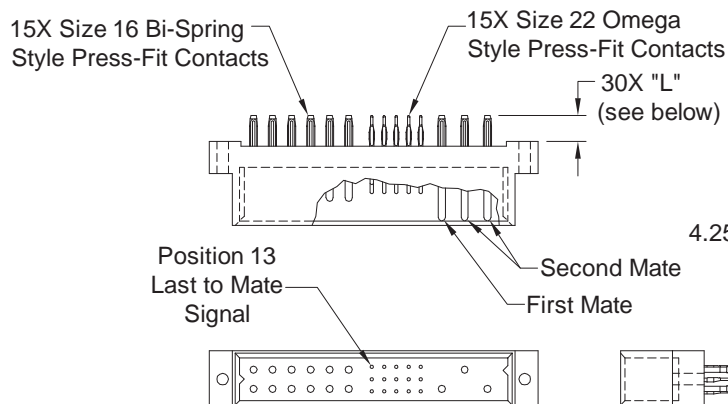
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

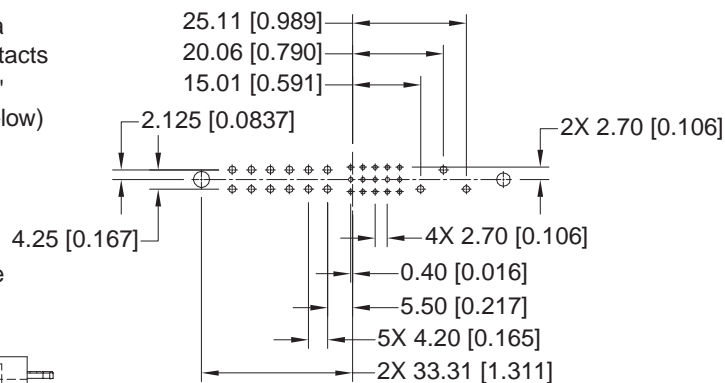
PCIM30W15M9300A1

PCIM30W15M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

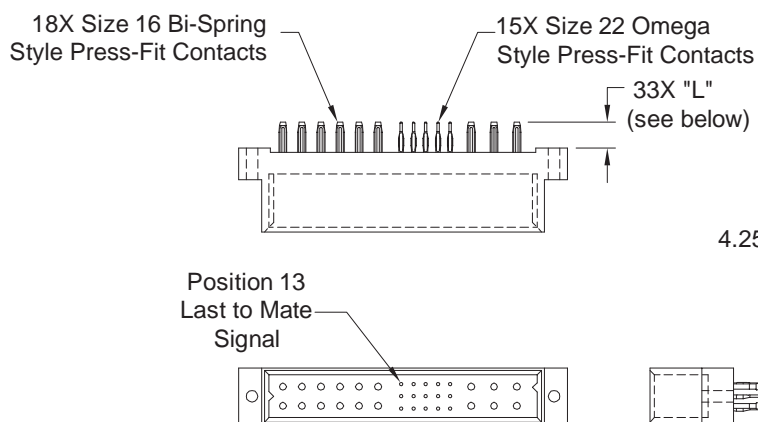
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

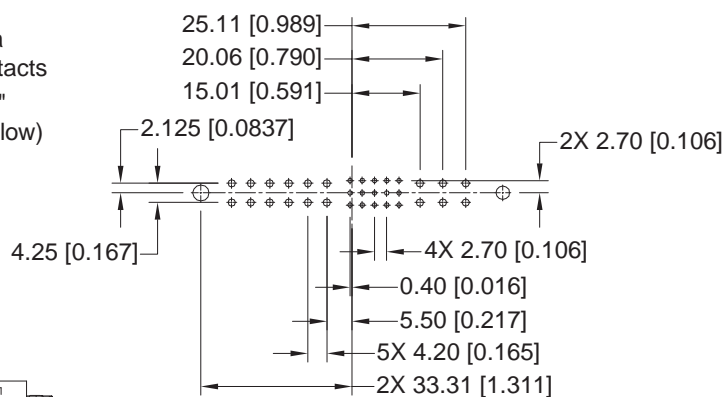
PCIM33W18M9300A1

PCIM33W18M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, MALE

Compact
Power
Connectors

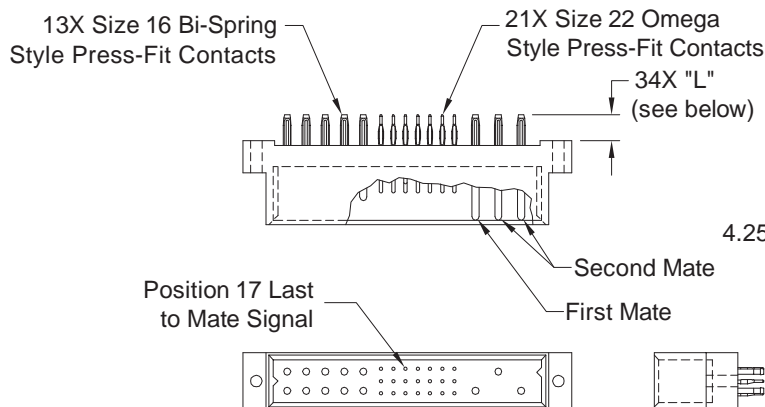
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

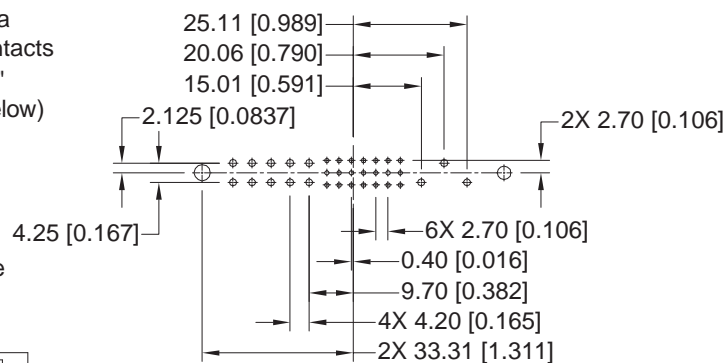
PCIM34W13M9300A1

PCIM34W13M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

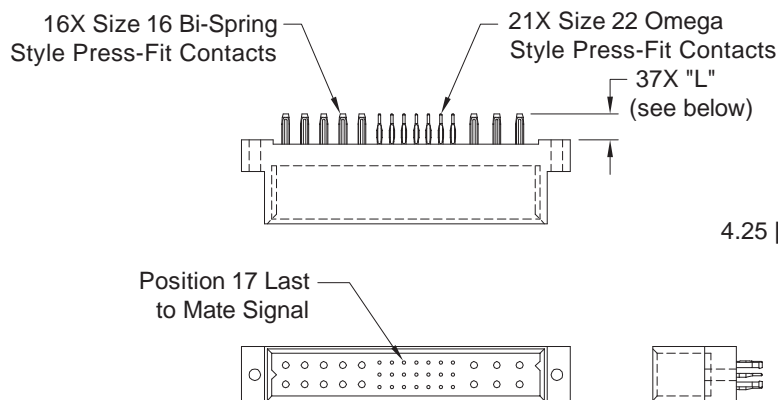
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

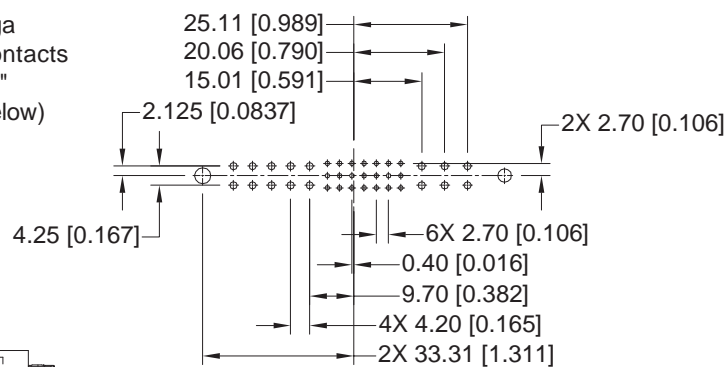
PCIM37W16M9300A1

PCIM37W16M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PCIM	34W13	F	93	0	0	A1	/AA	

STEP 1 - BASIC SERIES

PCIM - PCIM Series

STEP 2 - CONNECTOR VARIANTS

- 30W15 - 15 size 16 contacts and 15 size 22 contacts
- 30W15R - 15 size 16 contacts and 15 size 22 contacts. Inverted termination style, use with contact type "4"
- 33W18 - 18 size 16 contacts and 15 size 22 contacts
- 33W18R - 18 size 16 contacts and 15 size 22 contacts. Inverted termination style, use with contact type "4"
- 34W13 - 13 size 16 contacts and 21 size 22 contacts
- 34W13R - 13 size 16 contacts and 21 size 22 contacts. Inverted termination style, use with contact type "4"
- 37W16 - 16 size 16 contacts and 21 size 22 contacts
- 37W16R - 16 size 16 contacts and 21 size 22 contacts. Inverted termination style, use with contact type "4"

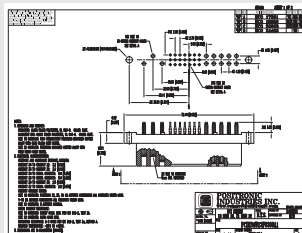
STEP 3 - CONNECTOR GENDER

- F - Female
- M - Male

STEP 4 - CONTACT TERMINATION TYPE

- 3 - Solder, Straight Printed Board Mount with 4.50 [0.177] tail extension for connection system 1.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 2.68 [0.106] tail extension for connection systems 1 and 4.
- 8 - Contacts must be ordered separately for Panel Mount Cable Connectors, connection system 3, see pages 102-103. Female connector only.
- 93 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection system 1.
- 94 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thickness of 4.45 minimum [0.175 minimum]. Connection system 1.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model

STEP 9 - SPECIAL OPTIONS

FOR LISTING OF SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGES 107-108.

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: PCIM34W13F9300A1

STEP 7 - CONTACT PLATING FOR PRINTED BOARD TYPE CONNECTORS

- 0 - Crimp contacts ordered separately
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.

STEP 6 - HOODS

- 0 - Not applicable

STEP 5 - MOUNTING STYLE

- 0 - Standard Option
- See page 105 for mounting screw options.



Positronic
connectpositronic.com

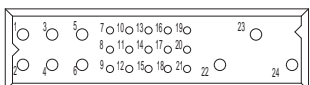
GENERAL PRODUCT INFORMATION

Compact
Power
Connectors

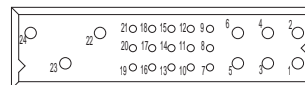
The PCIB Series encompasses all of the features of the PCIH Series in a smaller package. Reliability, high current capacity and many system management connections make the PCIB Series ideal for use in telecom, computer, information systems and industrial applications.

PCIB SERIES CONTACT VARIANTS

FACE VIEW OF MALE AND REAR VIEW OF FEMALE

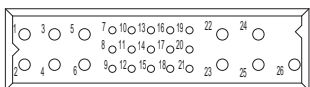


PCIB24W9 VARIANT

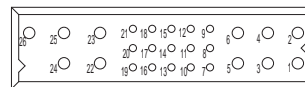


PCIB24W9R VARIANT (Inverted Termination)

9 Size 16 Power Contacts and 15 Size 22 Signal Contacts



PCIB26W11 VARIANT



PCIB26W11R VARIANT (Inverted Termination)

11 Size 16 Power Contacts and 15 Size 22 Signal Contacts



Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog



MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Size 16 contacts: High conductivity precision-machined copper alloy. Size 22 contacts: Precision-machined copper alloy.
Plating:	Gold flash over nickel. Other plating options available, refer to Step 7 on page 89.
Mounting Screws:	Steel, zinc plated.
Jackscrews:	Stainless steel, passivated.

ELECTRICAL CHARACTERISTICS:

PCIB Contact Current Ratings, per UL 1977

See Temperature Rise Curves on page 5 for details.

PCIB24W9:

Size 16 Power Contacts: Positions 22, 23, and 24:	45 amperes continuous, all contacts under load.
Positions 1 through 6:	35 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.

PCIB26W11:

Size 16 Power Contacts:	34 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.

Initial Contact Resistance:

Size 16 Contact:	0.0007 ohms maximum.
Size 22 Contact:	0.005 ohms maximum. Per IEC 60512-2, Test 2b.

Insulation Resistance:

5 G ohms per IEC 60512-2, Test 3a.

Voltage Proof:

PCIB24W9:

Contacts 22, 23 and 24:	3,000 V r.m.s.
Contacts 1 through 6:	1,500 V r.m.s.
Contacts 7 through 21:	1,000 V r.m.s.

PCIB26W11:

Contacts 1 through 6 and 22 through 26:	1,500 V r.m.s.
Contacts 7 through 21:	1,000 V r.m.s.

Creepage and Clearance

Distance; minimum:

PCIB24W9:

Contact 24 to Contact 22:	3.2mm [0.126 inch]
Contact 23 to Contact 22:	3.2mm [0.126 inch]
Contact 24 to Signal Contacts:	6.4mm [0.252 inch]
Contact 23 to Signal Contacts:	6.4mm [0.252 inch]
Contact 24 to Contact 23:	2.5mm [0.098 inch]
Contact 22 to Signal Contacts:	2.0mm [0.079 inch]

PCIB26W11:

Contact 22 to Signal Contacts:	2.0mm [0.079 inch]
--------------------------------	--------------------

Working Voltage:

PCIB24W9:

Contacts 22, 23 and 24:	1,000 V r.m.s.
Contacts 1 through 6:	500 V r.m.s.
Contacts 7 through 21:	333 V r.m.s.

PCIB26W11:

Contacts 1 through 6 and 22 through 26:	500 V r.m.s.
Contacts 7 through 21:	333 V r.m.s.

MECHANICAL CHARACTERISTICS:

Blind Mating System:

Male and female connector bodies provide "lead-in" for 1.3 mm [0.050 inch] diametral misalignment.

Polarization:

Provided by connector body design.

Removable Contacts:

Install contact from rear of insulator; release from front of insulator. Size 16 and 22 female contacts feature "Closed Entry" design for highest reliability.

Removable Contact Retention in Connector Body:

Size 16 Contacts:	67 N [15 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Fixed Contacts:

Printed board terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 22 feature rugged "Open Entry" contact design. "Closed Entry" contacts available, consult Technical Sales.

Fixed Contact Retention in Connector Body:

Size 16 Contacts:	45 N [10 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Resistance to Solder Heat:

260°C [500°F] for 10 seconds duration per IEC 60512-6, Test 12e, 25-watt soldering iron.

Sequential Contact Mating System:

PCIB24W9:	First mate contact 22 and last mate contact position 7.
PCIB26W11:	Last mate contact position 7.

Consult Technical Sales for customer specified sequential mating.

Safety "Recessed in Insulator" Contacts:

The following size 16 contacts are recessed 5.00 mm [0.197 inch] below the face of the female connector insulator per safety requirements. Contact positions 23 and 24. None

PCIB24W9:

PCIB26W11:

Compliant Terminations:

Size 16 and 22 contacts are available with compliant contact terminations. Average insertion and extraction forces of size 16 contacts are 22N (5 lbs.) per contact.

Printed Board Mounting:

Mounting holes provided in connector body for printed board mounting. Self-tapping screws are available.

Mechanical Operations:

250 couplings, minimum.

CLIMATIC CHARACTERISTICS:

Working Temperature: -55°C to +125°C.



Positronic
connectpositronic.com

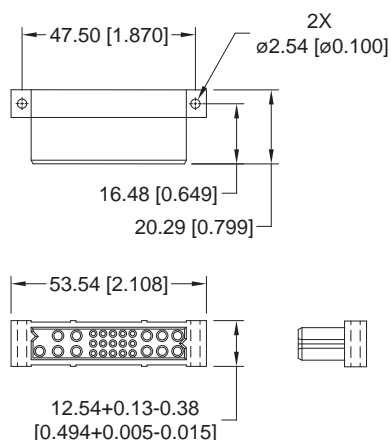
CONNECTOR OUTLINE AND MATING DIMENSIONS

Compact
Power
Connectors

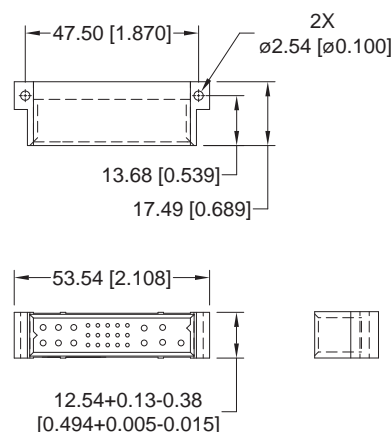
PCIB CONNECTOR OUTLINE DIMENSIONS

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR

FEMALE CONNECTOR

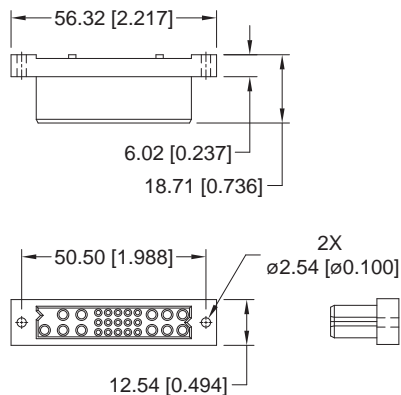


MALE CONNECTOR

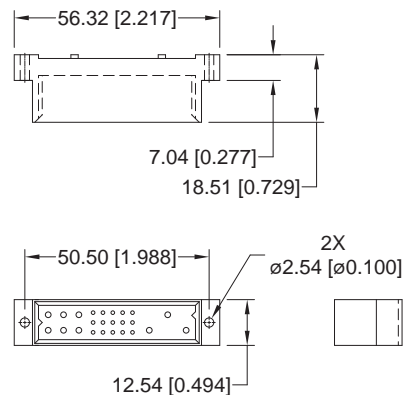


STRAIGHT BOARD MOUNT CONNECTOR

FEMALE CONNECTOR

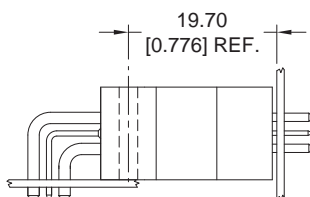


MALE CONNECTOR

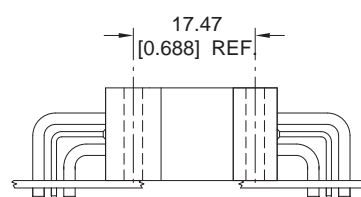


PCIB CONNECTOR MATING DIMENSIONS

(FULLY MATED)



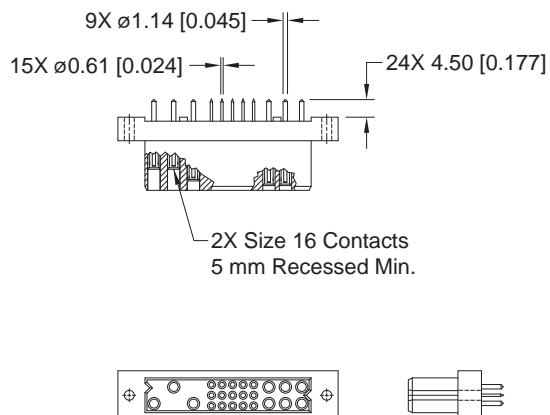
Right Angle (90°)
Board Mount Male to
Straight Board Mount
or Panel Mount Female



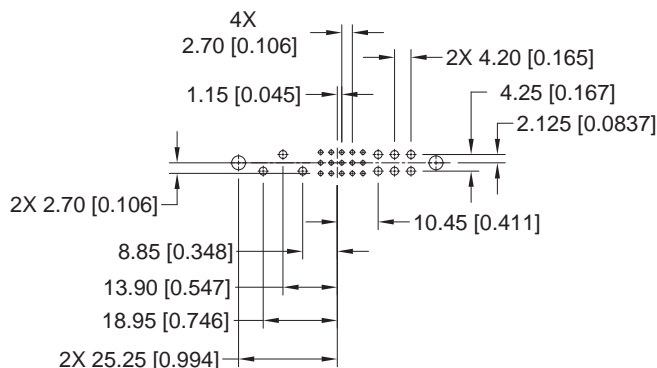
Right Angle (90°)
Board Mount Male to
Right Angle (90°)
Board Mount Female

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIB24W9F300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes.

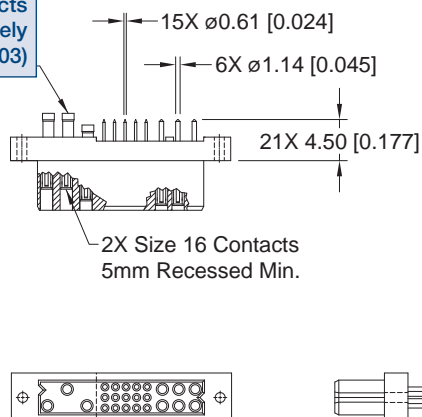
FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*¹ -246.5

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

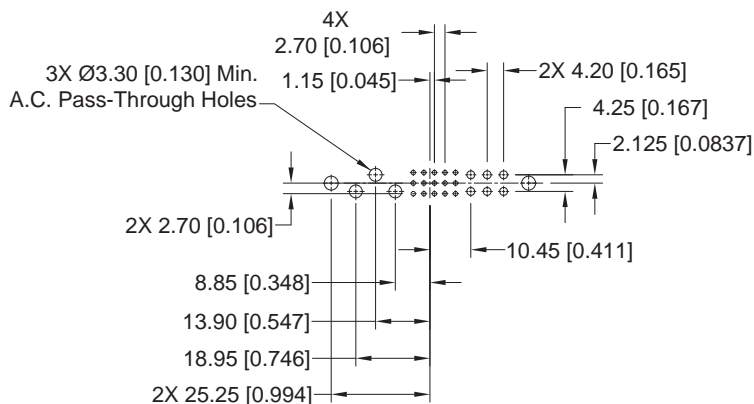
LOW PROFILE PART NUMBER
PCIB24W9F300A1-246.5

^{*1} For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 22 contact holes.
Suggest Ø1.60 [0.063] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



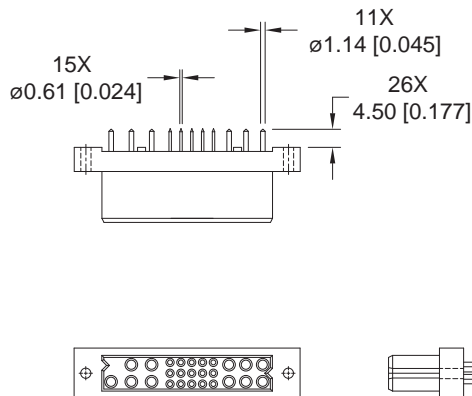
Positronic
connectpositronic.com

STRAIGHT SOLDER CONNECTOR, FEMALE

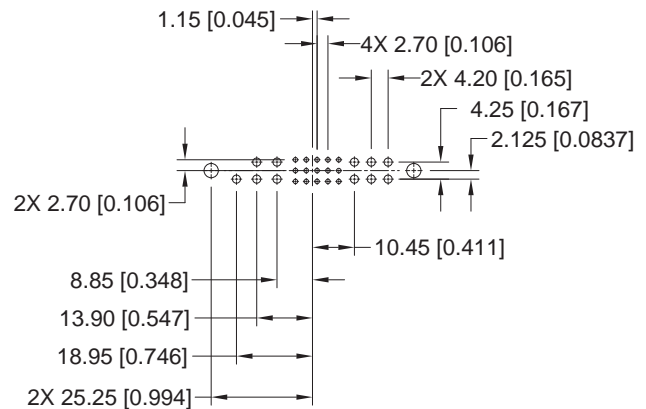
Compact
Power
Connectors

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIB26W11F300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

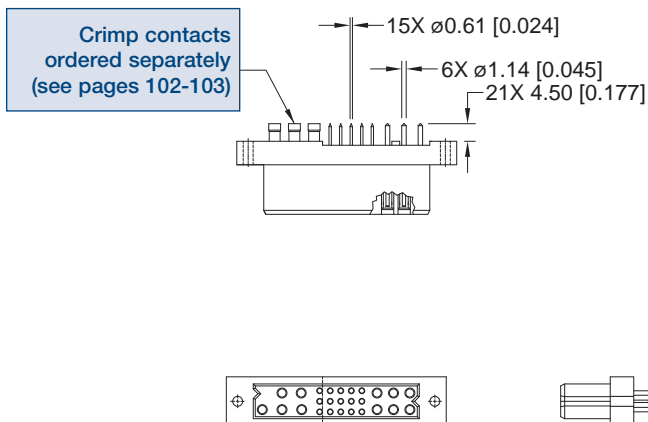
Note: See below for suggested printed board hole sizes.

FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*¹ -246.6

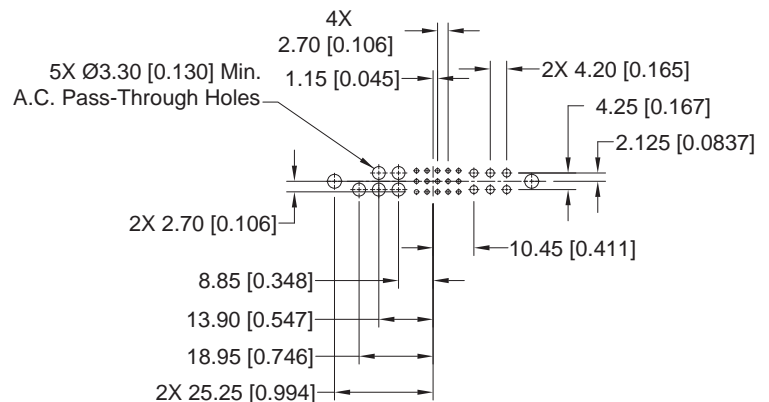
CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

LOW PROFILE PART NUMBER
PCIB26W11F300A1-246.6

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

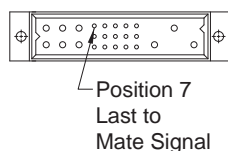
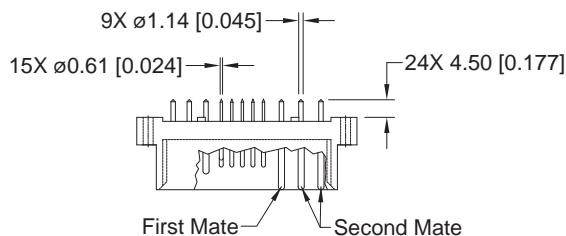
Suggest Ø1.00 [0.039] holes for size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

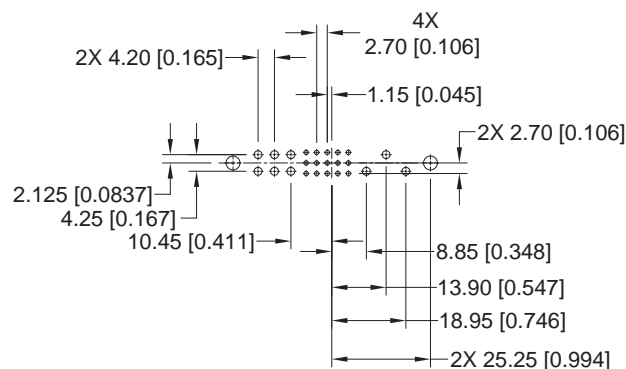
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIB24W9M300A1



CONNECTOR DIMENSIONS

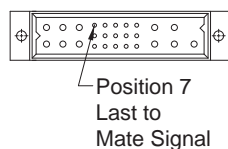
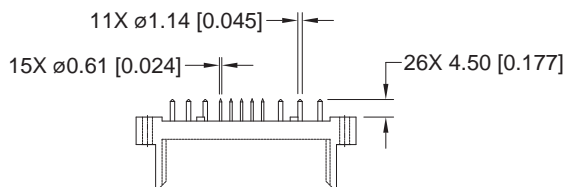


CONTACT HOLE PATTERN

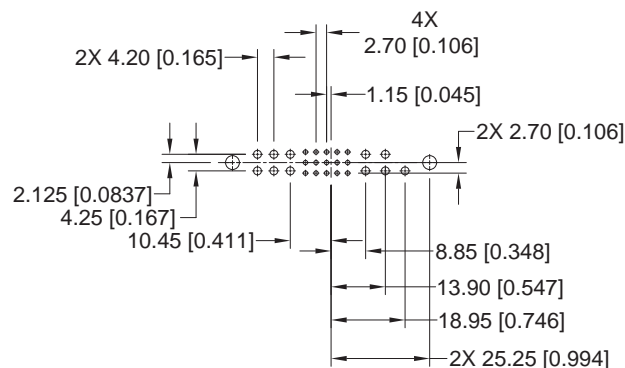
Note: See below for suggested printed board hole sizes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIB26W11M300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 22 contact holes.
Suggest Ø1.60 [0.063] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

STRAIGHT SOLDER CONNECTOR, MALE

Compact
Power
Connectors

MALE STRAIGHT SOLDER CONNECTOR WITH JACKSCREW SYSTEM

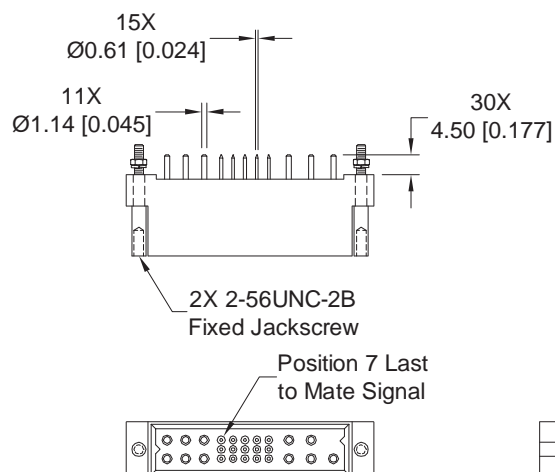
CODE 3 WITH MOS*¹ -444.0

OTHER JACKSCREW LENGTH OPTIONS AVAILABLE, CONTACT TECHNICAL SALES FOR DETAILS

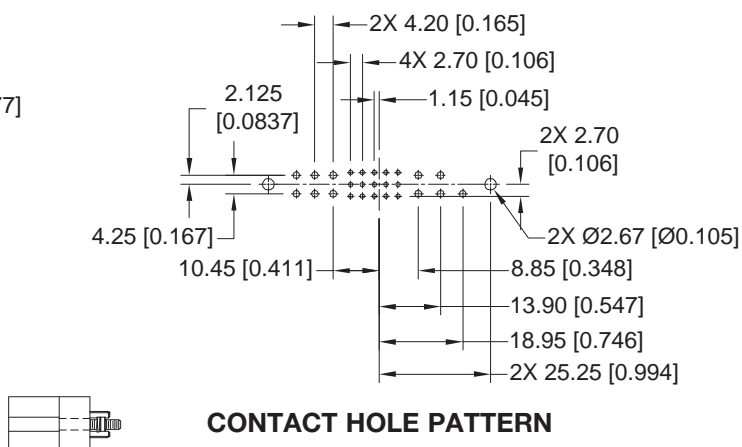
STANDARD PART NUMBER

PCIB26W11M300A1-444.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

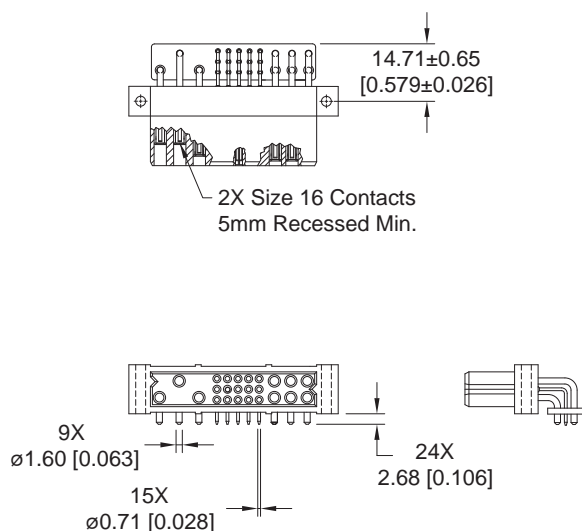
Suggest Ø1.00 [0.039] holes for size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

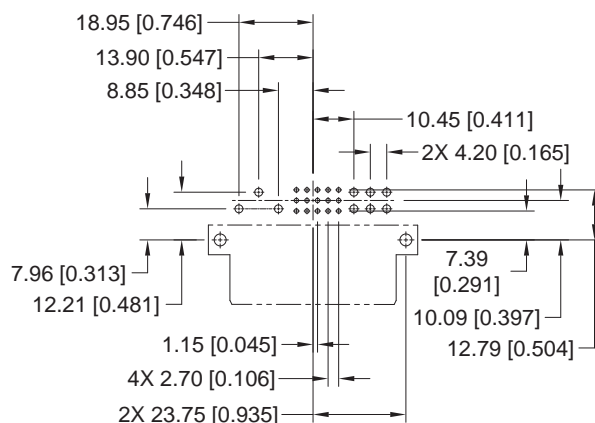
Suggest Ø2.67±0.08 [0.105±0.003] holes for connector mounting holes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIB24W9F400A1



CONNECTOR DIMENSIONS

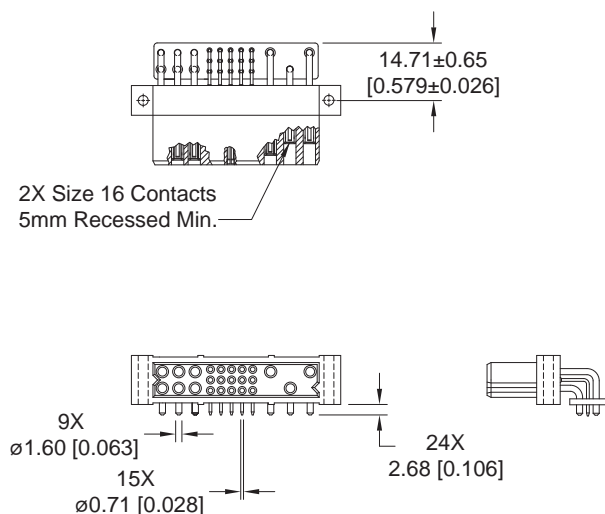


CONTACT HOLE PATTERN

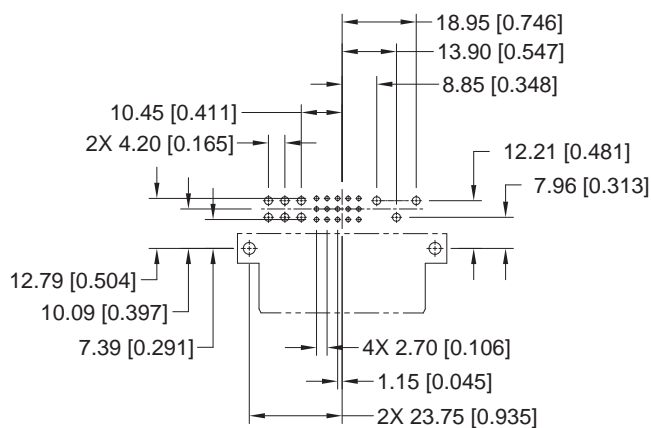
Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIB24W9RF400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

**DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.**



Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR WITH A.C. PASS-THROUGH CODE 4 WITH MOS*¹ -422.0

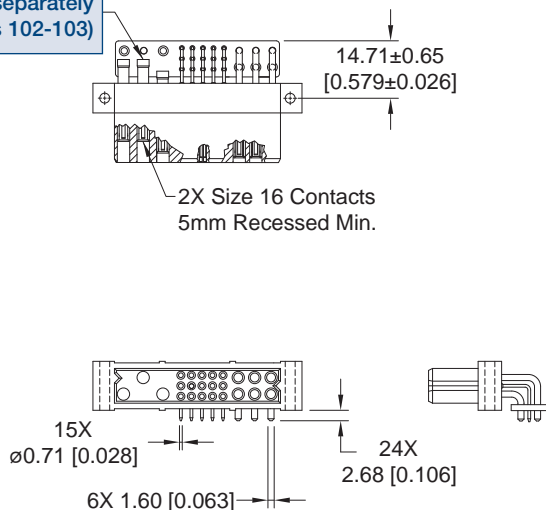
CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

LOW PROFILE PART NUMBER

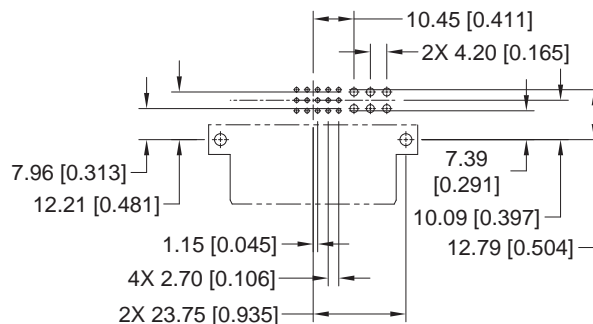
PCIB24W9F400A1-422.0

*¹ For MOS descriptions,
see chart on pages 107-108.

Crimp contacts
ordered separately
(see pages 102-103)



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

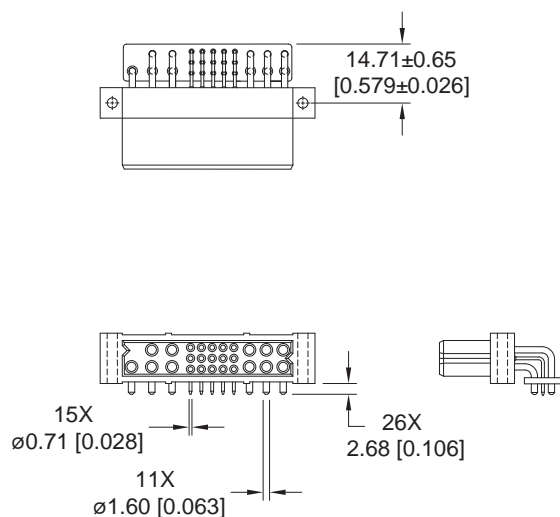
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

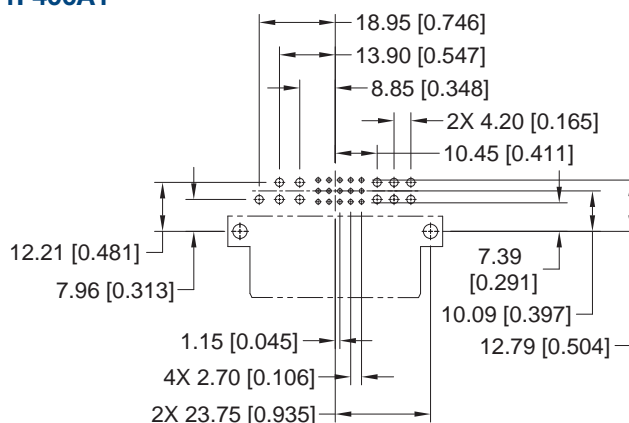
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIB26W11F400A1



CONNECTOR DIMENSIONS

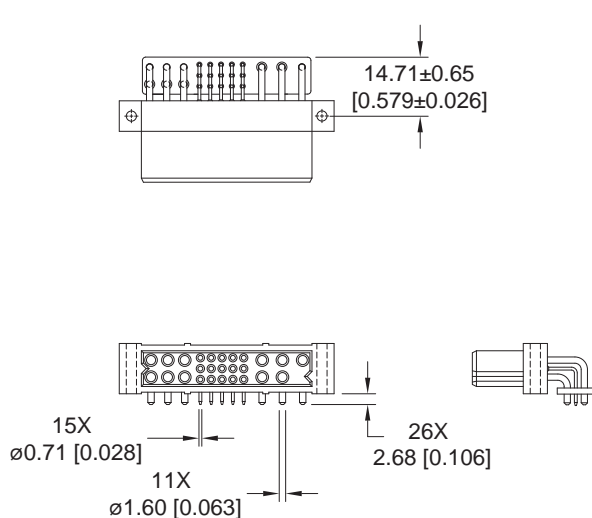


CONTACT HOLE PATTERN

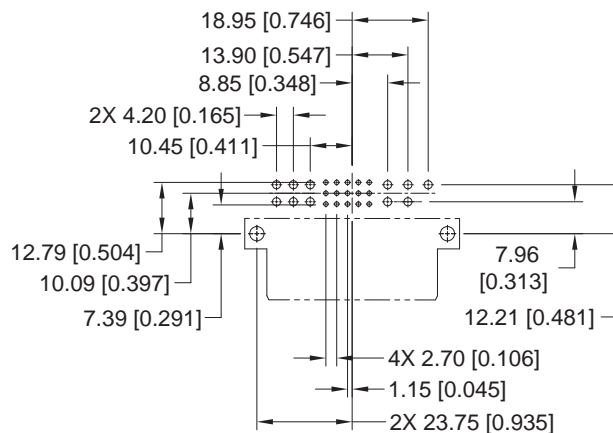
Note: See below for suggested printed board hole sizes.

FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIB26W11RF400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56 ± 0.08 [0.140 ± 0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



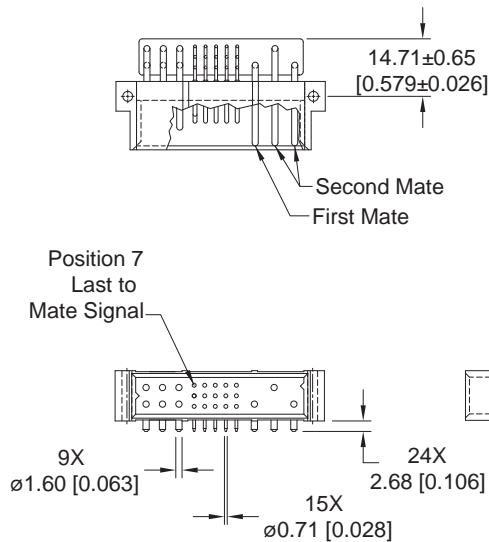
Positronic
connectpositronic.com

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, MALE

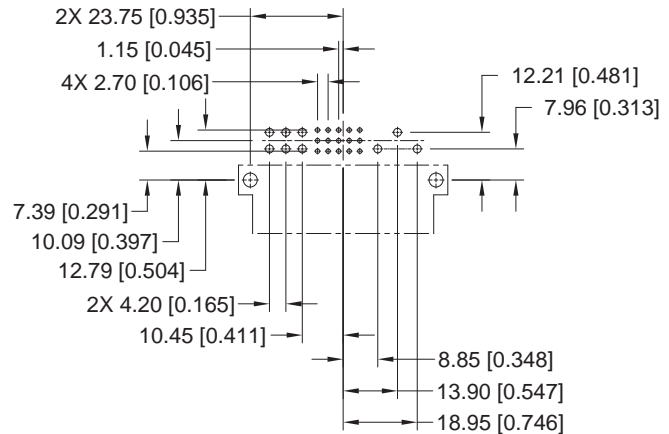
Compact
Power
Connectors

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIB24W9M400A1



CONNECTOR DIMENSIONS

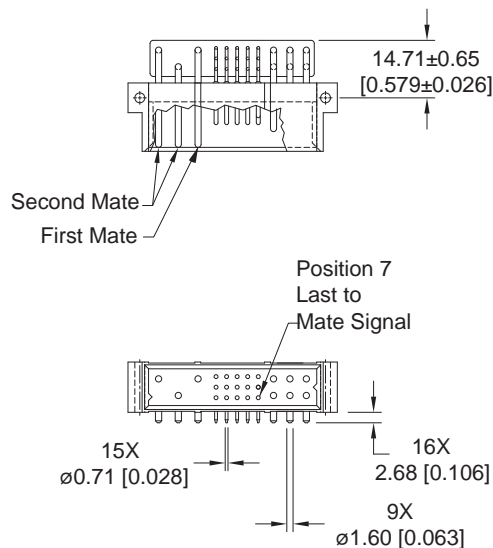


CONTACT HOLE PATTERN

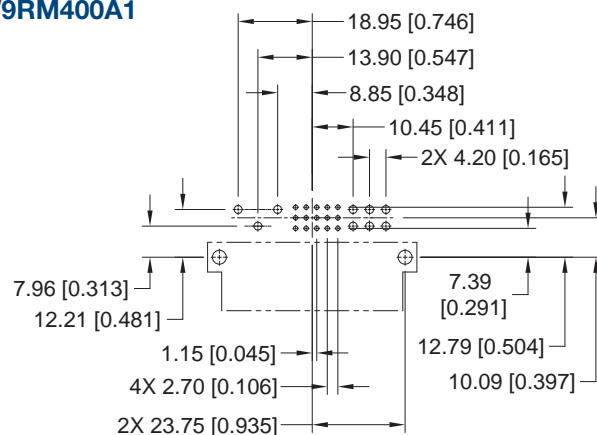
Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIB24W9RM400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

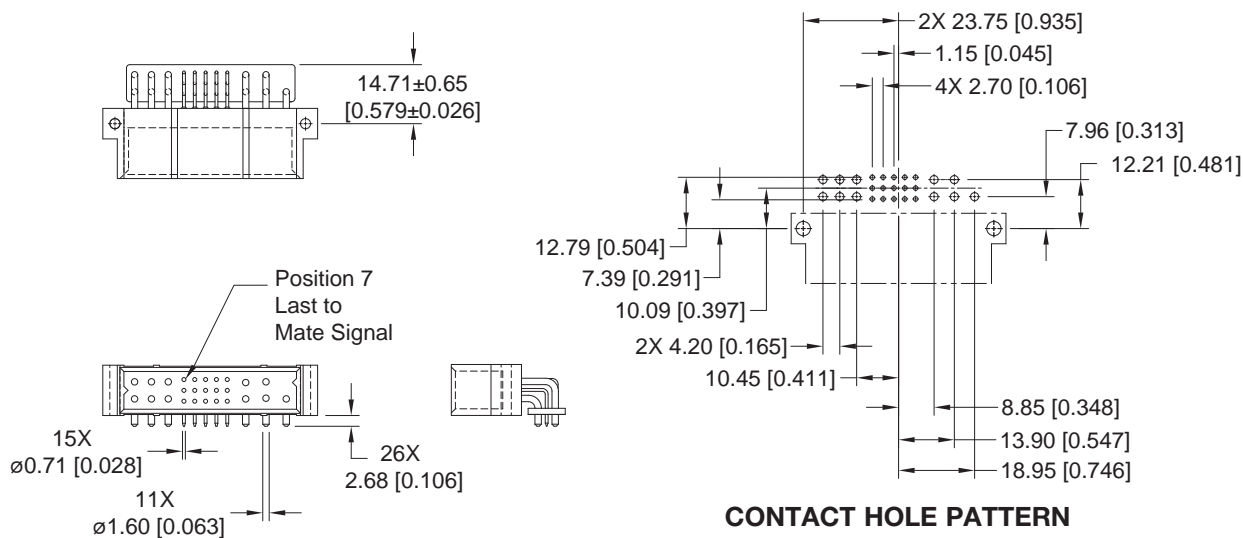
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER
PCIB26W11M400A1

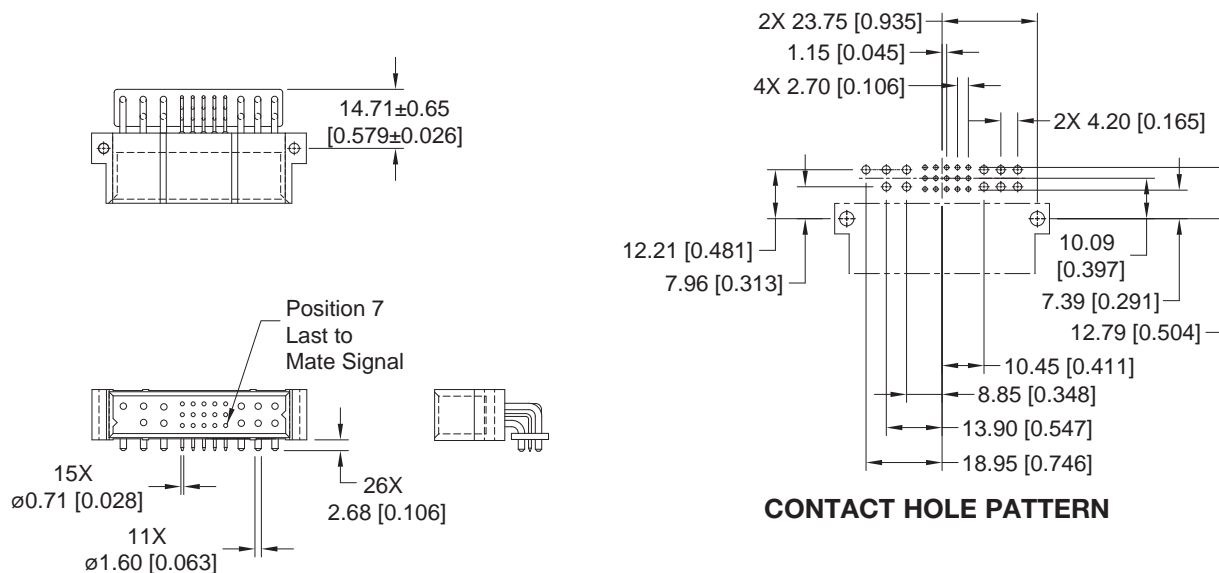


CONNECTOR DIMENSIONS

Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIB26W11RM400A1



CONNECTOR DIMENSIONS

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 1.14$ [0.045] holes for size 22 contact holes.
Suggest $\varnothing 2.03$ [0.080] holes for size 16 contact holes.
Suggest $\varnothing 3.56 \pm 0.08$ [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

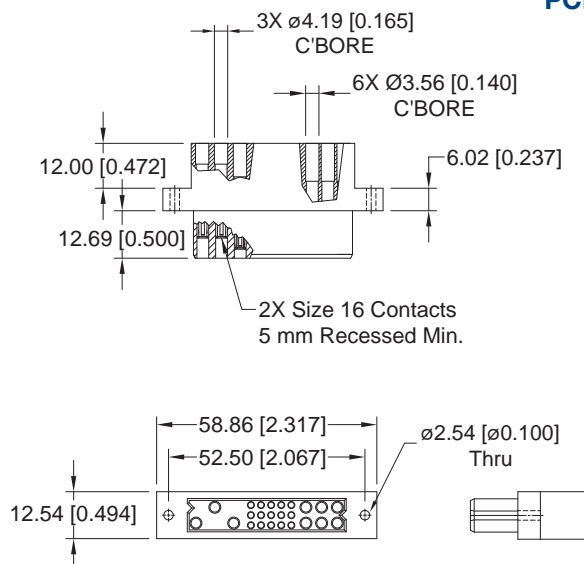
PANEL MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

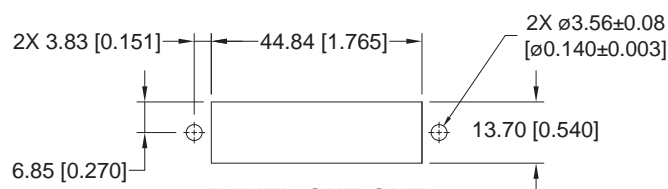
FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER
PCIB24W9F8000



CONNECTOR DIMENSIONS

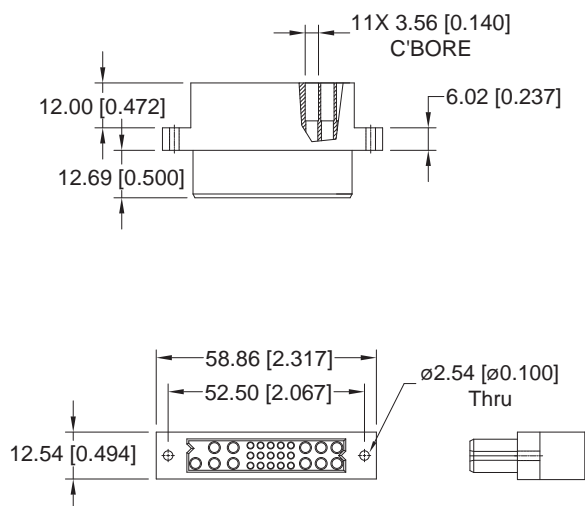


PANEL CUT OUT

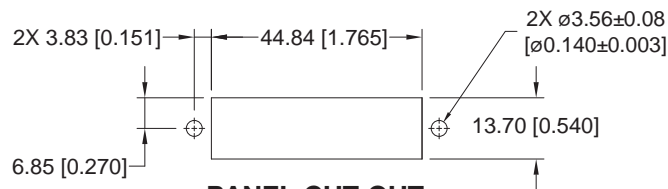
FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER
PCIB26W11F8000



CONNECTOR DIMENSIONS



PANEL CUT OUT

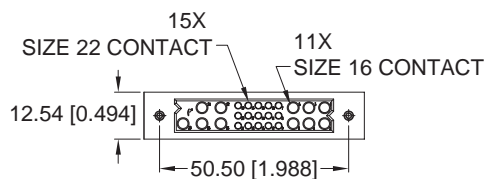
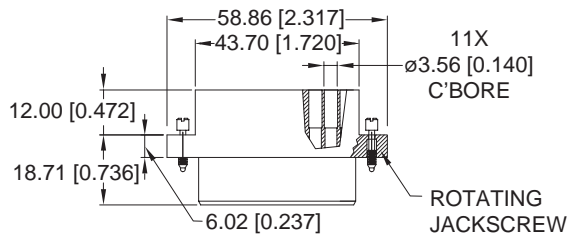
For information regarding removable contacts, see Removable Contact section, pages 102-103.

FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR WITH JACKSCREW SYSTEM CODE 8 WITH MOS*¹ -443.0

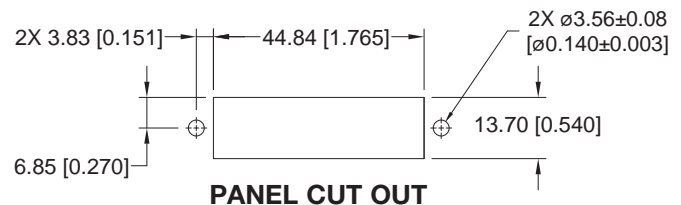
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER
PCIB26W11F8000-443.0

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



PANEL CUT OUT

For information regarding removable contacts, see Removable Contact section, pages 102-103.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

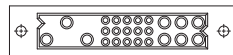
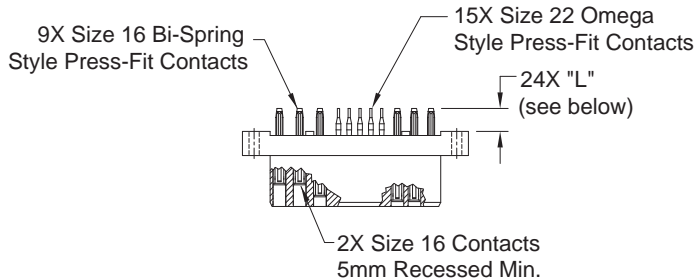
FEMALE COMPLIANT PRESS-FIT CONNECTORS CODE 93 or 94

STANDARD PART NUMBER

PCIB24W9F9300A1

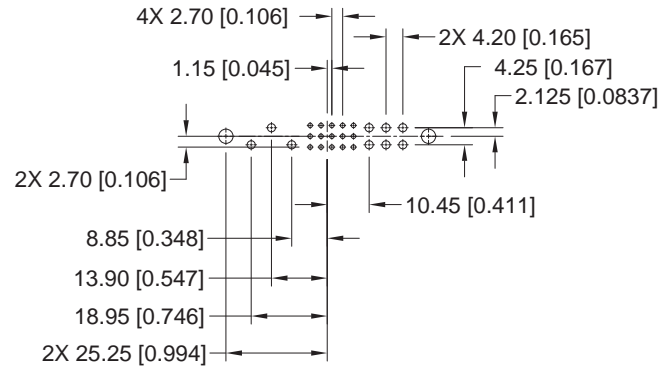
PCIB24W9F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

FEMALE COMPLIANT PRESS-FIT CONNECTORS WITH A.C. PASS-THROUGH CODE 93 OR 94 WITH MOS*1 -246.5

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

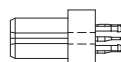
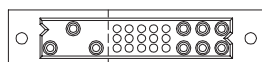
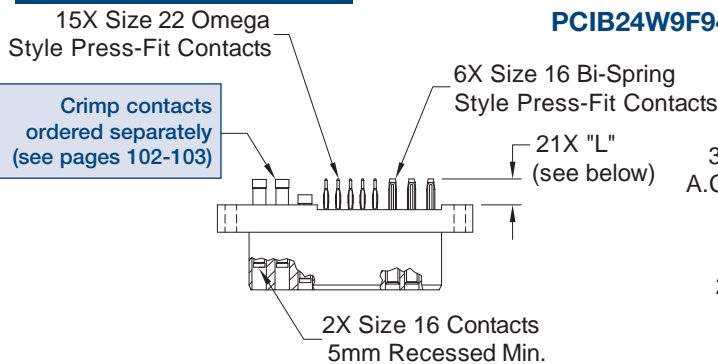
*1 For MOS descriptions, see chart on pages 107-108.

LOW PROFILE PART NUMBER

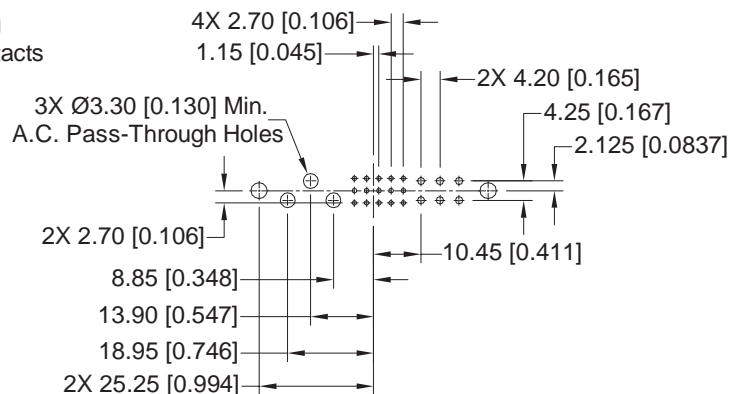
PCIB24W9F9300A1-246.5

PCIB24W9F9400A1-246.5

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

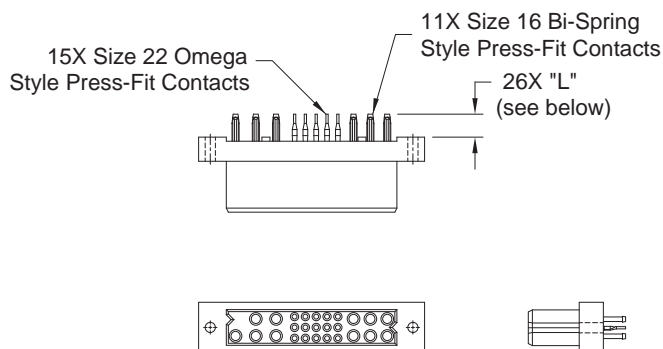
FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 or 94

STANDARD PART NUMBER

PCIB26W11F9300A1

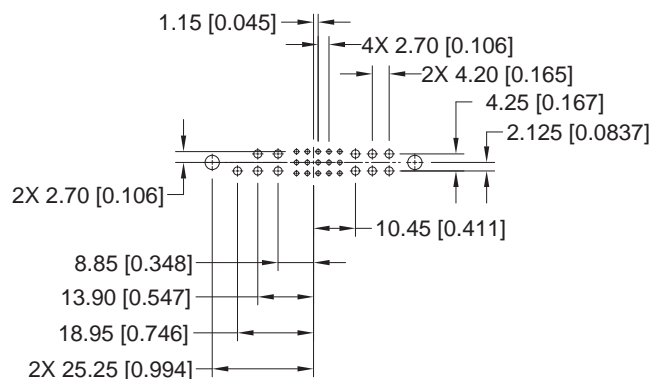
PCIB26W11F9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH CODE 93 or 94 WITH MOS*¹ -246.6

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

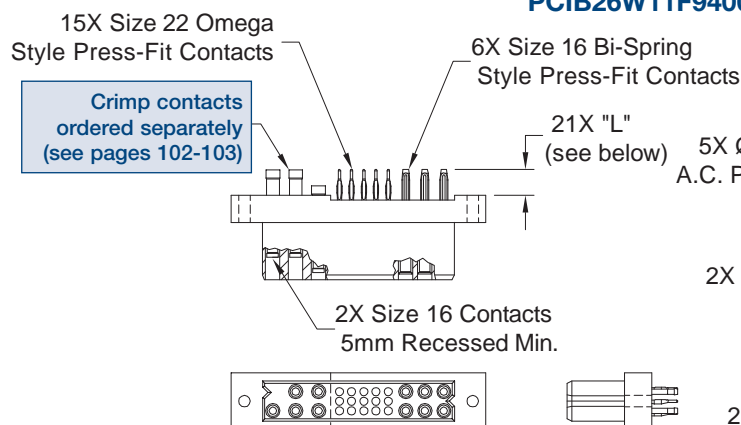
*¹ For MOS descriptions, see chart on pages 107-108.

LOW PROFILE PART NUMBER

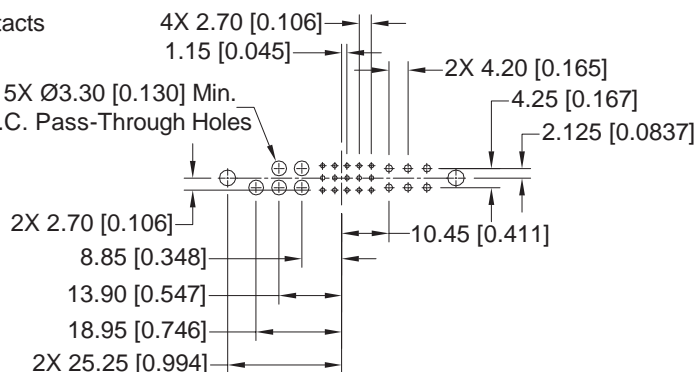
PCIB26W11F9300A1-246.6

PCIB26W11F9400A1-246.6

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, MALE

Compact
Power
Connectors

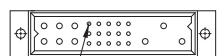
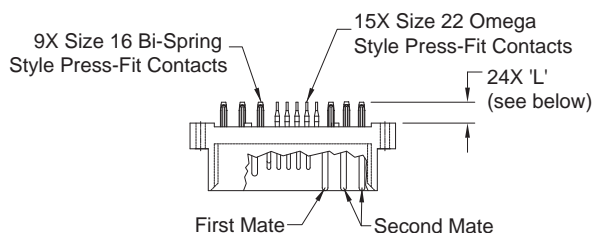
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 or 94

STANDARD PART NUMBER

PCIB24W9M9300A1

PCIB24W9M9400A1

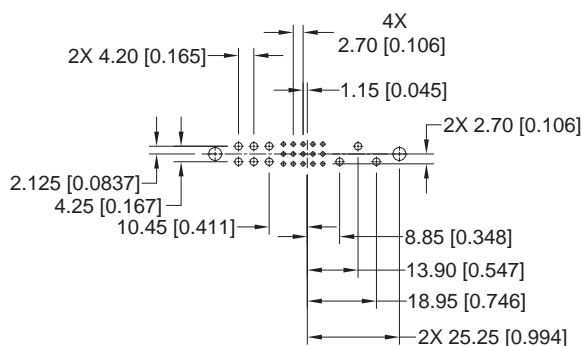
Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



Position 7 Last
to Mate Signal

CONNECTOR DIMENSIONS

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

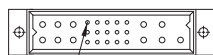
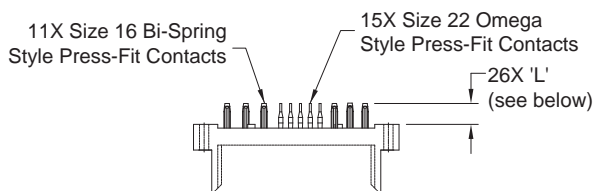
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 or 94

STANDARD PART NUMBER

PCIB26W11M9300A1

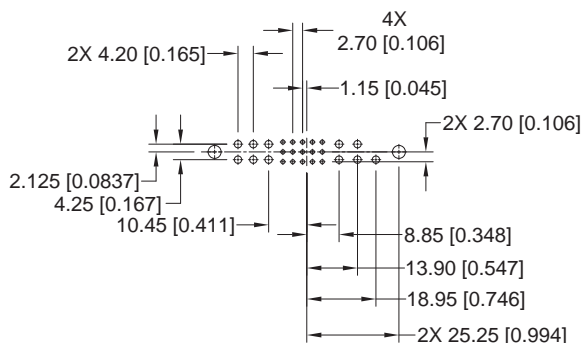
PCIB26W11M9400A1

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



Position 7
Last to Mate Signal

CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

MALE COMPLIANT PRESS-FIT CONNECTOR WITH JACKSCREW SYSTEM

CODE 93 OR 94 WITH MOS*¹ -444.0

OTHER JACKSCREW LENGTH OPTIONS AVAILABLE, CONTACT TECHNICAL SALES FOR DETAILS

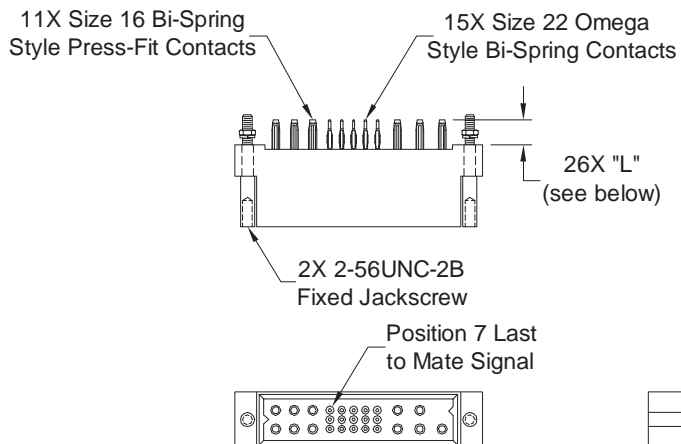
STANDARD PART NUMBER

PCIB26W11M9300A1-444.0

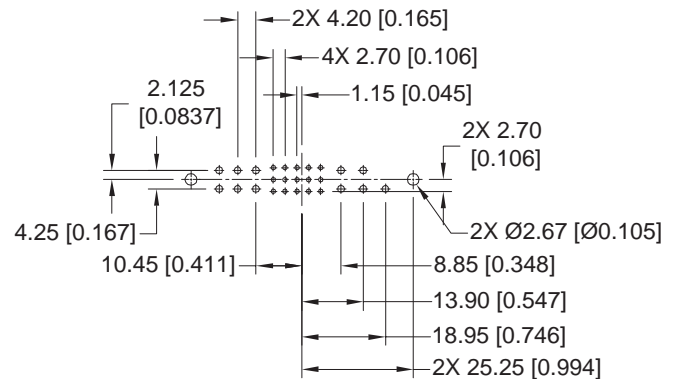
PCIB26W11M9400A1-444.0

*¹ For MOS descriptions,
see chart on pages 107-108.

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 2.67 \pm 0.08$ [0.105 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PCIB	26W11	F	93	0	0	A1	/AA	

STEP 1 - BASIC SERIES

PCIB - PCIB Series

STEP 2 - CONNECTOR VARIANTS

- 24W9 - 9 size 16 contacts and 15 size 22 contacts
- 24W9R - 9 size 16 contacts and 15 size 22 contacts. Inverted termination style, use with contact type "4"
- 26W11 - 11 size 16 contacts and 15 size 22 contacts
- 26W11R - 11 size 16 contacts and 15 size 22 contacts. Inverted termination style, use with contact type "4"

STEP 3 - CONNECTOR GENDER

- F - Female
- M - Male

STEP 4 - CONTACT TERMINATION TYPE

- 3 - Solder, Straight Printed Board Mount with 4.50 [0.177] tail extension for connection system 1.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 2.68 [0.106] tail extension for connection systems 1 and 4.
- 8 - Contacts must be ordered separately for Panel Mount Cable Connectors, connection system 3, see pages 102-103. Female connector only.
- 93 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection system 1.
- 94 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thickness of 4.45 minimum [0.175 minimum]. Connection system 1.

STEP 5 - MOUNTING STYLE

0 - Standard Option

See page 105 for mounting screw options.

STEP 6 - HOODS

0 - Not applicable

STEP 9 - SPECIAL OPTIONS

FOR LISTING OF SPECIAL OPTIONS,
SEE SPECIAL OPTIONS APPENDIX
ON PAGES 107-108.

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

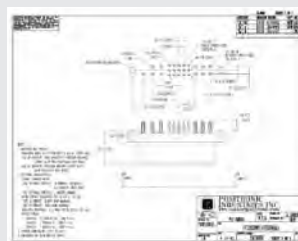
/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: PCIB26W11F9300A1

STEP 7 - CONTACT PLATING FOR PRINTED BOARD TYPE CONNECTORS

- 0 - Crimp contacts ordered separately
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing

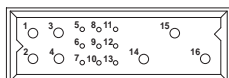


3D Model

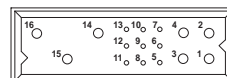
The PCIC Series encompasses all of the features of the PCIH Series in a **1U** package. Reliability, high current capacity and many system management connections make the PCIC Series ideal for use in telecom, computer, information systems and industrial applications.

PCIC SERIES CONTACT VARIANTS

FACE VIEW OF MALE AND REAR VIEW OF FEMALE

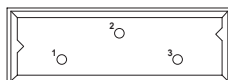


PCIC16W7 VARIANT



PCIC16W7R VARIANT (Inverted Termination)

7 Size 16 Power Contacts and 9 Size 22 Signal Contacts



PCIC3W3 VARIANT

CREEPAGE AND CLEARANCE FOR
HIGH VOLTAGE APPLICATIONS

3 Size 16 Power Contacts



Visit our website for the latest catalog updates and supplements at
www.connectpositronic.com/pci/catalog



Positronic
connectpositronic.com

TECHNICAL CHARACTERISTICS

Compact
Power
Connectors

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Size 16 contacts: High conductivity precision-machined copper alloy. Size 22 contacts: Precision-machined copper alloy.
Plating:	Gold flash over nickel. Other plating options available, refer to Step 7 on page 101.
Mounting Screws:	Steel, zinc plated.
Jackscrews:	Stainless steel, passivated.

ELECTRICAL CHARACTERISTICS:

PCIC Contact Current Ratings, per UL 1977

See *Temperature Rise Curves* on page 6 for details.

PCIC3W3:	
Size 16 Power Contacts:	32 amperes continuous, all contacts under load.
PCIC16W7:	
Size 16 Power Contacts:	
Positions 14, 15, and 16:	40 amperes continuous, all contacts under load.
Positions 1 through 4:	30 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	3 amperes nominal rating.
Initial Contact Resistance:	
Size 16 Contact:	0.0007 ohms maximum.
Size 22 Contact:	0.005 ohms maximum. Per IEC 60512-2, Test 2b.
Insulation Resistance:	5 G ohms per IEC 60512-2, Test 3a.
Voltage Proof:	
PCIC3W3:	
PCIC16W7:	
Contacts 14, 15, and 16:	3,000 V r.m.s.
Contacts 1 through 4:	1,500 V r.m.s.
Contacts 5 through 13:	1,000 V r.m.s.
Creepage and Clearance	
Distance; minimum:	
PCIC3W3:	
PCIC16W7:	
Contact 16 to Contact 14:	3.2mm [0.126 inch]
Contact 15 to Contact 14:	3.2mm [0.126 inch]
Contact 16 to Signal Contacts:	6.4mm [0.252 inch]
Contact 15 to Signal Contacts:	6.4mm [0.252 inch]
Contact 16 to Contact 15:	2.5mm [0.098 inch]
Contact 14 to Signal Contacts:	2.0mm [0.079 inch]
Working Voltage:	
PCIC3W3:	
PCIC16W7:	
Contacts 14, 15 and 16:	1,000 V r.m.s.
Contacts 1 through 4:	500 V r.m.s.
Contacts 5 through 13:	333 V r.m.s.

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Male and female connector bodies provide "lead-in" for 1.3mm [0.050 inch] diametral misalignment.
Polarization:	Provided by connector body design.

Removable Contacts:

Install contact from rear of insulator; release from front of insulator. Size 16 and 22 female contacts feature 0."Closed Entry" design for highest reliability.

Removable Contact Retention in Connector Body:

Size 16 Contacts:	67 N [15 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Fixed Contacts:

Printed board terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 22 feature rugged "Open Entry" contact design. "Closed Entry" contacts available, consult Technical Sales.

Fixed Contact Retention in Connector Body:

Size 16 Contacts:	45 N [10 lbs.]
Size 22 Contacts:	27 N [6 lbs.]

Resistance to Solder Heat:

260°C [500°F] for 10 seconds duration per IEC 60512-6, Test 12e, 25-watt soldering iron.

Sequential Contact Mating System:

PCIC16W7:	First mate contact 14 and last mate contact position 5.
------------------	---

Consult *Technical Sales* for customer specified sequential mating.

Safety "Recessed in Insulator" Contacts:

The following size 16 contacts are recessed 5mm [0.197 inch] below the face of the female connector insulator per safety requirements.
Contact positions 15 and 16.

PCIC16W7:

Compliant Terminations:

Size 16 and 22 contacts are available with compliant contact terminations. Average insertion and extraction forces of size 16 contacts are 22N (5 lbs.) per contact.

Printed Board Mounting:

Mounting holes provided in connector body for printed board mounting. Self-tapping screws are available.

Mechanical Operations:

250 couplings, minimum.

CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
-----------------------------	------------------

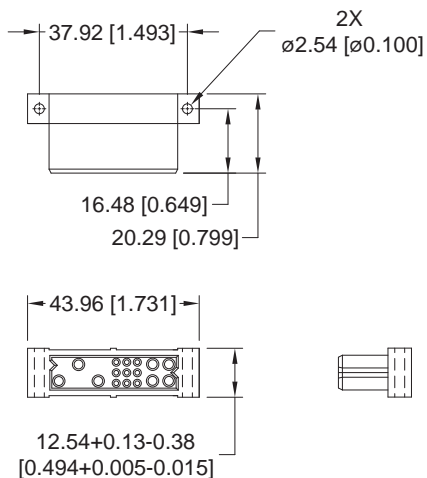
UL Recognized File #E49351^{*1}
CSA Recognized File #LR54219^{*1}

^{*1} UL and CSA recognition for PCIC3W3 is pending, consult Technical Sales.

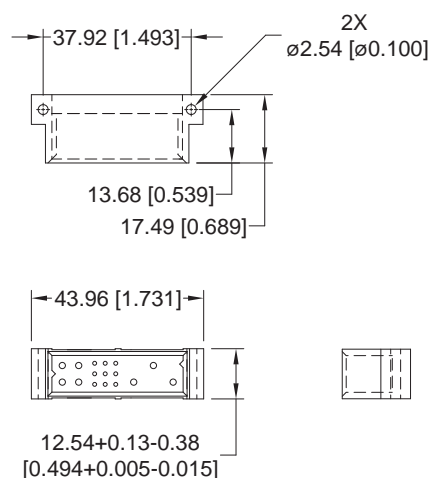
PCIC CONNECTOR OUTLINE DIMENSIONS

RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR

FEMALE CONNECTOR

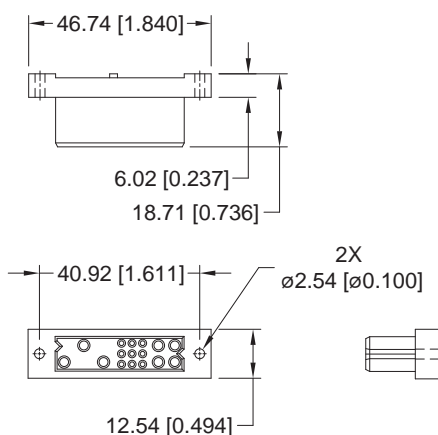


MALE CONNECTOR

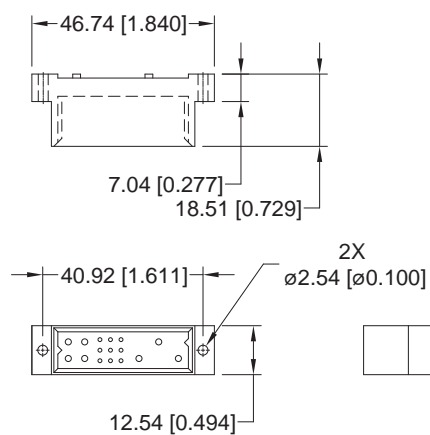


STRAIGHT BOARD MOUNT CONNECTOR

FEMALE CONNECTOR

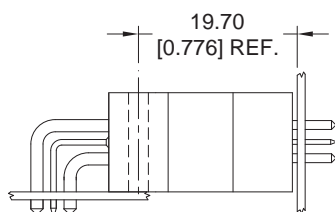


MALE CONNECTOR

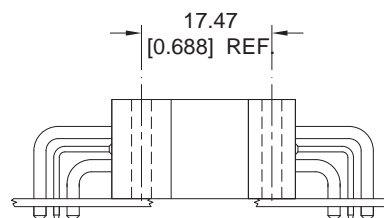


PCIC CONNECTOR MATING DIMENSIONS

(FULLY MATED)



Right Angle (90°) Board
Mount Male to Straight
Board Mount or Panel
Mount Female



Right Angle (90°)
Board Mount Male to
Right Angle (90°)
Board Mount Female



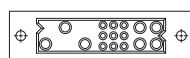
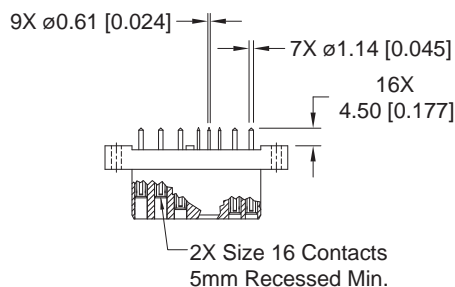
Positronic
connectpositronic.com

STRAIGHT SOLDER CONNECTOR, FEMALE

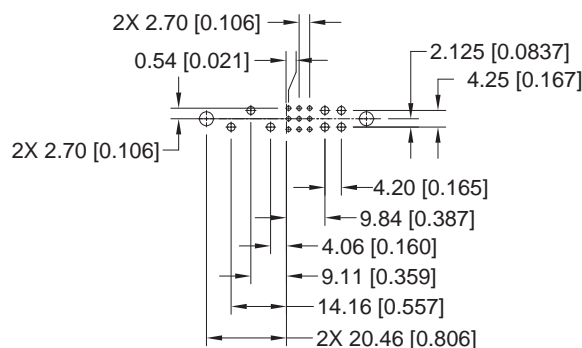
Compact
Power
Connectors

FEMALE STRAIGHT SOLDER CONNECTOR CODE 3

STANDARD PART NUMBER
PCIC16W7F300A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

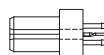
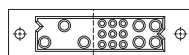
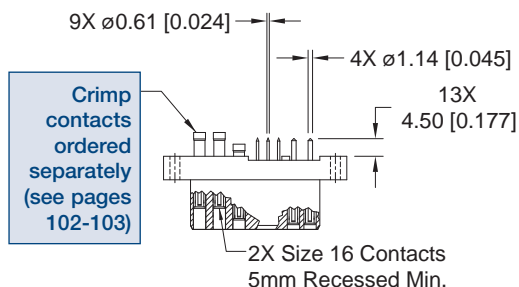
Note: See below for suggested printed board hole sizes.

FEMALE STRAIGHT SOLDER CONNECTOR WITH A.C. PASS-THROUGH CODE 3 WITH MOS*¹ -246.2

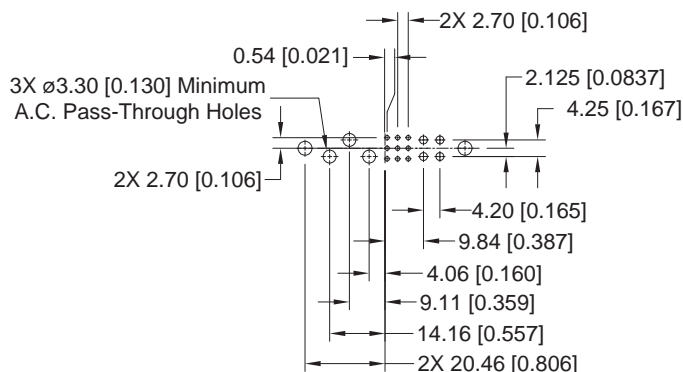
CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

LOW PROFILE PART NUMBER
PCIC16W7F300A1-246.2

*¹ For MOS descriptions,
see chart on pages 107-108.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

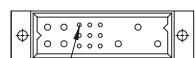
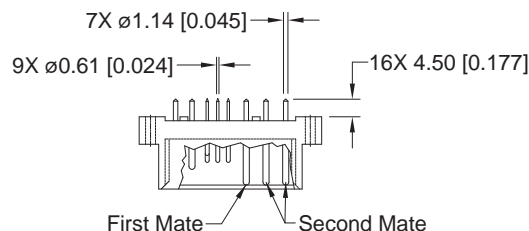
Suggest Ø1.00 [0.039] holes for size 22 contact holes.

Suggest Ø1.60 [0.063] holes for size 16 contact holes.

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE STRAIGHT SOLDER CONNECTOR CODE 3

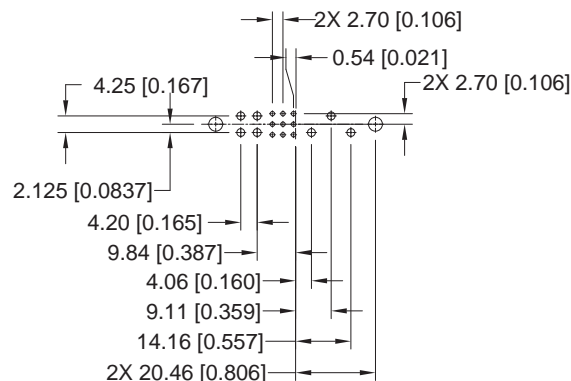
STANDARD PART NUMBER
PCIC16W7M300A1



Position 5
Last to
Mate Signal



CONNECTOR DIMENSIONS

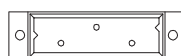
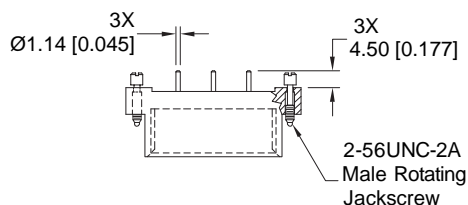


CONTACT HOLE PATTERN

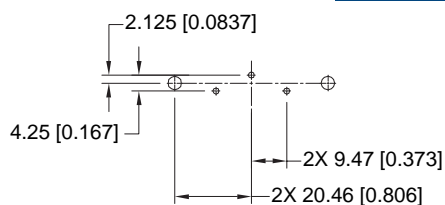
Note: See below for suggested printed board hole sizes.

MALE STRAIGHT SOLDER CONNECTOR WITH JACKSCREW SYSTEM CODE 3 WITH MOS^{*1} -443.2

STANDARD PART NUMBER
PCIC3W3M300A1-443.2



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

^{*1} For MOS descriptions,
see chart on pages 107-108.

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.00 [0.039] holes for size 22 contact holes.
Suggest Ø1.60 [0.063] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.



Positronic
connectpositronic.com

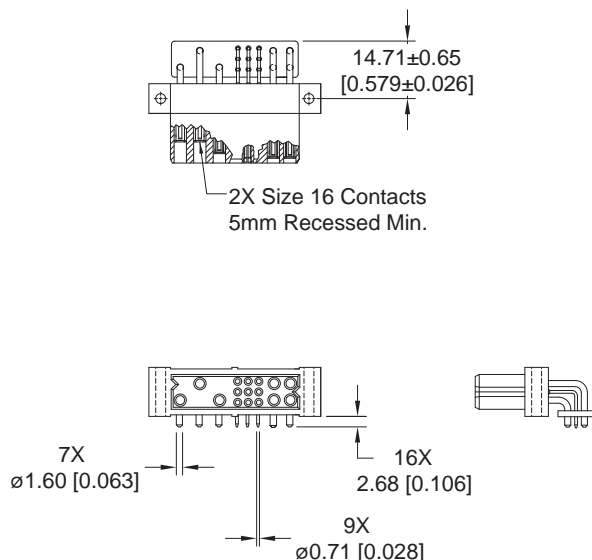
RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

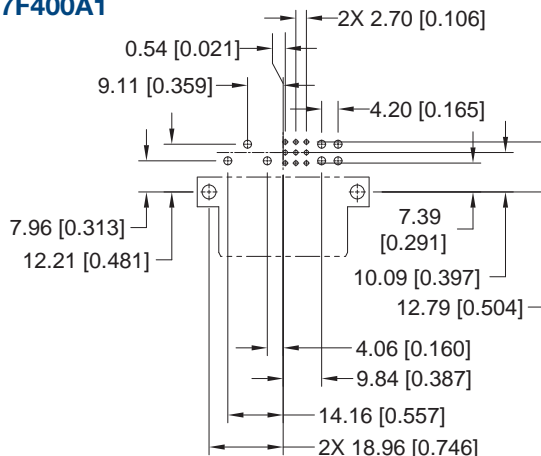
FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

STANDARD PART NUMBER

PCIC16W7F400A1



CONNECTOR DIMENSIONS



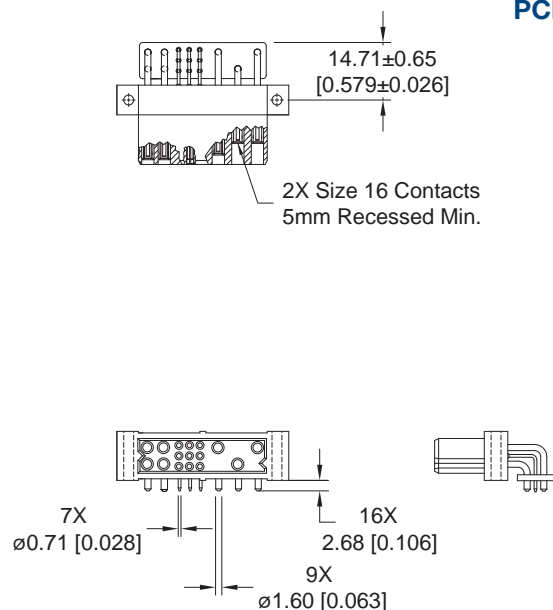
CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes.

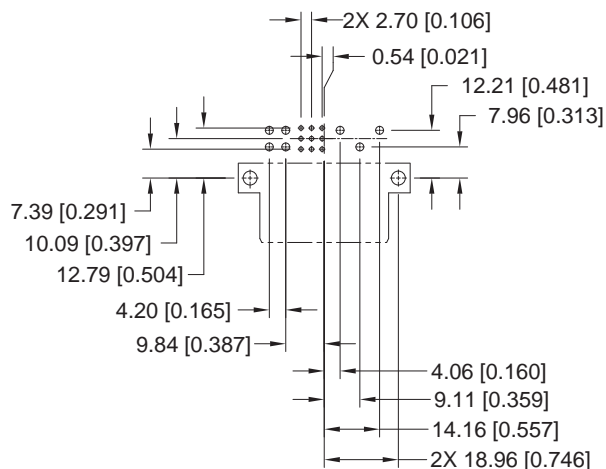
FEMALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR CODE 4

PART NUMBER FOR INVERTED TERMINATION

PCIC16W7RF400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

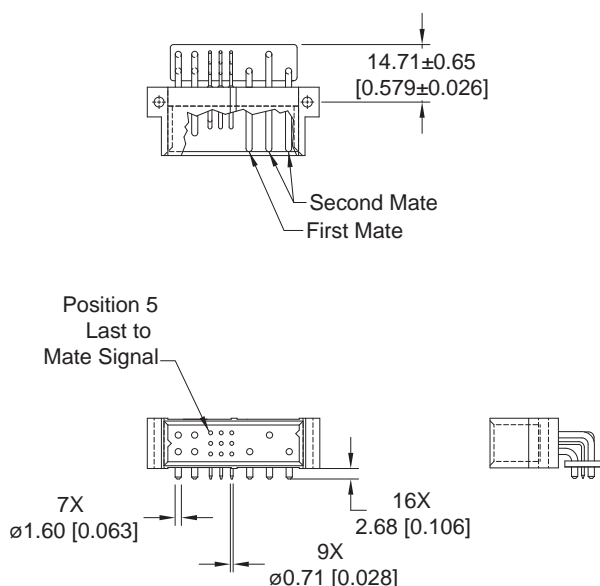
Suggest Ø1.14 [0.045] holes for size 22 contact holes.

Suggest Ø2.03 [0.080] holes for size 16 contact holes.

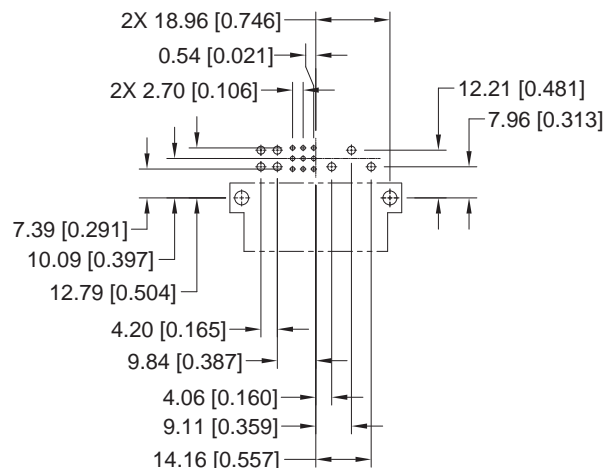
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4

STANDARD PART NUMBER
PCIC16W7M400A1



CONNECTOR DIMENSIONS

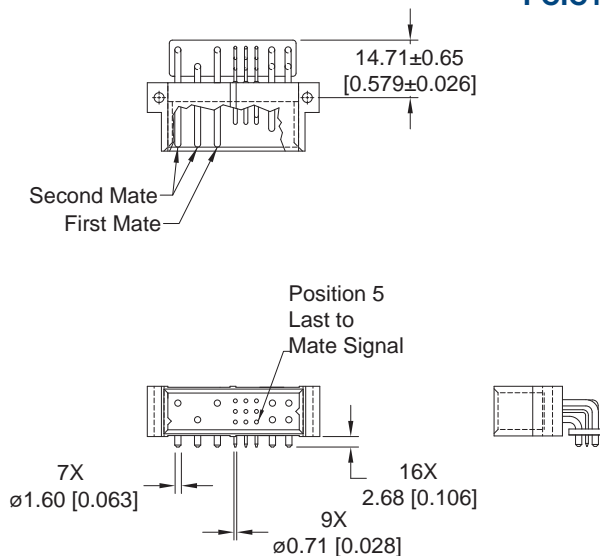


CONTACT HOLE PATTERN

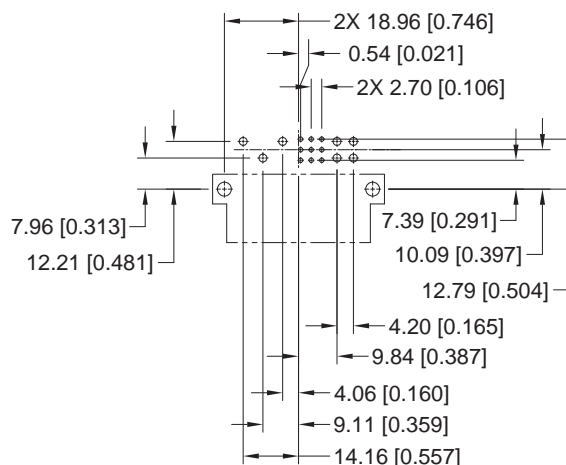
Note: See below for suggested printed board hole sizes.

MALE RIGHT ANGLE (90°) BOARD MOUNT CONNECTOR
CODE 4

PART NUMBER FOR INVERTED TERMINATION
PCIC16W7RM400A1



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø1.14 [0.045] holes for size 22 contact holes.
Suggest Ø2.03 [0.080] holes for size 16 contact holes.
Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



Positronic
connectpositronic.com

PANEL MOUNT CONNECTOR, FEMALE

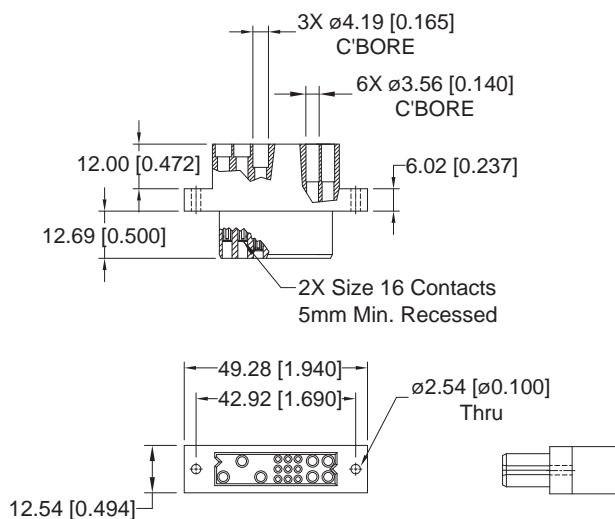
Compact
Power
Connectors

FEMALE PANEL MOUNT CRIMP CONTACT CONNECTOR CODE 8

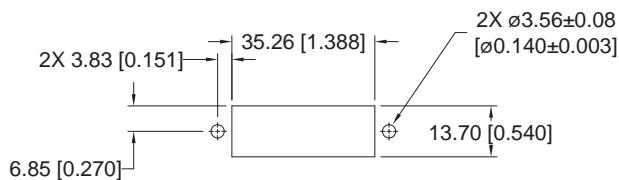
CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

STANDARD PART NUMBER

PCIC16W7F8000



CONNECTOR DIMENSIONS



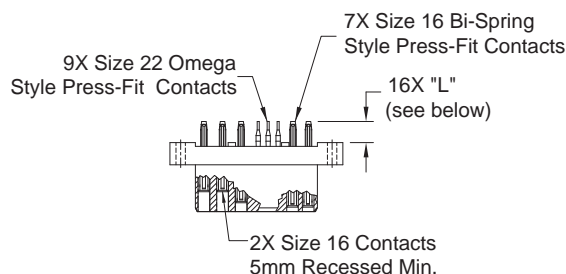
PANEL CUT OUT

For information regarding removable contacts, see Removable Contact section, pages 102-103.

FEMALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER
PCIC16W7F9300A1
PCIC16W7F9400A1

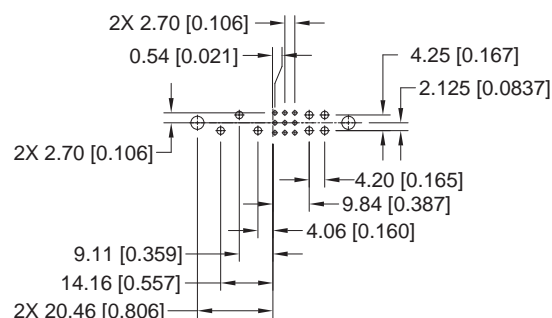
Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]



CONTACT HOLE PATTERN

Note: See below for suggested printed board hole sizes, press-fit connector installation tools, and mounting screw options.

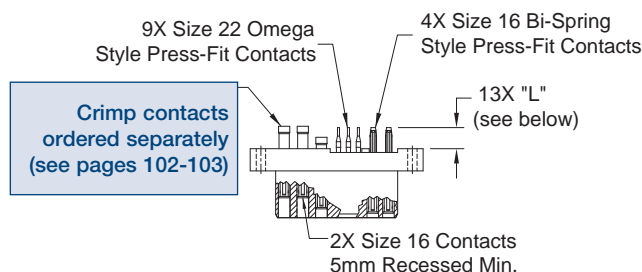
FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH A.C. PASS-THROUGH CODE 93 OR 94 WITH MOS*¹ -246.2

CRIMP CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY

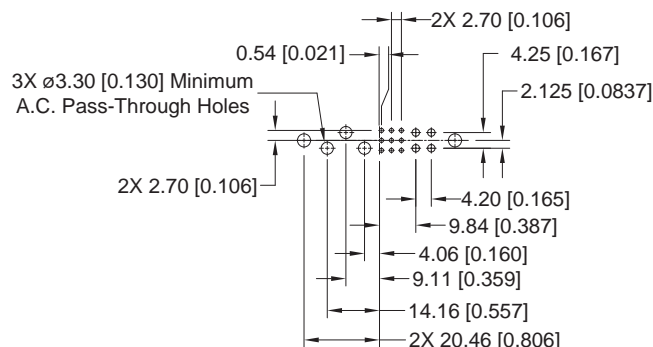
*¹ For MOS descriptions, see chart on pages 107-108.

LOW PROFILE PART NUMBER
PCIC16W7F9300A1-246.2
PCIC16W7F9400A1-246.2

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONNECTOR DIMENSIONS



CONTACT HOLE PATTERN

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø3.56±0.08 [0.140±0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

CONTACT TAIL LENGTH

Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 98



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT BOARD MOUNT CONNECTOR, FEMALE

Compact
Power
Connectors

FEMALE COMPLIANT PRESS-FIT CONNECTOR WITH JACKSCREW SYSTEM CODE 93 OR 94 WITH MOS^{*1} -444.2

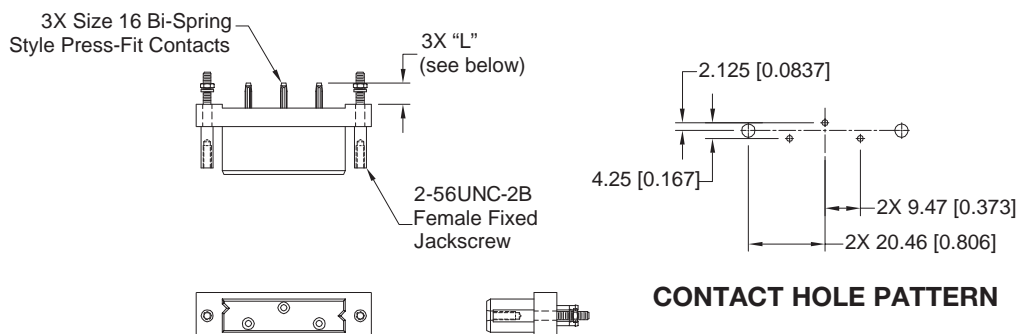
STANDARD PART NUMBER

PCIC3W3F9300A1-444.2

PCIC3W3F9400A1-444.2

^{*1} For MOS descriptions,
see chart on pages 107-108.

Positronic **recommends** the practice
of using **mounting hardware** to secure
connector to printed circuit board.



CONNECTOR DIMENSIONS

CONTACT HOLE PATTERN

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 2.67 \pm 0.08$ [0.105 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.

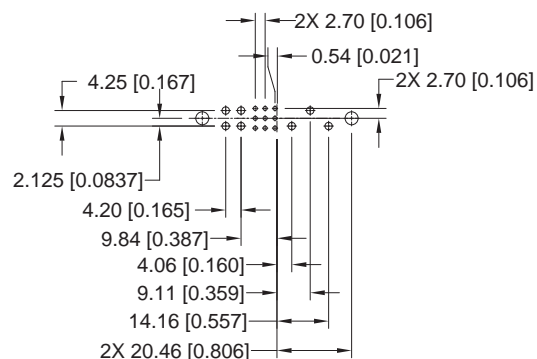
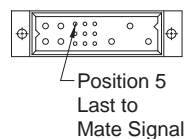
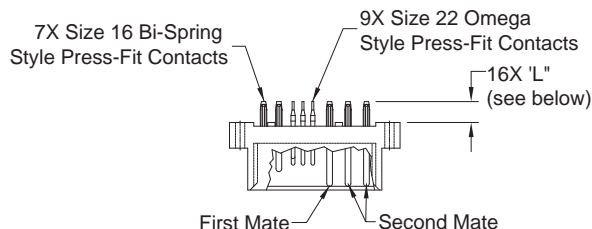
MALE COMPLIANT PRESS-FIT CONNECTOR CODE 93 OR 94

STANDARD PART NUMBER

PCIC16W7M9300A1

PCIC16W7M9400A11

Positronic **recommends** the practice of using **mounting hardware** to secure connector to printed circuit board.



CONTACT HOLE PATTERN

CONNECTOR DIMENSIONS

CONTACT TAIL LENGTH		
Code	"L" Length	Board Thickness
93	5.72 [0.225]	2.29 to 4.45 [0.090 to 0.175]
94	7.04 [0.277]	4.45 min. [0.175 min.]

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest $\varnothing 3.56 \pm 0.08$ [0.140 \pm 0.003] holes for connector mounting holes.

NOTE: See page 105 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 105-106.

For mounting screw options, see page 105.



Positronic
connectpositronic.com

PCIC ORDERING INFORMATION

Compact
Power
Connectors

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	PCIC	16W7	F	93	0	0	A1	/AA	

STEP 1 - BASIC SERIES

PCIC - PCIC Series

STEP 2 - CONNECTOR VARIANTS

16W7 - 7 size 16 contacts and 9 size 22 contacts

16W7R - 7 size 16 contacts and 9 size 22 contacts. Inverted termination style, use with contact type "4".

*13W3 - 3 size 16 contacts

STEP 3 - CONNECTOR GENDER

F - Female
M - Male

STEP 4 - CONTACT TERMINATION TYPE

- 3 - Solder, Straight Printed Board Mount with 4.50 [0.177] tail extension for connection systems 1 and 2.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 2.68 [0.106] tail extension for connection systems 1 and 4.
- 8 - Contacts must be ordered separately for Panel Mount Cable Connectors, connection system 3, see pages 102-103. Female connector only.
- 93 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection system 1.
- 94 - Press-Fit, Compliant Termination size 16 and size 22 Straight Printed Board Mount for use with board thickness of 4.45 minimum [0.175 minimum]. Connection systems 1 and 2.

STEP 5 - MOUNTING STYLE

0 - Standard Option

See page 105 for mounting screw options.

STEP 6 - HOODS

0 - Not applicable

*1 PCIC3W3 variant only available in these part numbers: PCIC3W3F9300A1-444.2 and PCIC3W3M300A1-443.2. Consult Technical Sales for other options to this variant.

STEP 9 - SPECIAL OPTIONS

FOR LISTING OF SPECIAL OPTIONS,
SEE SPECIAL OPTIONS APPENDIX ON
PAGES 107-108.

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

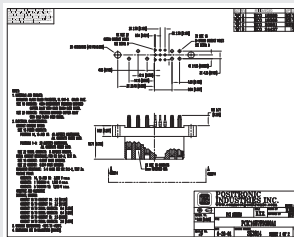
/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: PCIC16W7F9300A1

STEP 7 - CONTACT PLATING FOR PRINTED BOARD TYPE CONNECTORS

- 0 - Crimp contacts ordered separately
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.
- D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 or code 94 in step 4.

NOTE: If you would like a 2D drawing or 3D model, once you've made your connector selection, please visit www.connectpositronic.com. If you can't find your specific part number on our web site, contact Technical Sales to have one created.



2D Drawing



3D Model

REMOVABLE CONTACT TECHNICAL CHARACTERISTICS

SIZE 22 REMOVABLE CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of insulator, release from front face of insulator. Female contact feature "Closed Entry" design for highest reliability.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 3 amperes nominal.
Initial Contact Resistance: 0.005 ohms max. per IEC 60512-2, test 2b.

SIZE 20 REMOVABLE CONTACT

MATERIALS AND FINISHES:

Precision machined copper alloy with gold flash over nickel. Other finishes are available, see optional finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of insulator, release from front face of insulator. Female contact feature "Closed Entry" design for highest reliability.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes nominal.
Initial Contact Resistance: 0.004 ohms max. per IEC 60512-2, test 2b.

SIZE 16 REMOVABLE CONTACT

MATERIALS AND FINISHES:

HIGH CONDUCTIVITY:

Tellurium copper, gold flash over nickel. Other finishes are available, see optional plating finishes for -14 and -15.

MECHANICAL CHARACTERISTICS:

Insert contact to rear face of insulator, release from front face of insulator. Female contact feature "Closed Entry" design for highest reliability.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

See Size 16 contact current ratings for individual variants:

PCIH - refer to page 13
PCIA - refer to page 38
PCIM - refer to pages 47-48
PCIB - refer to page 72
PCIC - refer to page 91

Initial Contact Resistance: 0.0007 ohms max. per IEC 60512-2, test 2b.

OPTIONAL PLATING FINISHES

-14 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. *Example:* FC720N2-14.
-15 0.000050 inch [1.27µ] gold over nickel by adding "-15". *Example:* FC720N2-15.

RoHS OPTIONS:

/AA

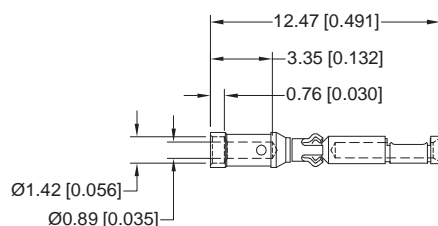
Environmental Compliance Option: RoHS compliant can be achieved by adding "/AA" suffix onto part number. *Examples:* FC720N2/AA or for optional finishes use FC720N2/AA-14.

REMOVABLE CRIMP CONTACT

FOR USE WITH PCIH, PCIA, PCIM, PCIB & PCIC SERIES PANEL MOUNT VERSION
CONTACTS MUST BE ORDERED SEPARATELY

SIZE 22

FEMALE CONTACT "CLOSED ENTRY" DESIGN



Part Number: FC422N8
Wire size 0.3 mm² [22 AWG]



Authentic Positronic®
PosiBand®

These contacts utilize authentic Positronic PosiBand® technology.
Protected by U.S. Patent 7,115,002

What makes Positronic's new PosiBand® contact interface a significant improvement?

- Higher reliability in harsh environments and repeated mating cycles, and durability in blind mate applications
- More stable price over time
- No need to anneal PosiBand contacts eliminating possibility of incorrect annealing causing reliability problems on the mating end of the contact
- PosiBand is protected by US Patent 7,115,002

For more information on PosiBand contacts, please contact Technical Sales.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 104-106.



Positronic
connectpositronic.com

REMOVABLE CONTACTS

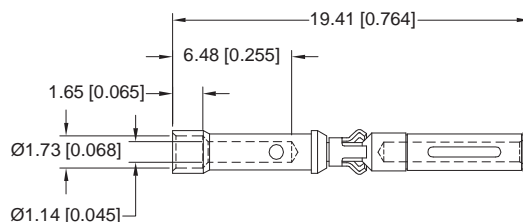
Compact
Power
Connectors

REMOVABLE CRIMP CONTACT

FOR USE WITH PCIH SERIES PANEL MOUNT VERSION
CONTACTS MUST BE ORDERED SEPARATELY
SIZE 20

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



Part Number: FC720N2

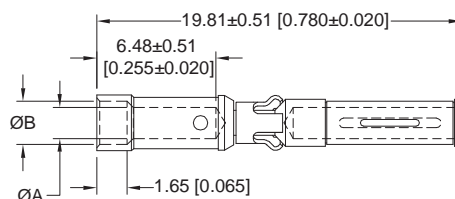
Wire size 0.5-0.3-0.25 mm² [20-22-24 AWG]

REMOVABLE CRIMP CONTACT

FOR USE WITH A.C. PASS-THROUGH AND PANEL MOUNT VERSIONS
FOR PCIH, PCIA, PCIM, PCIB & PCIC SERIES CONNECTORS
CONTACTS MUST BE ORDERED SEPARATELY
SIZE 16

FEMALE CONTACT ^{*1}

"CLOSED ENTRY" DESIGN, L.S.A.



"S" in
part number
indicates high
conductivity
material.

PART NUMBER	WIRE SIZE mm ² [AWG]	ØA	ØB
FC112N2S-1565.0	4.0 / [12]	2.49 [0.098]	n/a
To maintain current rating, FC112N2S-1565.0 must be used			
FC114N2-1565.0	2.5-1.5 / [14-16]	2.06 [0.081]	2.67 [0.105]
FC116N2-1565.0	1.5-1.0 / [16-18]	1.70 [0.067]	2.36 [0.093]
FC120N2-1565.0	0.5-0.3-0.25 / [20-22-24]	1.14 [0.045]	1.73 [0.068]

These contact options
do not feature high conductivity
material and
are for use with smaller
than 12 awg wire. Contact
resistance is 0.0016 ohms
max. per IEC 60512-2, test 2b.

NOTE: ^{*1} Female contacts feature Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contact and reduced contact resistance during operation.

For information regarding crimp tool and crimping tool techniques, see Application Tools section, pages 104-106.

APPLICATION TOOLS SECTION

*PCIH / PCIA / PCIM / PCIB / PCIC connectors are offered with **removable crimp contacts**. Positronic recognizes the **importance of supplying application tooling** to support our customers' use of our products.*

Information on application tooling is

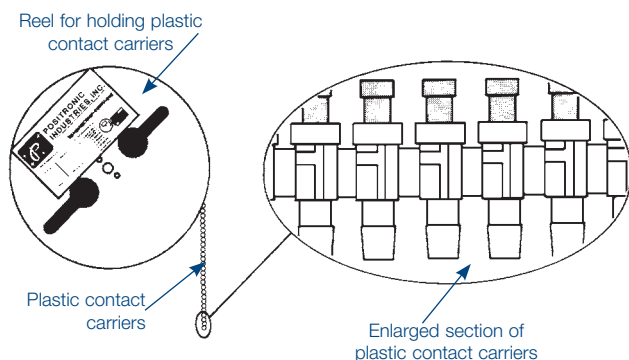
***available** on our web site at*

www.connectpositronic.com/design-tools/tooling

*There you will find **downloadable PDF** cross reference charts for removable and compliant press-fit contacts. These charts will **supply part numbers** for insertion, removal and crimping tools, along with **information regarding use** of tools and techniques.*



CONTACT REELS FOR AUTOMATIC PNEUMATIC CRIMP TOOLS



Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part numbers 9550-0-0-0 and 9550-1-0-0; packaged in reels holding 1,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9555-0-2-0. The same type carrier is used for both male and female contacts.

All female crimp contacts can be ordered in reels by adding letter "R" after the contact part number, such as FC720N2R for a female contact.



Positronic
connectpositronic.com

COMPLIANT PRESS-FIT CONNECTORS PRINTED BOARD HOLE SIZES AND MOUNTING SCREWS

Compact
Power
Connectors

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

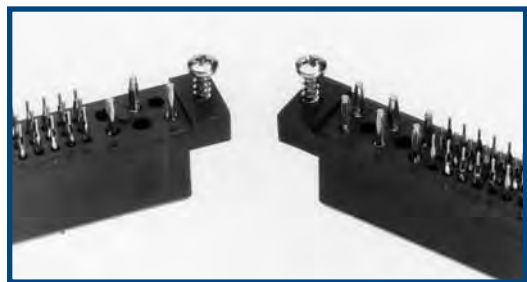
Traditionally, tin-lead has been a popular plating for printed circuit board (PCB) holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA & BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE / TYPE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	22 OMEGA	$\phi 1.150 \pm 0.025$ [$\phi 0.0453 \pm 0.0010$]	15 μ [0.0006] minimum solder over 25 μ [0.0010] min. copper	$\phi 1.000 \pm 0.090 - 0.060$ [$\phi 0.0394 \pm 0.0035 - 0.0024$]
	20 OMEGA	$\phi 1.150 \pm 0.025$ [$\phi 0.0453 \pm 0.0010$]		$\phi 1.000 \pm 0.090 - 0.060$ [$\phi 0.0394 \pm 0.0035 - 0.0024$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]		$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION TIN PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.85 $\pm 0.15\mu$ [0.000033 ± 0.000006] immersion tin over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]		$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION SILVER PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.34 $\pm 0.17\mu$ [0.000013 ± 0.000007] immersion silver over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]		$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.05 μ [0.000002] min. immersion gold over 4.5 $\pm 1.5\mu$ [0.000177 ± 0.000059] electroless nickel per IPC-4552 over 25 μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	20 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]		$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]

Note: The PCIH38 variant contains size 16 and size 20 contacts. All other variants contain size 16 and size 22 contacts.

MOUNTING SCREWS

Stresses that occur during coupling and uncoupling of power supplies or through shock and vibration of systems can be transferred to backplanes or printed circuit boards through press-fit connector terminations. Avoid concern over electrical integrity of the connector to board interface by using mounting screws. Bellcore GR1217 details a preference for the use of mounting hardware and we recommend this practice.



ORDERING INFORMATION	
SCREW PART NUMBER	THREAD LENGTH
A2076-16-1-16	$7.92 \pm 0.00 - 0.76$ [0.312 $\pm 0.000 - 0.030$]
A2076-16-2-16	$9.53 \pm 0.00 - 0.76$ [0.375 $\pm 0.000 - 0.030$]
A2076-16-3-16	$11.10 \pm 0.00 - 0.76$ [0.437 $\pm 0.000 - 0.030$]
A2076-16-4-16	$12.70 \pm 0.00 - 0.76$ [0.500 $\pm 0.000 - 0.030$]

SCREWS ARE #4 SELF-TAPPING
FOR PLASTIC

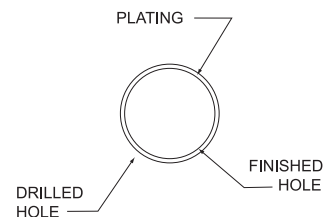
"Omega" Termination

utilized on signal contacts



"Bi-Spring" Termination

utilized on power contacts



COMPLIANT PRESS-FIT TERMINATION CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

COMPLIANT PRESS-FIT USER INFORMATION

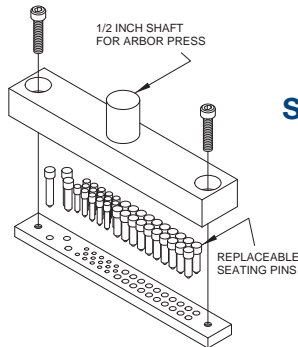
When properly used, Positronic Bi-Spring Power or Omega Signal Press-Fit terminations provide reliable service even under severe conditions.

Connectors utilizing this leading technology press-fit contact are easy to install:

1. Inexpensive installation tooling is available from Positronic, to choose the proper installation tool refer to page 106 for part number ordering information.
2. Insert the connector into the printed circuit board or backplane and seat connector fully.
3. Secure the connector to the printed circuit board or backplane using two self-tapping screws. The screws should be #4 self-tapping screws for plastic. Mounting screws can be ordered separately, see chart at the left.

COMPLIANT PRESS-FIT TERMINATION CONNECTOR INSTALLATION TOOLS

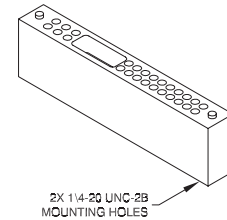
USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS



**SEATING
TOOL**

Positronic offers expert assistance in adapting application tooling to your manufacturing environment. Contact our application tooling specialist for assistance.

SUPPORT TOOL



SERIES	CONNECTOR VARIANT	CONNECTOR SEATING TOOL WITH ARBOR PRESS SHAFT		CONNECTOR SEATING TOOL WITHOUT ARBOR PRESS SHAFT		REPLACEMENT PINS	CONNECTOR SUPPORT TOOL
		MALE	FEMALE	MALE	FEMALE	FEMALE	
PCIH	PCIH38	9513-300-13-41	9513-300-0-41	9513-300-33-41	9513-300-20-41	Positions 1 through 20: 855-347-2-0 Positions 21 through 35: 855-916-26-0 Position 36: 855-916-12-0 Positions 37 and 38: 855-916-11-0	9513-400-0-41
	PCIH47	9513-300-12-41	9513-300-3-41	9513-300-32-41	9513-300-23-41	Positions 1 through 20: 855-347-2-0 Positions 21 through 44: 855-916-19-0 Position 45: 855-916-12-0 Positions 46 and 47: 855-916-11-0	9513-400-0-41
	PCIH49W25 FEMALE -379.0 MALE -378.0	9513-300-12-41	9513-300-47-41	9513-300-32-41	9513-300-67-41	Positions 1 through 20: 855-347-2-0 Positions 21 through 44: 855-916-19-0 Position 45: 855-916-12-0 Positions 46 through 49: 855-916-11-0	9513-400-0-41
PCIA	PCIA60W36	9513-300-44-41	9513-300-9-41	9513-300-64-41	9513-300-29-41	Positions 1 through 30: 855-347-2-0 Positions 31 through 54: 855-916-19-0 Position 55 and 56: 855-916-12-0 Positions 57 through 60: 855-916-11-0	9513-400-2-41
PCIM	PCIM30W15	9513-300-52-41	9513-300-17-41	9513-300-72-41	9513-300-37-41	Positions 1 through 12: 855-347-2-0 Positions 13 through 27: 855-916-19-0 Position 28: 855-916-12-0 Positions 29 and 30: 855-916-11-0	9513-400-3-41
	PCIM33W18	9513-300-53-41	9513-300-40-41	9513-300-73-41	9513-300-60-41	Positions 1 through 12 and Positions 28 through 33: 855-347-2-0 Positions 13 through 27: 855-916-19-0	9513-400-3-41
	PCIM34W13	9513-300-54-41	9513-300-14-41	9513-300-74-41	9513-300-34-41	Positions 1 through 10: 855-347-2-0 Positions 11 through 31: 855-916-19-0 Position 32: 855-916-12-0 Positions 33 and 34: 855-916-11-0	9513-400-3-41
	PCIM37W16	9513-300-55-41	9513-300-41-41	9513-300-75-41	9513-300-61-41	Positions 1 through 10 and Positions 32 through 37: 855-347-2-0 Positions 11 through 31: 855-916-19-0	9513-400-3-41
PCIB	PCIB24W9	9513-300-50-41	9513-300-19-41	9513-300-70-41	9513-300-39-41	Positions 1 through 6: 855-347-2-0 Positions 7 through 21: 855-916-19-0 Position 22: 855-916-12-0 Position 23 and 24: 855-916-11-0	9513-400-4-41
	PCIB26W11	9513-300-49-41	9513-300-42-41	9513-300-69-41	9513-300-62-41	Positions 1 through 6 and Positions 22 through 26: 855-347-2-0 Positions 7 through 21: 855-916-19-0	9513-400-4-41
PCIC	PCIC16W7	9513-300-68-41	9513-300-43-41	9513-300-48-41	9513-300-63-41	Positions 1 through 4: 855-347-2-0 Positions 5 through 13: 855-916-19-0 Position 14: 855-916-12-0 Positions 15 and 16: 855-916-11-0	9513-400-5-41
	PCIC3W3	9513-300-56-41	9513-300-57-41	9513-300-76-41	9513-300-76-41	Positions 1 through 3: 855-347-2-0	9513-400-9-41



MODIFICATION OF STANDARD (MOS) SUFFIXES

Specify complete connector by selecting a base part number from the desired series [Ordering Information Page](#).
Once base part number is selected, add desired modification of standard (MOS) suffix below to the end of the part number.

Example part number: PCIH47F9300A1/AA-245.0

(Ordering information pages can be found at the end of each series)

	CONNECTOR VARIANT SIZE	GENDER	TERMINATION TYPE AVAILABLE	MODIFICATION OF STANDARD (MOS) SUFFIXES	DESCRIPTION OF MODIFICATION
PCIH	38	F	3, 93, 94	-245.0	System 2, Straight Printed Board Mount 38 contact connector with 3 high profile A.C. pass-through contact positions.
	38	F	3, 93, 94	-246.1	System 2, Straight Printed Board Mount 38 contact connector with 3 low profile A.C. pass-through contact positions.
	47	F	3, 93, 94	-246.0	System 2, Straight Printed Board Mount 47 contact connector with 3 low profile A.C. pass-through contact positions.
	47 * ¹ 47R	F	4	-246.4	System 5, Right Angle (90°) Board Mount 47 contact connector with 3 A.C. pass-through contact positions.
	47	M	4	259.0	Selectively loaded Right Angle (90°), 47 contact connector with ten total output contacts loaded in 1, 4, 5, 8, 9, 12, 13, 16, 19, 20. See page 11.
	47	M	4	259.1	Selectively loaded Right Angle (90°), 47 contact connector with six total output contacts loaded in 1, 5, 9, 13, 19, 20. See page 11.
	47	M	4	259.2	Selectively loaded Right Angle (90°), 47 contact connector with sixteen total output contacts loaded in 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 17, 19, 20. See page 11.
	47	M	3, 4, 93, 94	-441.0	System 1 & 4, allows for any 47 male contact connector to be supplied with two additional contact positions, 48 and 49, to be left vacant in order to accept keying plugs. See page 7.
	47	F	3, 4, 93, 94	-442.0	System 1 & 4, allows for any 47 female contact connector to be supplied with two additional contact positions, 48 and 49, to be left vacant in order to accept keying plugs. See page 7.
	49W25	F	3, 93, 94	-246.3	System 2, Straight Printed Board Mount 49 contact connector with 5 low profile A.C. pass-through contact positions.
	49W25	M	3, 4, 93, 94	-378.0	Allows contacts 45-49 to be sequentially mated as follows: Position 45 is first mate, positions 46, 47, 48, and 49 are second mate. Male connector mates with female connector using MOS number -379.0.
	49W25 * ¹ 49W25R	F	3, 4, 93, 94	-379.0	Allows for contact positions 46, 47, 48 and 49 to have 5mm recess. Contact 45 to have 2mm recess. Female connector mates with male connector using MOS number -378.0.
CONTACT TECHNICAL SALES FOR ADDITIONAL SPECIAL OPTIONS					

*¹Inverted termination available on connectors with code 4 termination only.

Note: Select loading of contact positions are available, contact Technical Sales.



MODIFICATION OF STANDARD (MOS) SUFFIXES

Specify complete connector by selecting a base part number from the desired series [Ordering Information Page](#).
Once base part number is selected, add desired modification of standard (MOS) suffix below to the end of the part number.

Example part number: PCIH47F9300A1/AA-245.0

(Ordering information pages can be found at the end of each series)

	CONNECTOR VARIANT SIZE	GENDER	TERMINATION TYPE AVAILABLE	MODIFICATION OF STANDARD (MOS) SUFFIXES	DESCRIPTION OF MODIFICATION
PCIA	Consult Technical Sales for Special Options				
PCIM	33W18	F	3, 93, 94	-246.10	System 2, Straight Printed Board Mount Connector with 3 low profile A.C pass-through contact positions.
PCIB	24W9	F	3, 93, 94	-246.5	System 2, Straight Printed Board Mount Connector with 3 low profile A.C pass-through contact positions.
	^{*1} 24W9 24W9R	F	4	-422.0	System 1 and 4, Right Angle (90°) Printed Board Mount Connector with 3 low profile A.C pass-through contact positions.
	26W11	F	3, 93, 94	-246.6	System 2, Straight Printed Board Mount Connector with 5 low profile A.C pass-through contact positions.
	26W11	M	3, 93, 94	-444.0	Fixed jackscrew system. Male connector mates with female connector using MOS number -443.0
	26W11	F	8	-443.0	Rotating jackscrew system. Female connector mates with male connector using MOS number -444.0.
PCIC	16W7	F	3, 93, 94	-246.2	System 2, Straight Printed Board Mount Connector with 3 low profile A.C. Pass-Through contact positions.
	3W3	F	93, 94	-444.2	Special molding, fixed female jackscrews. Female connector mates with male connector using MOS number -443.2.
	3W3	M	3	-443.2	Special molding, special rotating male jackscrews. Male connector mates with female connector using MOS number -444.2.
CONTACT TECHNICAL SALES FOR ADDITIONAL SPECIAL OPTIONS					

^{*1}Inverted termination available on connectors with code 4 termination only.

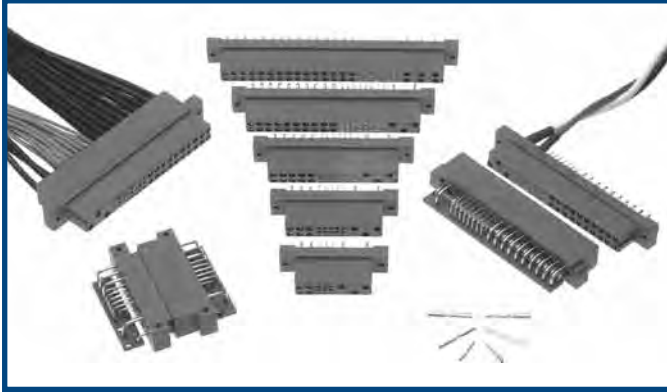
Note: Select loading of contact positions are available, contact Technical Sales.

Positronic

has the widest variety of

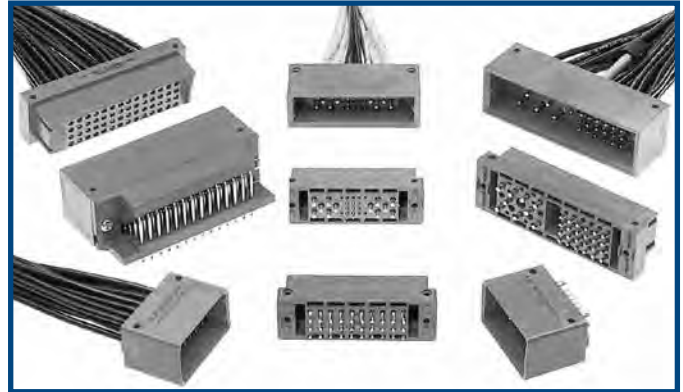
Power Connector Solutions

COMPACT POWER CONNECTOR



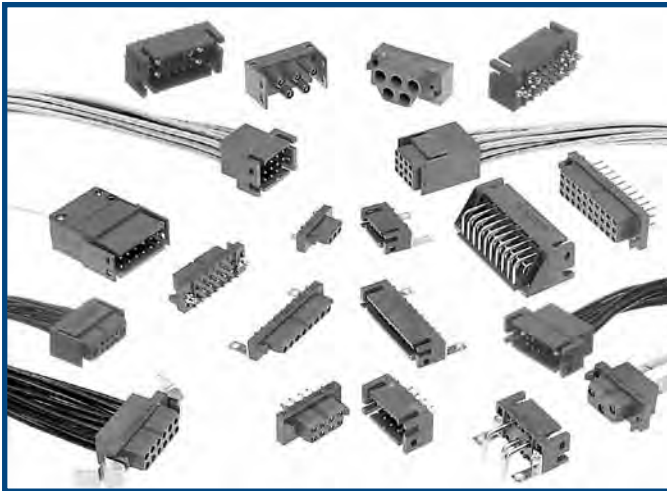
The Power interface for platforms utilizing Eurocard form factors including CompactPCI®, PICMG® 2.11 compliant. Multiple package sizes available.

INFINITY



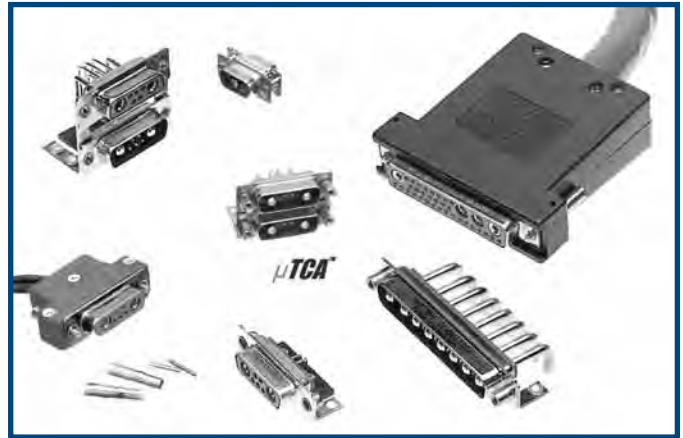
Ideal for low, mid, and high power applications which demand outstanding blind mating capability.

POWER CONNECTION SYSTEMS



The industry standard for low and mid range power applications. Multiple package sizes available.

COMBO-D



Power, signal, coaxial, high voltage, and thermocouple contacts in an EMI/RFI shielded package.

FRONT RUNNER CIRCULAR



Power, signal, and thermocouple contacts in an environmental and/or EMI/RFI shielded package.

EACH OF THESE SERIES HAVE ONE OR MORE OF THE FOLLOWING FEATURES:

- Hot swap capability
- A.C./ D.C. operation in a single connector
- Meets safety agency requirements
- Signal contacts for communication with host system
- Superior blind mating capability
- Cable and panel mount options
- Large surface area contact system
- Bi-Spring power press-fit terminations
- Single contact ratings up to 100 amperes
- Wide variety of variants & accessories

Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
Current Ratings: To 200 amperes per contact
Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

D - SUB MINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in
Configurations: Multiple variants in both standard and high densities, seven connector housing sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in
Configurations: Multiple variants in both standard and high densities, thirty package sizes
Qualifications: MIL-DTL-28748, AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder
Configurations: Multiple variants in four package sizes
Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cablizing" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare wire harness connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-subminiature and circular configurations above
Compliance: Space-D32



Positronic®
global connector solutions

Divisional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/sales



High Reliability



Size 20 fixed contacts, 7.5 amperes



Low Profile, countersink side mounting holes.



Connectors can be "stacked" side by side.



Male and female contacts can be configured within individual connectors to provide polarization and coding (keying) options.



Terminations include solder cup, straight and right angle (90°) printed board mount.

UL Recognized:

• UL File # E49351

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled DAP per ASTM-D-5948 Type SDG-F. Gray color is standard.
Fixed Contacts:	Precision machined copper alloy, gold flash over nickel. Other finishes are available upon request.

Locking Systems:

Polarization:

Mechanical Operations:

Open Entry Contacts:	500 operations per IEC 60512-5.
Closed Entry Contacts:	1,000 operations per IEC 60512-5.

Straight and right angle (90°) printed board mount - 0.64 mm [0.025 inch] termination diameter. Friction.

Gender positioning of contacts.

MECHANICAL CHARACTERISTICS:

Contacts:	
Size 20 Fixed:	Male contact, 1.02 mm [0.040 inch] mating diameter. Female contact, open entry is standard. "Closed Entry" available on solder cup termination for high reliability applications.
Contact Retention in Connector Insert:	44.5 N [10 lbs.], minimum.
Contact Termination :	Solder cup - 1.17 mm [0.046 inch] hole diameter for 0.5mm ² [20 AWG] wire maximum.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amperes, maximum.
Initial Contact Resistance:	0.010 ohms, maximum.
Flash over Voltage:	2000 VAC (rms).
Test Voltage:	1200 VAC (rms).
Insulation Resistance:	5 G ohms, minimum.
Clearance and Creepage:	0.97 mm [0.038 inch], minimum.
Working Voltage:	300 VAC (rms).

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days

Visit our web site for the latest catalog updates and supplements at <http://www.connectpositronic.com/products/55/Utility/catalogs/>



Positronic Industries
connectpositronic.com

GF / GFPL SERIES

PROFESSIONAL QUALITY UTILITY CONNECTORS

Utility
Connectors

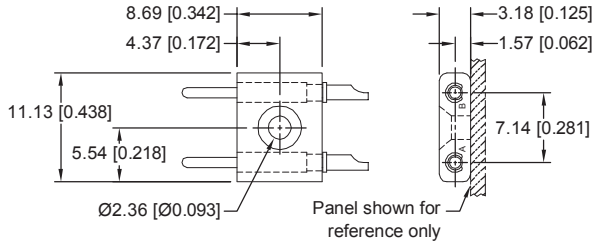
FIXED CONTACT / LOW PROFILE

INSULATOR DIMENSIONS

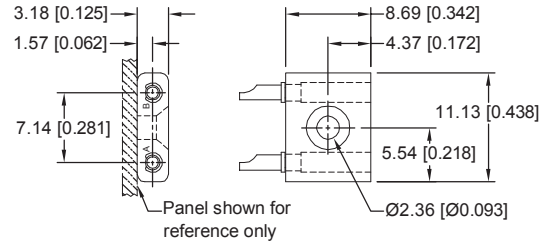
MALE OR FEMALE CONTACTS MAY BE POPULATED IN ANY POSITION

GF 2-POLE

RIGHT PANEL MOUNTED *1

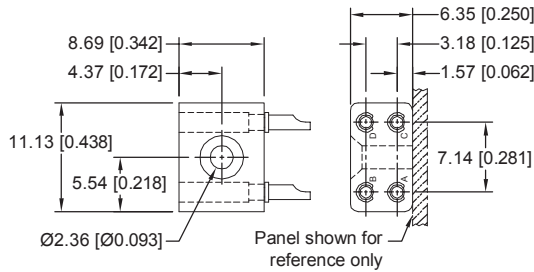


LEFT PANEL MOUNTED *1

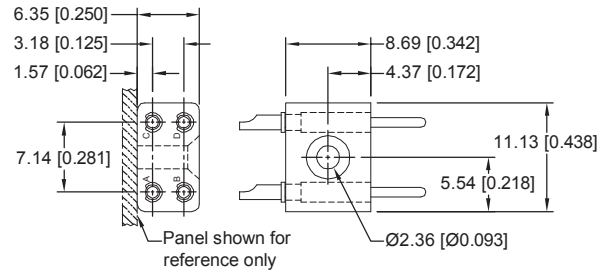


GF 4-POLE

RIGHT PANEL MOUNTED *1



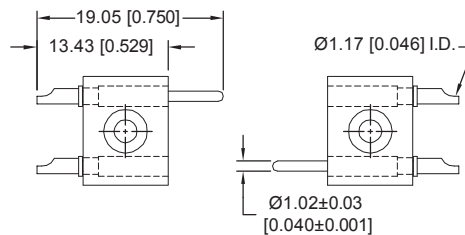
LEFT PANEL MOUNTED *1



NOTE: *1 When viewing the connector from the rear with the "A" contact position down, the panel on the left dictates "L" Code while the panel on the right dictates "R" code. See ordering information page "Step 5".

SOLDER CUP TERMINATION CODE SC

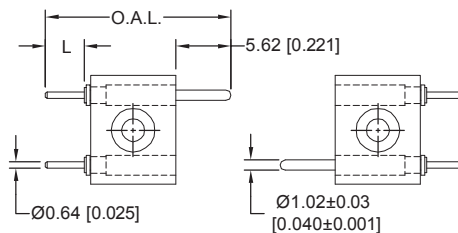
Typical part number:
GF1M1FASCL



Typical part number:
GF1M1FBSCR

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION CODE DS3, DS4, DS5 AND DS6

Typical part number:
GF1M1FADS3L



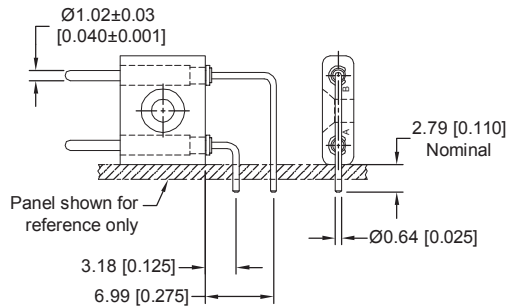
Typical part number:
GF1M1FBDS3R

CONTACT CODE	L	O.A.L.
DS3	2.36 [0.093]	17.37 [0.684]
DS4	3.18 [0.125]	18.19 [0.716]
DS5	3.96 [0.156]	18.97 [0.747]
DS6	4.75 [0.187]	19.79 [0.779]

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
AVAILABLE IN VERTICAL OR HORIZONTAL MOUNTS

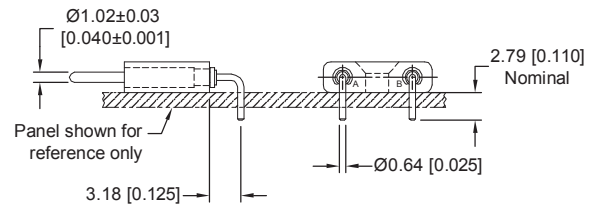
GFPL 2-POLE

VERTICAL PANEL MOUNTED *1



Typical part number: **GFPL2M000RV**

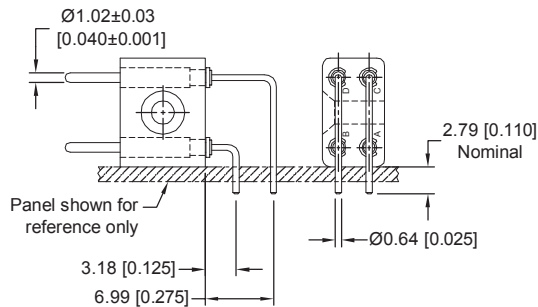
HORIZONTAL PANEL MOUNTED



Typical part number: **GFPL2M000H**

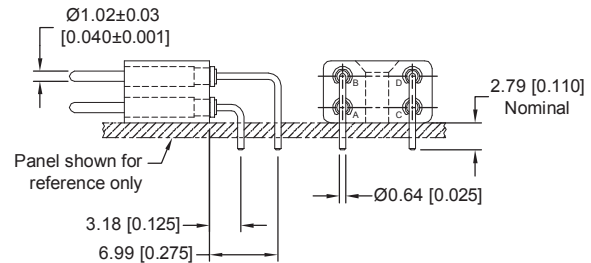
GFPL 4-POLE

VERTICAL PANEL MOUNTED *1



Typical part number: **GFPL2M2FAC0RV**

HORIZONTAL PANEL MOUNTED

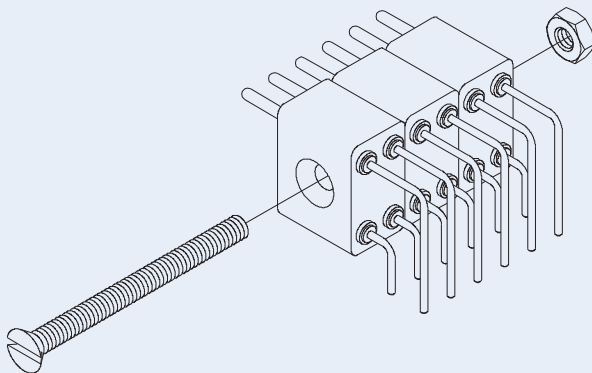


Typical part number: **GFPL2M2FCD0H**

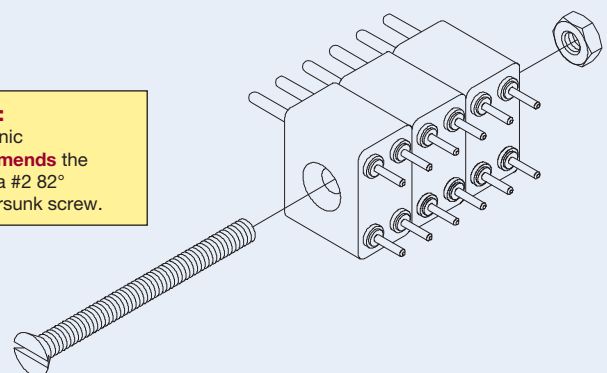
NOTE: *1 When viewing the connector from the rear with the "A" contact position down, the panel on the left dictates "L" code while the panel on the right dictates "R" code. See ordering information page "Step 5".

U N I Q U E F E A T U R E S

GF and GFPL connectors can be "STACKED" in building block fashion to create custom configurations.



NOTE:
Positronic
recommends
the
use of a #2 82°
countersunk screw.





Positronic Industries
connectpositronic.com

GF / GFPL SERIES

PROFESSIONAL QUALITY UTILITY CONNECTORS

FIXED CONTACT / LOW PROFILE

Utility
Connectors

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 through 5.

STEP	1	2	3	4	5	-	6
EXAMPLE	GF	3M1F	A	DS5	L		-14

STEP 1 - BASIC SERIES

GF - Solder cup or straight printed board mount termination

STEP 6 - SPECIAL OPTIONS

CE - Closed entry contacts on female solder cup terminations
-14 - 0.000030 [0.76] gold over nickel.

Contact Technical Sales for special options.

STEP 2 - QUANTITY AND GENDER OF CONTACTS

2 POLE INSULATOR

2M0 - 2 Male, No Female.
2F0 - 2 Female, No Male.
1M1F - 1 Male, 1 Female.

4 POLE INSULATOR

4M0 - 4 Male, No Female.
4F0 - 4 Female, No Male.
3M1F - 3 Male, 1 Female.
3F1M - 3 Female, 1 Male.
2M2F - 2 Male, 2 Female.

STEP 3 - POSITION OF POLARIZING CONTACT

0 All contacts same gender
A, B, C, D Specify polarizing position(s) of contact(s) for the second gender specified in Step 2 above.

EXAMPLES:

GF4M00DS3R No specification needed.
GF1M1FA SCL Specifies "A" position of the female contact.
GF2M2FC D SCL Specifies "C" and "D" positions of the female contact.

STEP 5 - MOUNTING OPTIONS

L - Left panel mount.
R - Right panel mount.

STEP 4 - CONTACT TERMINATION TYPE

SC - Solder cup. For closed entry design, add "CE" in Step 6.
DS3 - Solder, Straight printed board mount with 2.36 [0.093] tail length.
DS4 - Solder, Straight printed board mount with 3.18 [0.125] tail length.
DS5 - Solder, Straight printed board mount with 3.96 [0.156] tail length.
DS6 - Solder, Straight printed board mount with 4.75 [0.187] tail length.

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 through 5.

STEP	1	2	3	4	5	-	6
EXAMPLE	GFPL	2M2F	AB	0	H		-14

STEP 1 - BASIC SERIES

GFPL - Right angle (90°) printed board mount termination

STEP 6 - SPECIAL OPTIONS

-14 - 0.000030 [0.76] gold over nickel.

Contact Technical Sales for special options.

STEP 2 - QUANTITY AND GENDER OF CONTACTS

2 POLE INSULATOR

2M0 - 2 Male, No Female.
2F0 - 2 Female, No Male.
1M1F - 1 Male, 1 Female.

4 POLE INSULATOR

4M0 - 4 Male, No Female.
4F0 - 4 Female, No Male.
3M1F - 3 Male, 1 Female.
3F1M - 3 Female, 1 Male.
2M2F - 2 Male, 2 Female.

STEP 3 - POSITION OF POLARIZING CONTACT

0 All contacts same gender
A, B, C, D Specify polarizing position(s) of contact(s) for the second gender specified in Step 2 above.

STEP 5 - MOUNTING OPTIONS

LV - Left panel vertical mount.
RV - Right panel vertical mount.
H - Horizontal mount.

STEP 4 - CONTACT TERMINATION TYPE

0 - Right angle (90°) printed board mount.

EXAMPLES:

GFPL4M00RV No specification needed.
GFPL3M1FA0H Specifies "A" position of the female contact.
GFPL2M2FC D LV Specifies "C" and "D" positions of the female contact.

www.connectpositronic.com



POSITRONIC
GLOBAL *Connector* SOLUTIONS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel 417 866 2322 • Fax 417 866 4115 • Toll Free 800 641 4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 5 6263 4491 • Fax 33 5 6263 5117
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone 65 6842 1419 • Fax 65 6842 1421
singapore@connectpositronic.com



Positronic®
global connector solutions

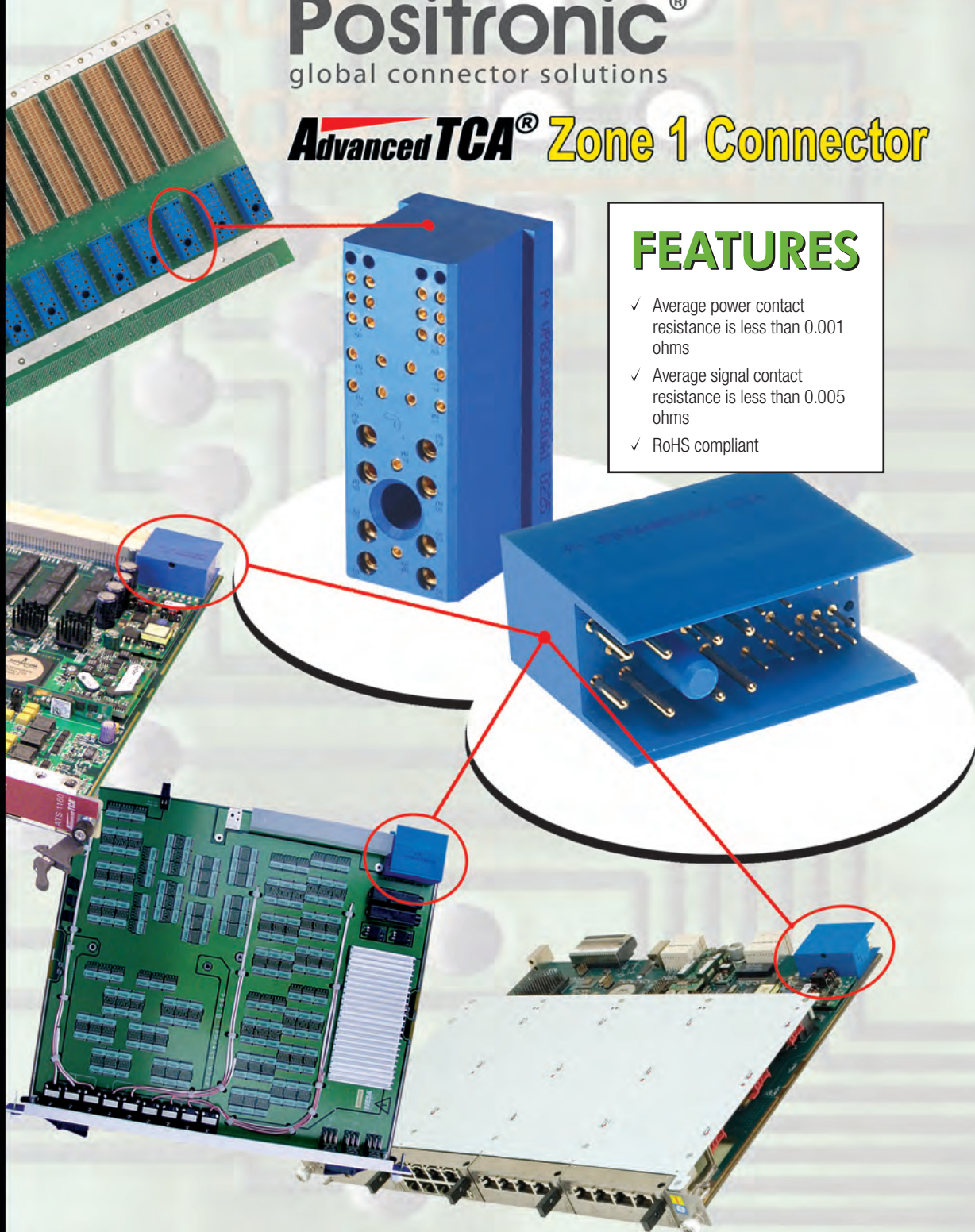
Advanced TCA® Zone 1 Connector

FEATURES

- ✓ Average power contact resistance is less than 0.001 ohms
- ✓ Average signal contact resistance is less than 0.005 ohms
- ✓ RoHS compliant

VPB SERIES

Power Connectors



Catalog C-031 Rev. H

www.connectpositronic.com

Positronic® - The Leader in Power Connector Solutions for PICMG Applications

For nearly two decades, Positronic has been a leading edge power connector manufacturer for PICMG technology-based applications such as AdvancedTCA®, CompactPCI®, MicroTCA®, and PICMG 3.8. Despite copy cat products, Positronic continues to offer the broadest selection of power connectors for these applications. Visit www.connectpositronic.com for more details.

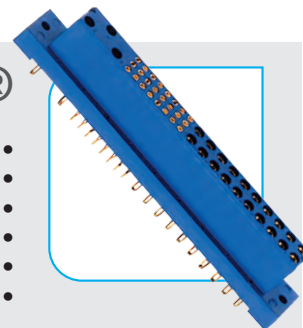


AdvancedTCA®

- Dedicated Zone 1 power interface for plug-in cards
- Closed entry female contacts for ruggedized applications
- Heavy gold contact options
- Available from stock at www.posishop.com

Compact PCI®

- P47 version for CompactPCI applications
- Features include AC/DC power input, power output at various voltages and signal controls
- Five package sizes available
- Closed entry female contacts for rugged applications
- Heavy gold plated contact options
- Widest variety of gender / termination combinations in the marketplace

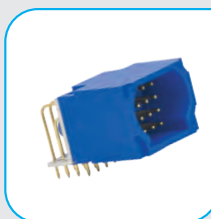


MicroTCA (μTCA)®

- Compliant to MTCA.0, MTCA.1 & MTCA.3 specifications
- High reliability, precision machined contacts
- Low contact resistance
- Minimized height above printed circuit board
- Single and dual port configurations
- Power contacts carry 50 amps minimum at a 30°C temperature rise (prior to derating)

PICMG 3.8

- Compliant to PICMG 3.8 requirements
- Intended for power and system management use
- Blind mating capability
- 19.8 mm wide



Positronic®
global connector solutions

Plug-in boards used in today's computing platforms must provide higher reliability, greater functionality and require more power than ever before. Many next generation platforms deliver bulk voltage to boards. DC to DC converters are used to supply the various voltage requirements on the board. This allows systems to adapt as semiconductor voltages change.

The **VPB Series** was developed as a **dedicated interface** between backplanes and boards. The connector is capable of providing dual redundant power, system management and high voltage auxiliary circuits to each slot within the platform. The connector's outstanding blind mating capability can be used to align the board during insertion. The **VPB Series** is **compliant to PICMG 3.0, AdvancedTCA®, Zone 1 connector requirements**.



www.picmg.com



www.advancedtca.com

PICMG and the PICMG logo and/or Advanced TCA® and the Advanced TCA® logo are registered trademarks of the PCI Industrial Computers Manufacturers Group

*Visit our web site for the latest catalog updates and supplements
at <http://www.connectpositronic.com/design-tools/catalogs/>*

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261[†] #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

[†]Patented in Canada, 1992 Other Patents Pending



Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.®, Positronic®, Connector Excellence®, P+ logo®, PosiBand®, PosiShop®, Positronic Global Connector Solutions®, Global Connector Solutions®. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

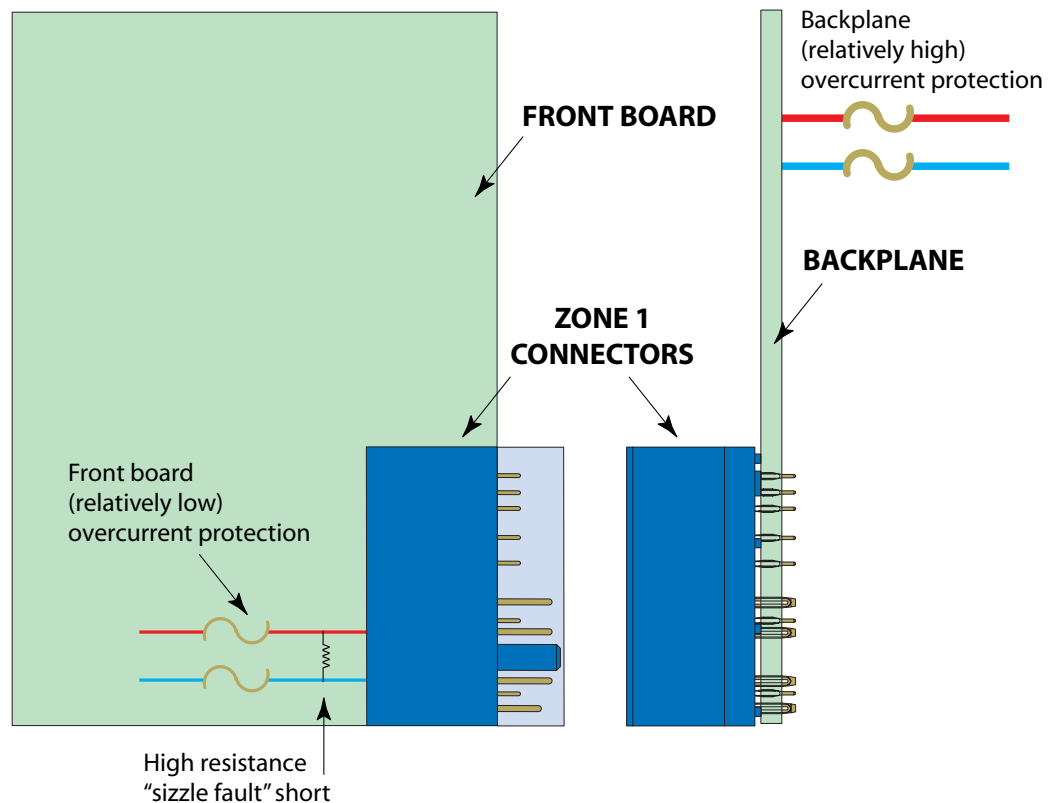
About the cover:

For more information about the products shown on the front cover, visit the following web sites:

- **Rittal** backplane (top left) <http://www.rittal-corp.com>
- **Diversified Technology, Inc** ATS1160 (middle left) <http://www.dtim.com>
- **F9 Systems, Inc.** AdvancedTCA Thermal Blade™ (bottom left) <http://www.f9-systems.com>
- **GE Fanuc Embedded Systems** AT4-AMC-1 carrier blade (bottom left) <http://www.gefanucembedded.com>

“SIZZLE FAULT”

A high resistance short between a front board's overcurrent protection and the backplane's overcurrent protection could allow high currents to be drawn through the Zone 1 Power Connector indefinitely. These currents could reach a value that is slightly less than the overcurrent protection for the entire backplane.



Zone 1 backplane connectors must survive sizzle fault conditions when tested per PICMG 3.0, R3.0, Section B.4.2.4.

- Conditions: IEC 60512-3, Test 10d
- The mated set of connectors (specimens) shall be comprised of a Front Board connector with right angle (90°) press-in terminations and a backplane connector having press-in terminations
- Standard atmospheric conditions
- Ambient temperature shall be 55 degrees C
- Contact positions 28 and 33 shall be energized at 10 amperes through a circuit path sized to simulate a standard PICMG 3.0 frontboard/backplane
- Contact positions 29 and 34 shall be energized at 50 amperes through a circuit path sized to simulate a standard PICMG 3.0 frontboard/backplane
- There shall be a one hour stabilization time after test set up
- Test time shall be four hours after one hour stabilization period
- After completion of test, connectors shall be immediately uncoupled
- Requirements after test conditioning:
- Visual inspection of backplane connector shall show no defect that would impair normal operation
- After backplane connectors are allowed to cool to room ambient temperature the connectors shall be mated to fresh Front Board connectors that have right angle (90°) press-in terminations. The mated connector sets shall pass the test requirements of B.4.2.2; B.4.2.3; B.4.2.4; B.4.2.5; and B.4.3.2.

Positronic's VPB series meets the requirements of this test!

Positronic's Blue Connectors are Green

Energy is essential to everyone. Often we do not give thought to where **energy** comes from or how much we consume until **energy** is not readily available.

Energy has become an area of focus for governments, private industry, and citizens. Enhanced methods of producing **energy** from traditional sources, development of new **energy** sources and conservation of **energy** from all sources have become more crucial than ever before.

Across the world, the electronic equipment that we all rely upon in our daily lives consumes a vast amount of **energy**. An unavoidable waste of **energy** occurs when power is distributed throughout electronic equipment. As electrical current flows through conductors and connectors, unwanted heat is generated in proportion to the amount of electrical resistance encountered.

Lowering resistance in connector contacts and conductors will reduce the amount of heat generated, and result in less wasted **energy**. Additional **energy** will be saved, as cooling systems will have less heat to draw out of the equipment.

In the past, the primary metric for power connectors has been contact current ratings. In the future, contact resistance may become equally important. While it is true that contact resistance and contact current ratings are closely associated, contact current ratings cannot be used to quantify the **energy** consumed by contacts.

Current ratings are based on the temperature rise of a connector or contact at a specific current level. A connector design or test method allowing relatively rapid heat dissipation may yield a reasonable temperature rise, while a relatively high amount of **energy** is still being wasted.

Within the connector industry, there are a variety of test methods used to quantify a particular performance metric. Different test methods can yield different values for the same metric. This lack of uniformity can be confusing to connector users who are trying to compare connectors offered by various manufacturers. Third party assessment can give connector users a common point of reference when making connector choices.

Assessors use contact resistance as the metric to determine the relative efficiency of connector contacts. These assessments verify the claims made by manufacturers.

Once the assessment is made, the assessor issues a statement that will aid power connector users in evaluating contact efficiency as it relates to **energy** consumption. As an example, the Positronic VPB series size 16-power contacts recently underwent evaluation. The contact resistance was found to be less than one milliohm each. This low contact resistance is achieved by use of high conductivity contact materials. In addition, Positronic's Large Surface Area (LSA) contact system is utilized as the interface between male and female power contacts in VPB series connectors.

The VPB series was designed for use as the Zone 1 power connector in AdvancedTCA (ATCA) telecommunication computing systems. Zone 1 connectors provide power from backplanes to front boards in ATCA chassis. The low contact resistance of Positronic's VPB series provides

energy savings opportunities in any application using this connector.

The following formula verifies the **energy** savings of a lower resistance contact at a given current: **Power Consumption (Watts) = Current Flow² (Amperes²) X Contact Resistance (Ohms)**. Contact resistance has a one-to-one effect on power consumption. If, the contact resistance is reduced by half, the power consumption is reduced by half.

Low resistance power contacts also provide benefits in systems sensitive to voltage drop. This is demonstrated in the following formula: **Voltage drop across contact pairs = Current Flow (Amperes) X Contact Resistance (Ohms)**. Once again, contact resistance has a one-to-one effect. Reducing the contact resistance by half reduces voltage drop by half.

Higher **energy** costs and government legislation will cause **energy** conservation efforts to continue to intensify. If we consider the vast numbers of power contacts in electronic equipment around the world, it is clear how lower contact resistance can play a role in meeting **energy** conservation goals. Positronic utilizes high conductivity contact materials and unique contact interfaces to provide low contact resistance in our power connector products. To learn more about these products, visit connectpositronic.com.

FEATURES

- ✓ Average power contact resistance is less than 0.001 ohms
- ✓ Average signal contact resistance is less than 0.005 ohms
- ✓ RoHS compliant

VPB SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Connector Insert:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel plate. Other finishes available upon request. Size 22 female precision-stamped and formed press-fit contacts are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Male and female connector bodies provide "lead-in" for 2.0 mm [0.078 inch] diametral misalignment.
Polarization:	Provided by connector body design.
Fixed Contacts:	Printed board mount terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 22 female contacts feature rugged open entry design. "PosiBand" closed entry contacts are optional.
Fixed Contact Retention in Connector Body:	
Size 16 Contacts:	31 N [7 lbs.]
Size 22 Contacts:	25 N [5 lbs.]
Sequential Contact Mating System:	First mate contacts 25, 26, 28, 29, 30 and 31. Second mate contact 33. Third mate contact 34. Contacts 1-24 mate before 27 and 32. Last mate contacts 27 and 32.

Power to be enabled through a last mate contact within VPB Series or another connector.

Consult Technical Sales for customer specified sequential mating.

Printed Board Mounting:	Mounting holes provided in connector body for printed board. Self-tapping screws are available, see ordering information page.
Mechanical Operations:	250 couplings, minimum.

ELECTRICAL CHARACTERISTICS:

Contact Current Ratings, per UL 1977:	See temperature rise curve on page 9 for details.
Size 16 Power Contacts:	30 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	2 amperes nominal rating.
Current Overload Test	Tested per PICMG 3.0, R3.0 Section B.4.2.4, see page 4 for more information.
Initial Contact Resistance:	
Termination to termination:	
Size 16 Contacts:	Average resistance is less than 0.001 ohms. Tested per IEC 60512-2, Test 2a. Compliant to PICMG 3.0, R3.0 requirements of 0.0022 ohms maximum. Tested per IEC 60512-2, Test 2b.
Size 22 Contacts:	Average resistance is less than 0.005 ohms. Tested per IEC 60512-2, Test 2a. Compliant to PICMG 3.0, R3.0 requirements of 0.0085 ohms maximum. Tested per IEC 60512-2, Test 2a.
Insulation Resistance:	5 G ohms per IEC 60512-2, Test 3a.
Voltage Proof:	
Contacts 1-16:	1,000 V r.m.s.
Contacts 17-34:	2,000 V r.m.s.
Creepage and Clearance Distance; minimum:	
Contact positions 1-16 to any other contact within this group:	0.7mm [0.028 inch]
Contact positions 17-24 to any other contact within this group:	2.5mm [0.098 inch]
Contact positions 25-34 to any other contact within this group:	1.4mm [0.055 inch]
Contact positions 13-16 to 17-20:	3.0mm [0.118 inch]
Contact positions 21-24 to 25, 26:	4.0mm [0.157 inch]
Contact positions 25, 26 to 27-29:	2.0mm [0.079 inch]

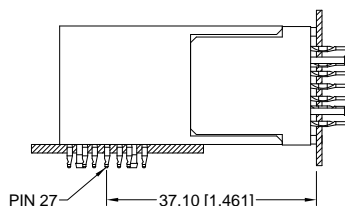
CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
-----------------------------	------------------

UL and C.N.R. Recognized
File #E49351

MATING DIMENSIONS

Right Angle (90°) Board Mount Male to
Straight Board Mount Female
(FULLY MATED)

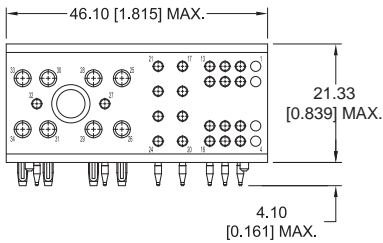
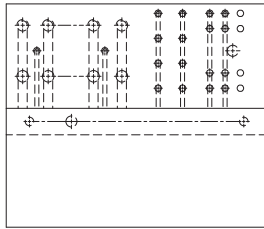


1 mm [0.039 inch]
separation allowed

MALE CONNECTOR WITH RIGHT ANGLE (90°) COMPLIANT PRESS-FIT PRINTED BOARD MOUNT TERMINATIONS CODE 62

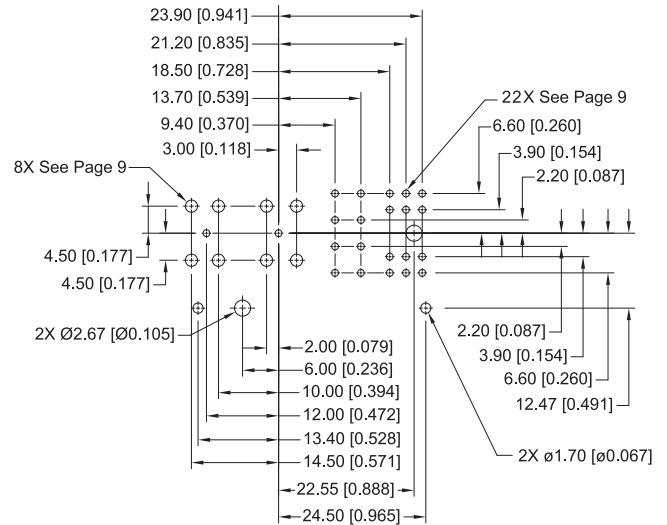
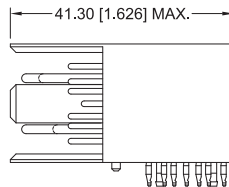
Typical Part Numbers

VPB30W8M6200*1/AA



NOTE:

*1 Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



VPB30W8M6200A1/AA shown for reference.
Positions 1-4 are not populated with contacts.

CONTACT HOLE PATTERN

NOTE: See page 9 for suggested printed board hole sizes.

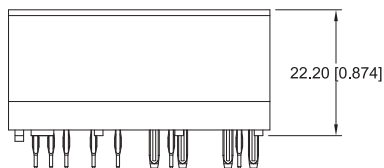
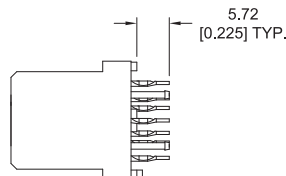
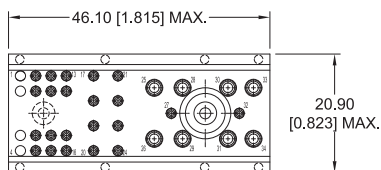
FEMALE CONNECTOR WITH STRAIGHT COMPLIANT PRESS-FIT PRINTED BOARD MOUNT TERMINATIONS CODE 93



Typical Part Numbers

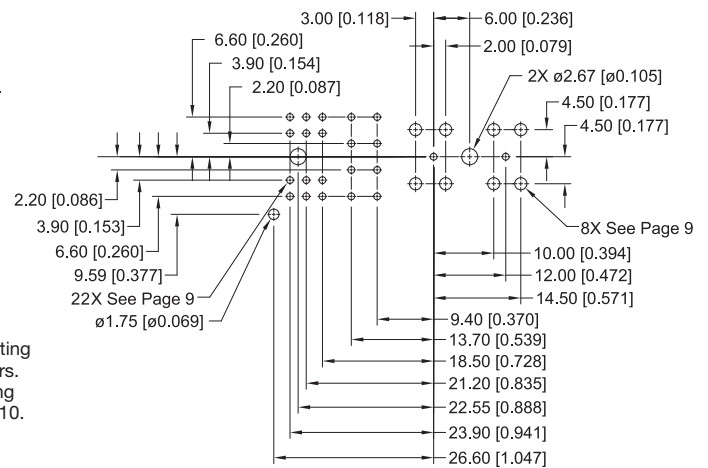
VPB30W8F9300*1/AA

VPB30W8S9300*1/AA



NOTE:

*1 Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



VPB30W8F9300A1/AA shown for reference.
Positions 1-4 are not populated with contacts.

CONTACT HOLE PATTERN

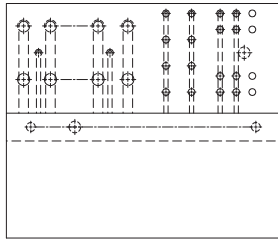
NOTE: See page 9 for suggested printed board hole sizes.

MALE CONNECTOR WITH RIGHT ANGLE (90°) SOLDER PRINTED BOARD MOUNT TERMINATIONS

CODE 4

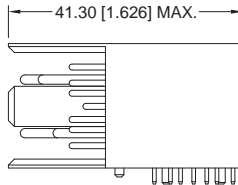
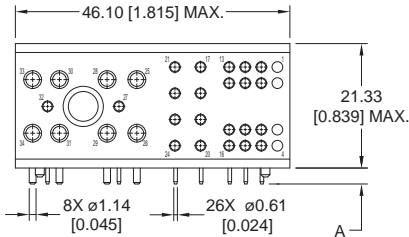
Typical Part Numbers

VPB30W8M400*1/AA



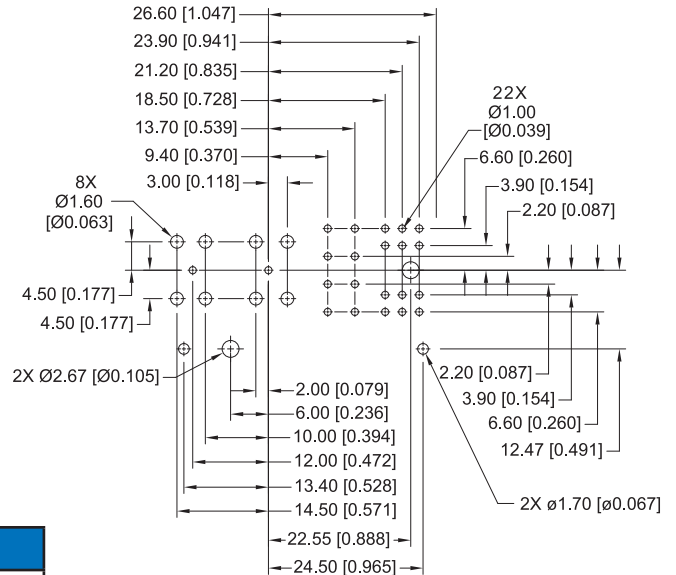
NOTE:

*1 Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



VPB30W8M400A1/AA shown for reference.
Positions 1-4 are not populated with contacts.

CODE	A
4	2.68 [0.106]
42	4.09 [0.161]



CONTACT HOLE PATTERN

FEMALE CONNECTOR WITH RIGHT ANGLE (90°) SOLDER PRINTED BOARD MOUNT TERMINATIONS

CODE 4 WITH -394.0 MOS

Typical Part Numbers

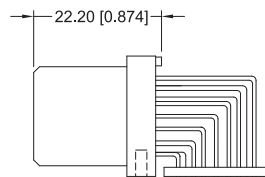
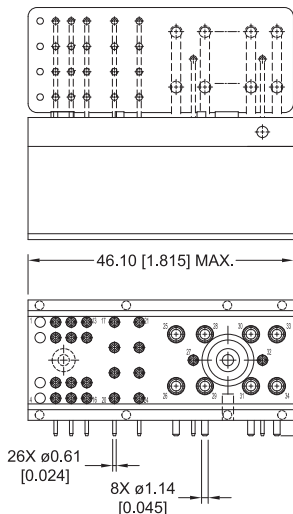
VPB30W8F400*1/AA-394.0

VPB30W8S400*1/AA-394.0

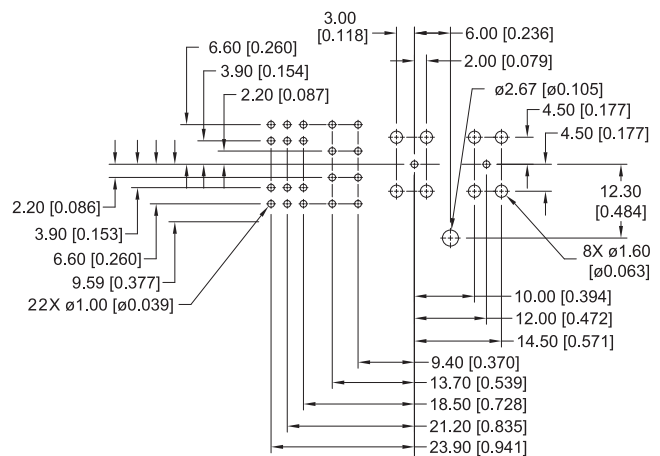


NOTE:

*1 Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



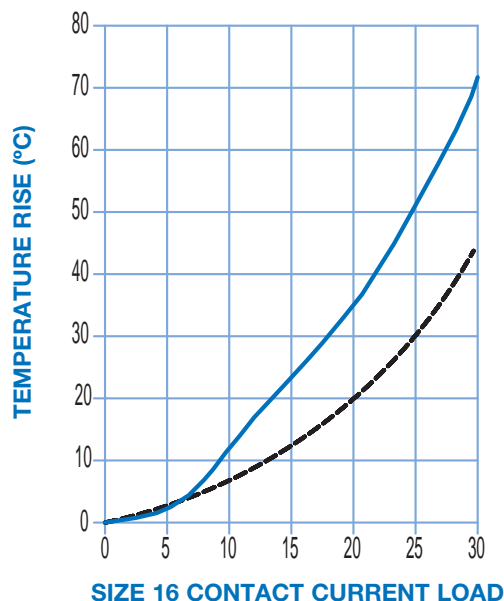
VPB30W8F400A1/AA-394.0 shown for reference.
Positions 1-4 are not populated with contacts.



CONTACT HOLE PATTERN

This connector option is offered to support extender cards.
Consult Technical Sales for higher volume requirements.

TEMPERATURE RISE CURVE



Above curve developed using VPB30W8M6200A1 and VPB30W8F9300A1 connectors.

— **CURVE A** - ALL SIZE 16 POWER CONTACT UNDER LOAD, SIGNAL CONTACTS 1-24 UNDER 1 AMP LOAD
 - - - **CURVE B** - SIZE 16 POWER CONTACT POSITIONS 28, 33 UNDER LOAD, SIGNAL CONTACTS 1-24 UNDER 1 AMP LOAD

EXAMPLES OF POSSIBLE CONTACT ASSIGNMENTS

CONTACT POSITION	FUNCTION
1-16	Low Speed Hardware Management
17-24	High Voltage Metallic Test and Ringing Generator Signals
25	Shelf Ground
26	Logic Ground
27/32	Enables for A and B power
28	A Return
29	B Return
30	A Early
31	B Early
33	A Voltage
34	B Voltage

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

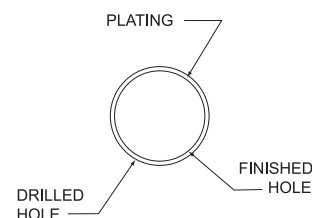
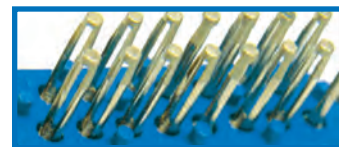
Traditionally, tin-lead has been a popular plating for printed circuit board (PCB) holes. However, many PCB hole platings must now be RoHS compliant. Positronic is pleased to offer **PCB HOLE SIZES FOR RoHS** PCB platings as shown below.

OMEGA & BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	22 OMEGA	$\phi 1.150 \pm 0.025$ [$\phi 0.0453 \pm 0.0010$]	15μ [0.0006] minimum solder over 25μ [0.0010] min. copper	$\phi 1.000 \pm 0.090 - 0.060$ [$\phi 0.0394 \pm 0.0035 - 0.0024$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
RoHS PRINTED CIRCUIT BOARD (PCB) PLATING OPTIONS				
COPPER PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION TIN PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.85±0.15μ [0.000033±0.000006] immersion tin over 25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION SILVER PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.34±0.17μ [0.000013±0.000007] immersion silver over 25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
ELECTROLESS NICKEL/ IMMERSION GOLD PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.05μ [0.000002] min. immersion gold over 4.5±1.5μ [0.000177±0.000059] electroless nickel per IPC-4552 over 25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]

“Omega” Termination
utilized on signal contacts



“Bi-Spring” Termination
utilized on power contacts



COMPLIANT PRESS-FIT CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

ORDERING INFORMATION – CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting an Option From Steps 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	VPB	30W8	F	93	0	0	A1	/AA	-394.0
<div> <div> STEP 1 - BASIC SERIES VPB - VP Series </div> <div> STEP 2 - CONNECTOR VARIANTS <p>*1 30W8 - Contact positions 1-4 are not populated. Standard variant for AdvancedTCA® backplanes. Standard option for frontboards.</p> <p>*1 22W8 - Contact positions 1-4 and 17-24 are not populated. Standard cost saving option for AdvancedTCA® frontboards.</p> </div> <div> STEP 3 - CONNECTOR GENDER M - Male <p>*2 F - Female - Professional Level</p> <p>*2 S - Female - Industrial/Military Level</p> </div> <div> STEP 4 - CONTACT TERMINATION TYPE 4 - Right Angle (90°) Board Mount, Solder, termination length 2.68 [0.106] (30W8 female requires MOS 394.0, contact Technical Sales for 22W8 female MOS part number) 42- Right Angle (90°) Board Mount, Solder, termination length 4.09 [0.161]. 62 - Right Angle (90°) Board Mount, Press-fit. Male only 93 - Straight Board Mount, Press-fit. Female only. 99 - Straight Board Mount, Press-fit, Size 22 stamped and formed contacts. Female "F" variant only (Step 3). Contact Technical Sales. </div> <div> STEP 5 0 - None </div> <div> Notes <p>*1 VPB series can be supplied with contacts populated in all 34 positions. Use part number VPB34W8*****.</p> <p>*2 Female signal contacts are offered in open and closed entry. Closed entry contacts are designed with an unbroken ring at the opening of the contact. This closed entry feature provides higher reliability in environments experiencing higher levels of shock and vibration. Closed entry contacts are also more abuse resistant than open entry designs. VPB Power contacts are always closed entry design.</p> </div> <div> STEP 6 0 - None </div> <div> STEP 7 - CONTACT PLATING (choose plating based on end use requirements) A1 - Gold flash over nickel on mating end and termination end. A2 - Gold flash over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 62 or 93 in step 4. C1 - 0.76µ [0.000030 inch] gold over nickel on mating end and termination end. C2 - 0.76µ [0.000030 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coated termination end. Not available with code 62 or 93 in step 4. D1 - 1.27µ [0.000050 inch] gold over nickel on mating end and termination end. D2 - 1.27µ [0.000050 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coated termination end. Not available with code 62 or 93 in step 4. </div> <div> STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - RoHS compliant <p>Note: This step should be included to create a standard part number. Example: VPB30W8F9300A1/AA</p> </div> <div> STEP 9 - SPECIAL OPTIONS 394.0- Allows for female contact right angle (90°) solder mount. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS </div> </div>									

Unless otherwise specified, dimensional tolerances are:

- 1) ±0.13 mm [0.005 inches] for all diameters.
- 2) ±0.38 mm [0.015 inches] for all other dimensions.

MOUNTING SCREWS

Telecordia GR1217 shows a preference that press-fit connectors use auxiliary mounting hardware. Also, the AdvancedTCA® Zone 1 connector serves as the lower alignment feature for front boards. Therefore, the use of mounting hardware is recommended.

However, VPB connectors have been tested to PICMG 3.0. B.5.1.3 requirements, which may guide connector users to omit use of screws. Contact Positronic for test details.

STEEL SCREW PART NUMBER	STAINLESS STEEL SCREW PART NUMBER	THREAD LENGTH
A4546-7-1-16	A4546-7-6-4	6.35±0.00-0.76 [0.250±0.000-0.030]
A4546-7-2-16	A4546-7-7-4	7.93±0.00-0.76 [0.312±0.000-0.030]
A4546-7-3-16	A4546-7-8-4	9.53±0.00-0.76 [0.375±0.000-0.030]
A4546-7-4-16	A4546-7-9-4	11.11±0.00-0.76 [0.438±0.000-0.030]

Install Screw to a Depth of:
3.50 [0.138] Minimum
5.00 [0.197] Maximum

Contact technical sales for RoHS compliant mounting screw information.

- Female compliant press-fit connectors **require a press-fit tool**, part number 9513-308-1-41, for installation.

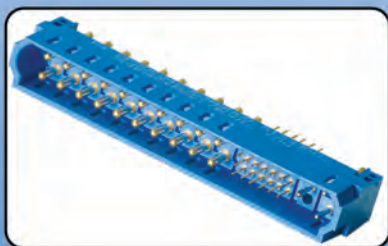
- The use of a support tool when installing **press-fit** connectors is recommended. For female connectors use 9513-400-6-41, for male connectors use 9513-400-8-41.

Other Power Connector Products

To view all products visit

www.connectpositronic.com

Positronic Industries has a wide variety of power connector products. Let us provide solutions for Power Entry Modules (PEM) and other power distribution needs.



Scorpion Modular Connector

Build Your Own Connector

Modular tooling produces a one-piece insulator with almost infinite configurations using twenty-one different module types. Power, signal, and shielded contacts are offered. Options include: cooling vents, blind mate, sequential mate, integral locking and connector keying.



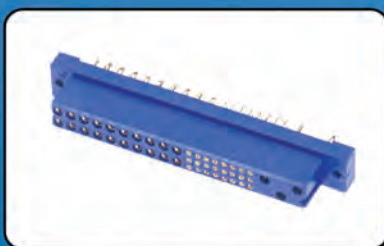
Power Connection Systems

Available with 3 to 30 contacts and utilizes an integral locking system. Offers a wide variety of termination styles and accessories for board to board, cable to board, and panel to cable applications.



Infinity/Mini-Infinity

For low, medium and high power applications requiring outstanding blind mating capability. Offers mixed contact density, sequential mate contacts, and a wide variety of termination styles.



Compact Power Connector

The power interface for platforms that utilize IEEE1101.10 form factors including CompactPCI®. Offers a wide variety of sizes and contact variants. Provides for input, output, and system management in a single connector as well as three-level sequential mating.



Goldfish

For low to mid range power applications that require excellent blind mating. Additional options include float mounts, selective loading and sequential mating.



DragonFly

High density connectors having power and/or signal contacts. Multiple package sizes with integral locking system.

LOCATIONS

For most current sales office information, please visit www.connectpositronic.com/locations



Positronic®
global connector solutions

Regional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi RD 1 #07-01
Singapore 408703

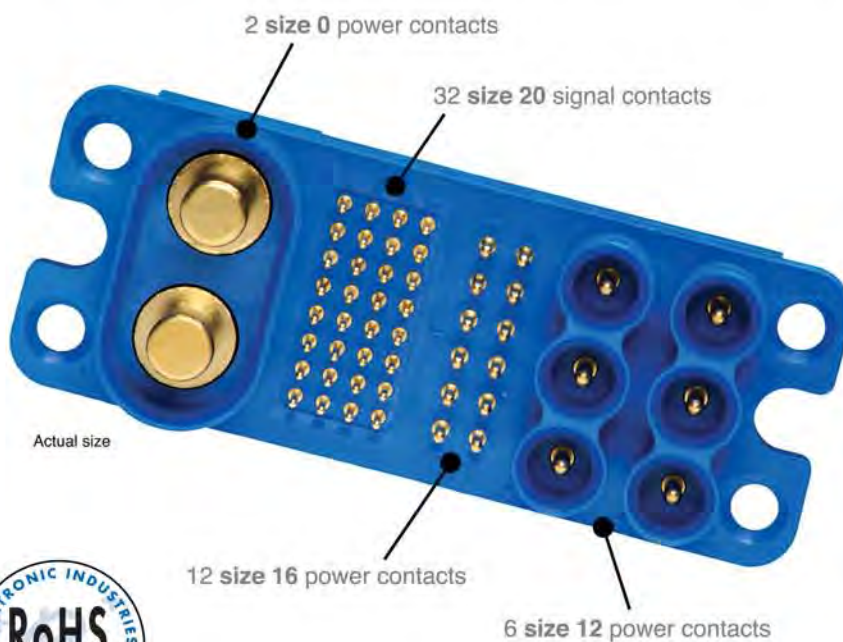
+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/locations



High Power Sumo connectors



FEATURES:

- ◆ **Compatible** with existing power connectors for use in **drawer** applications
- ◆ Variety of contact sizes in a single package
- ◆ Available in cable, **right angle** and straight **board mount** versions
- ◆ Selective loading available on request
- ◆ Sequential mating options
- ◆ Outstanding **blind mating**

Contact us for more information
on other Positronic interconnect
products:

Technical Sales

(800) 641-4054

E-mail

info@connectpositronic.com

Web

www.connectpositronic.com

Connector Excellence

POSITRONIC INDUSTRIES

ABOUT US

Founded in 1966, Positronic Industries is a vertically integrated manufacturer of high quality interconnect products. Positronic has earned the worldwide reputation as a service oriented, quick-reaction, top quality connector supplier. We are committed to maintaining this reputation by continuous implementation of our **Complete Capability** concept.

COMPLETE CAPABILITY

Design & Development

- Designs new connectors and modifies existing connectors to meet industry requirements
- Continuously conducts marketing studies to identify industry needs for new products
- Ongoing interest in unique connector designs

Tooling

- Tooling support for all manufacturing areas within company
- Provides 80% of new tooling, punch press dies, molds, jigs and fixtures used at Positronic factory locations worldwide

Machining

- Automatic screw machines produce finely crafted contacts and hardware for connector bodies
- Trained technicians operate machines from Tornos, Bechler and Brown & Sharpe

Molding

- Molds all plastic connector components such as insulators, hoods, angle brackets and more
- Overmold capability available

Plating

- Applies gold and other metal finishes to connector components to any required thickness
- Plating conforms to all military specifications

Quality Assurance Lab

- Quality assurance system certified to ISO 9001
- Maintains aggressive TQM program
- Able to test to IEC, EIA, UL, MIL-DTL-24308, MIL-DTL-28748, MIL-C-39029 and MIL-C-85049 requirements

Finished Stock Inventory

- Each main factory location maintains a large inventory of connector components and accessories
- Same day shipments available on many standard connector products
- Stocking agreements available for qualified customers

Worldwide Sales & Service

- Responsive attitude toward customer needs
- Fully trained sales staff located worldwide



Machining



Molding



Finished Stock Inventory

Products described within this catalog may be protected by one or more of the following US. patents:

#4,721,472 #4,900,261 #5,255,580
#5,329,697 #6,260,268 #6,835,079

Patented in Canada, 1992 Other Patents Pending

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.03 mm [0.001 inches] for male contact mating diameters.
- 2) ± 0.08 mm [0.003 inches] for contact termination diameters.
- 3) ± 0.13 mm [0.005 inches] for all other diameters.
- 4) ± 0.38 mm [0.015 inches] for all other dimensions.

Positronic Industries believes the data contained herein to be reliable. Since the technical information is given free of charge, the User employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic Industries' FEDERAL SUPPLY CODE (Cage Code) FOR MANUFACTURERS is 28198



STANDARD TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel. Solder-coated terminations optional. Other finishes available upon request.
Blind Mate Guides:	Stainless steel, passivated.
Float Mount Screw:	Stainless steel, passivated.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, per UL 1977:	
Size 0 Contact:	200 amperes, continuous.
Size 12 Contact:	35 amperes, continuous.
Size 16 Contact:	15 amperes, continuous.
Size 20 Contact:	5 amperes.
Temperature Rise Curves per IEC 512-3, Test 5a. See next page for performance curves.	
Initial Contact Resistance (in free air at rated current):	
Size 0 Contact:	0.074m ohms.
Size 12 Contact:	0.12m ohms.
Size 16 Contact:	0.32m ohms.
Size 20 Contact:	1.90m ohms.
	Per IEC 512-2, Test 2b.
Insulator Resistance:	5 G ohms per IEC 512-2, Test 3a.
Voltage Proof:	
Size 0 Contact:	3,000 VAC
Size 12 Contact:	3,000 VAC
Size 16 Contact:	2,000 VAC
Size 20 Contact:	1,700 VAC
Creepage Distances:	Consult Technical Sales.
Clearance Distance:	Consult Technical Sales.
Working Voltage:	
Size 0 Contact:	250 V
Size 12 Contact:	600 V
Size 16 Contact:	250 V
Size 20 Contact:	250 V

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Blind mate guides allow for misalignment up to 4.00 mm [0.157 inch]
Polarization:	Provided by connector body design.
Removable Contacts:	Insert contact in rear face of insulator; release from front face of insulator. Female contacts feature "Closed Entry" design.
Removable Contact Retention in Connector Body:	
Size 0 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 12 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 16 Contact:	67N [15 lbs.] per IEC 512-8, Test 15a.
Size 20 Contact:	44N [10 lbs.] per IEC 512-8, Test 15a.
Fixed Contacts:	Printed board terminations, both straight and right angle. Size 12 and 16 female contacts feature "Closed Entry" design. Size 20 female contacts feature "Rugged Open Entry" design.
Fixed Contact Retention in Connector Body:	44N [10 lbs.], minimum.
Resistance to Solder Heat:	260°C [500°F] for 10 seconds duration per IEC 512-6, Test 12e, 25-watt soldering iron.
Sequential Contact Mating System:	Three level systems featured for size 12, 16 and 20. Consult Technical Sales for application assistance with contact sequencing.
Printed Board and Panel Mounting Holes:	Mounting holes provided in connector body for both printed board and panel mounting.
Float Mount Shoulder Screw:	Provides up to 2.36 mm [0.093 inch] float.
Mechanical Operations:	200 couplings.

CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
----------------------	------------------

For RoHS options,
see page 13.



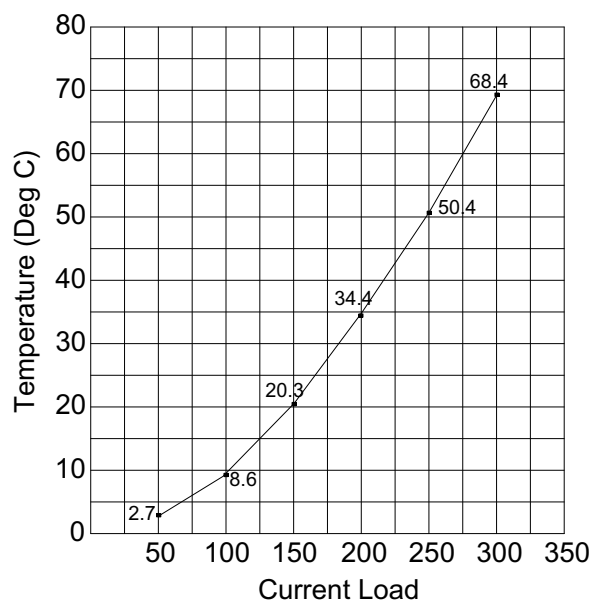
Positronic Industries
connectpositronic.com

TEMPERATURE RISE CURVES

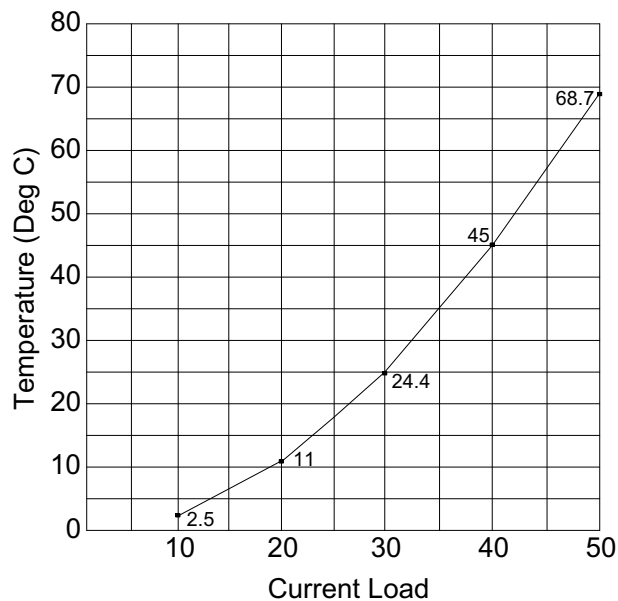
SUMO

CONNECTOR TEMPERATURE RISE CURVES

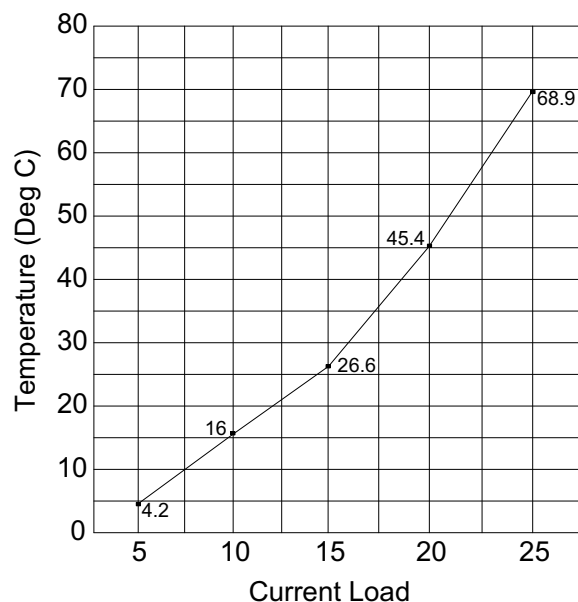
Tested per IEC Publication 512-3, Test 5a



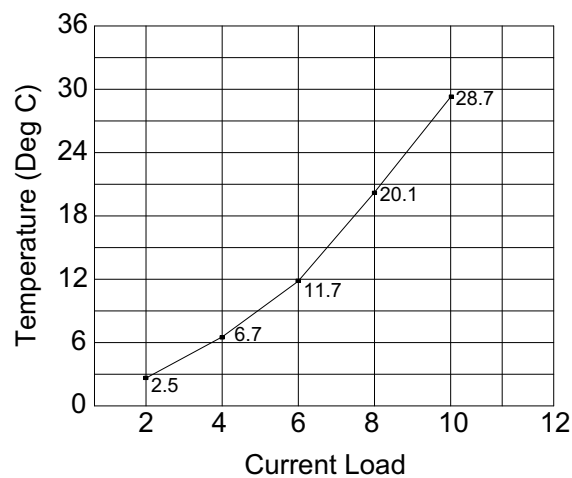
SIZE 0 CONTACTS



SIZE 12 CONTACTS



SIZE 16 CONTACTS



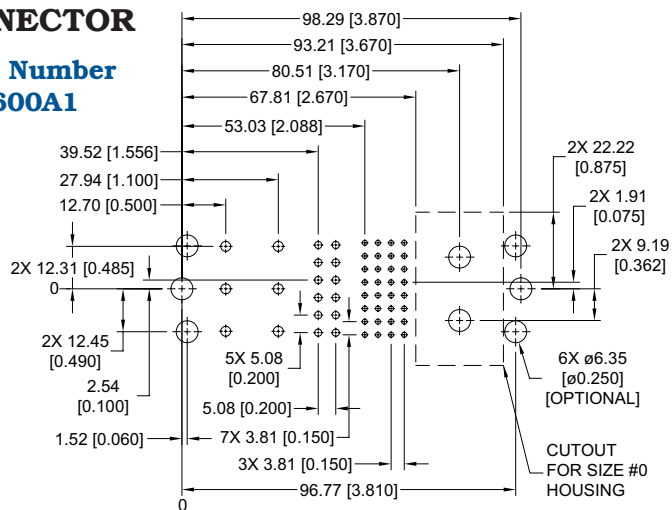
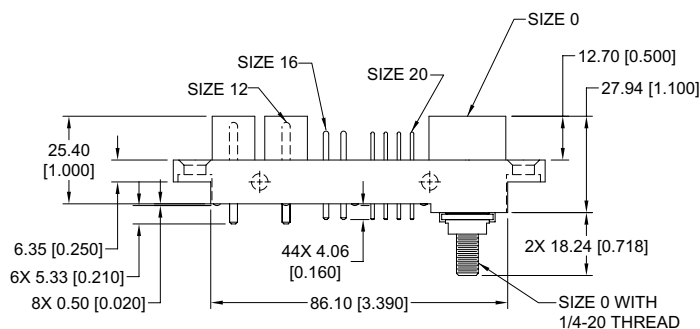
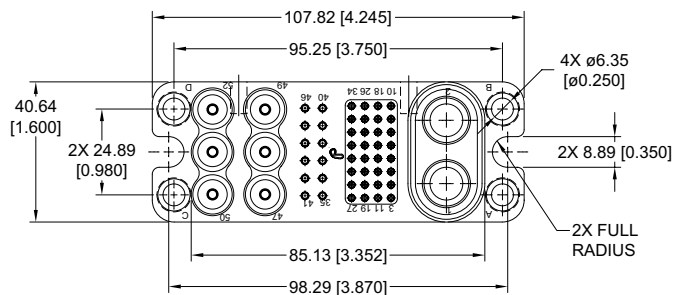
SIZE 20 CONTACTS

NOTE:

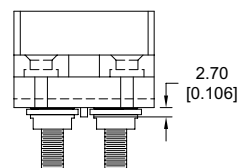
- 1) These temperature rise curves were developed in free air.

MALE CONNECTOR

Typical Part Number
SUM13M600A1



CONTACT HOLE PATTERN

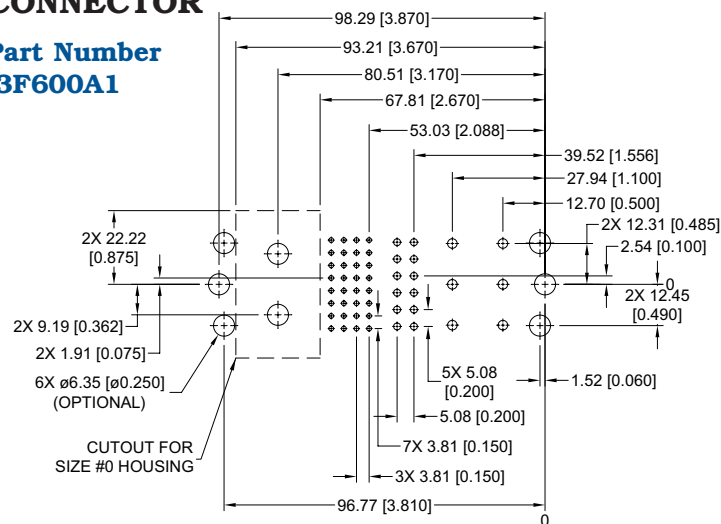
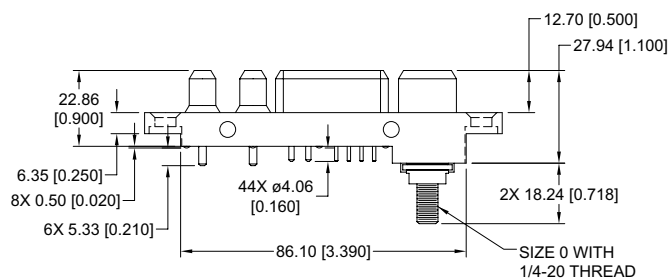
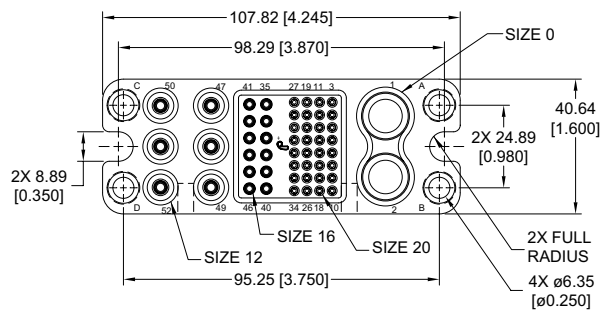


Contact Terminations:
Size 12: ø2.29 [0.090]
Size 16: ø1.60 [0.063]
Size 20: ø1.02 [0.040]

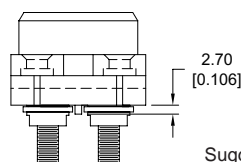
Note: See below for suggested printed board hole sizes.

FEMALE CONNECTOR

Typical Part Number
SUM13F600A1



CONTACT HOLE PATTERN



Contact Terminations:
Size 12: ø2.29 [0.090]
Size 16: ø1.60 [0.063]
Size 20: ø1.02 [0.040]

Suggest ø2.90 [0.114] holes for size 12 contact holes.
Suggest ø2.11 [0.083] holes for size 16 contact holes.
Suggest ø1.47 [0.058] holes for size 20 contact holes.
Suggest ø3.96 [0.156] holes for connector mounting holes.



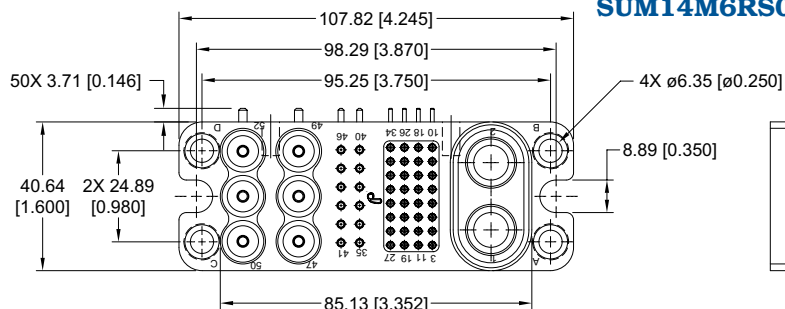
Positronic Industries
connectpositronic.com

RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS

SUMO

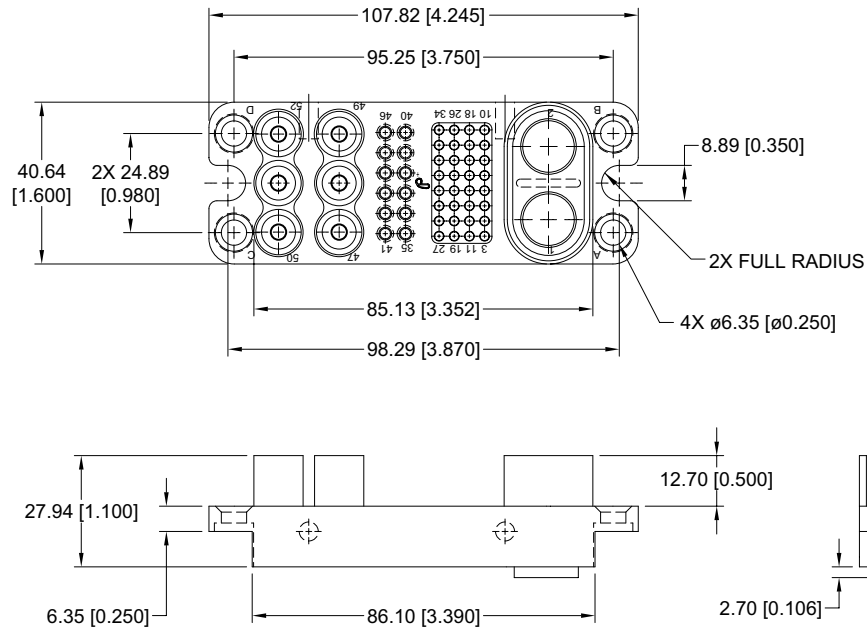
MALE CONNECTOR

Typical Part Number
SUM14M6RS0A1

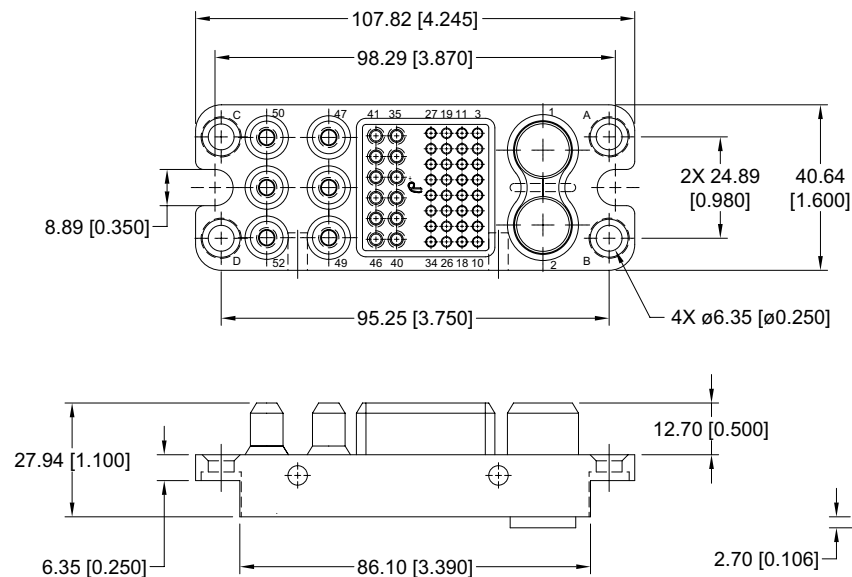


MALE CONNECTOR

Typical Part Number
SUM10M0000

**FEMALE CONNECTOR**

Typical Part Number
SUM10F0000



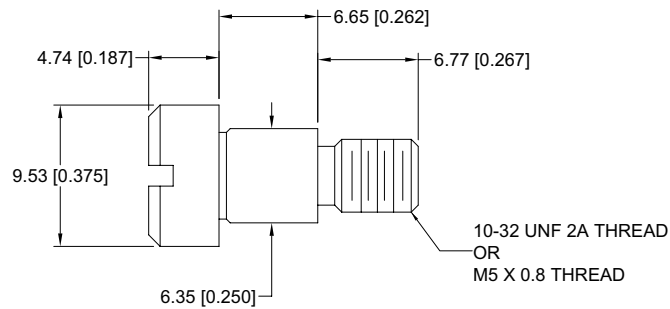


Positronic Industries
connectpositronic.com

FLOAT MOUNTING STYLES

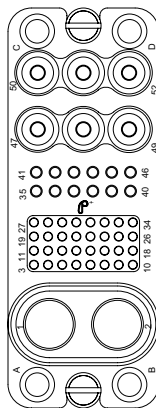
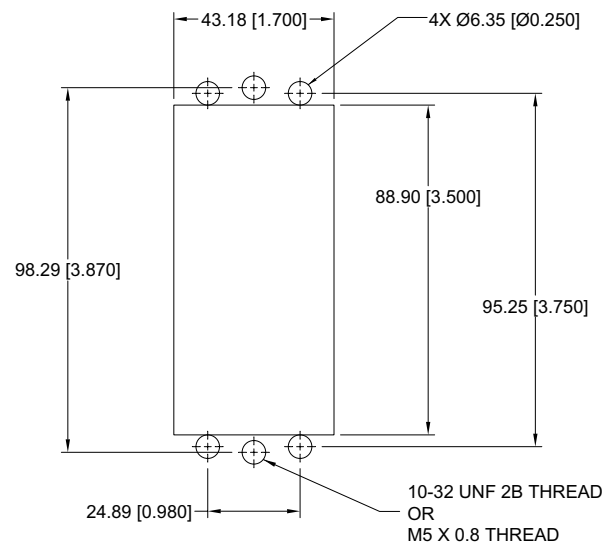
SUMO

FLOAT MOUNT



PANEL CUTOUT

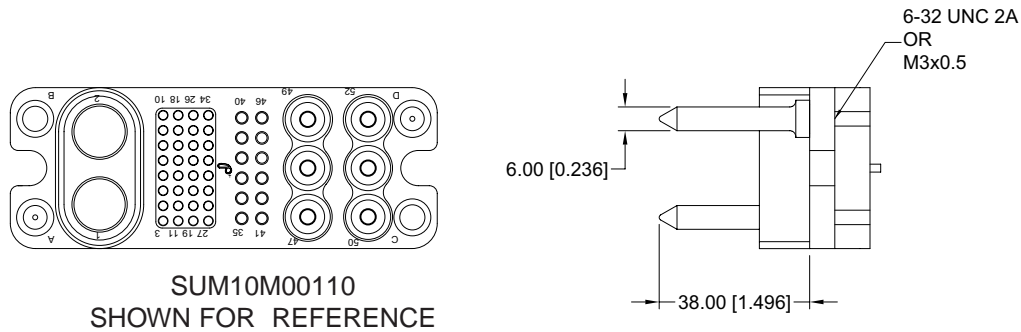
MAXIMUM PANEL THICKNESS 4.76 [0.188]



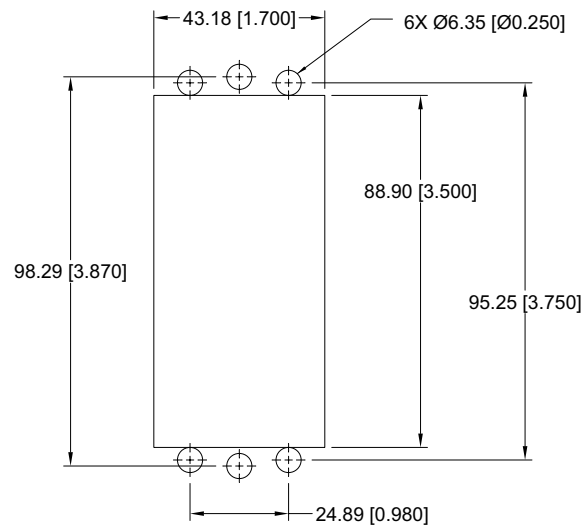
SUM10M0FS00
SHOWN FOR REFERENCE

MOUNTING OPTION

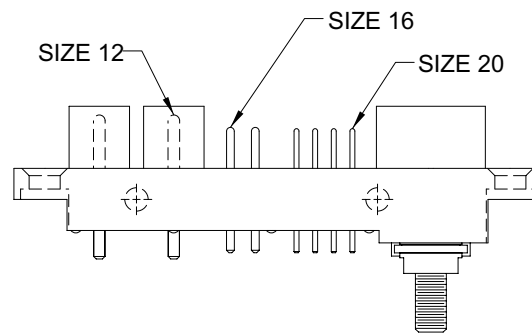
BLIND MATING SYSTEM



PANEL CUTOUT



SEQUENTIAL MATING



CONTACT SIZE	FIRST MATE	STANDARD	LAST MATE
Size 12	11.68 [0.460]	10.92 [0.430]	9.90 [0.390]
Size 16	12.19 [0.480]	8.38 [0.330]	7.36 [0.290]
Size 20	11.93 [0.470]	8.12 [0.320]	6.85 [0.270]



Positronic Industries
connectpositronic.com

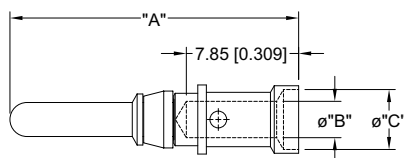
MALE REMOVABLE CONTACTS

SUMO

SIZE 12, 16 AND 20 REMOVABLE CRIMP CONTACTS

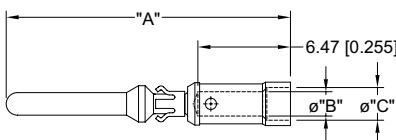
Contacts are rear insertion front release style

SIZE 12



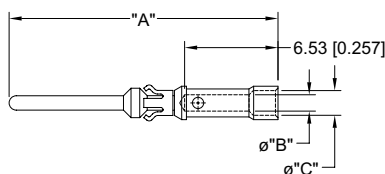
PART NUMBER	WIRE SIZE mm ² [AWG]	A	øB	øC	SEQUENTIAL MATE
SMC1210AN	5.3 [10]	23.46 [0.924]	N/A	3.73 [0.147]	FIRST
SMC1210BN	5.3 [10]	22.70 [0.894]	N/A	3.73 [0.147]	STANDARD
SMC1210CN	5.3 [10]	21.68 [0.854]	N/A	3.73 [0.147]	THIRD
SMC1212AN	4.0 [12]	23.46 [0.924]	2.54 [0.100]	4.19 [0.165]	FIRST
SMC1212BN	4.0 [12]	22.70 [0.894]	2.54 [0.100]	4.19 [0.165]	STANDARD
SMC1212CN	4.0 [12]	21.68 [0.854]	2.54 [0.100]	4.19 [0.165]	THIRD

SIZE 16



PART NUMBER	WIRE SIZE mm ² [AWG]	A	øB	øC	SEQUENTIAL MATE
SMC1612AN	4.0 [12]	23.68 [0.932]	N/A	2.49 [0.098]	FIRST
SMC1612BN	4.0 [12]	19.87 [0.782]	N/A	2.49 [0.098]	STANDARD
SMC1612CN	4.0 [12]	18.85 [0.742]	N/A	2.49 [0.098]	THIRD
SMC1614AN	2.5 [14]	23.68 [0.932]	2.06 [0.081]	2.67 [0.105]	FIRST
SMC1614BN	2.5 [14]	19.87 [0.782]	2.06 [0.081]	2.67 [0.105]	STANDARD
SMC1614CN	2.5 [14]	18.85 [0.742]	2.06 [0.081]	2.67 [0.105]	THIRD
SMC1616AN	1.5 [16]	23.68 [0.932]	1.70 [0.067]	2.36 [0.093]	FIRST
SMC1616BN	1.5 [16]	19.87 [0.782]	1.70 [0.067]	2.36 [0.093]	STANDARD
SMC1616CN	1.5 [16]	18.85 [0.742]	1.70 [0.067]	2.36 [0.093]	THIRD
SMC1620AN	0.5 [20]	23.68 [0.932]	1.14 [0.045]	1.73 [0.068]	FIRST
SMC1620BN	0.5 [20]	19.87 [0.782]	1.14 [0.045]	1.73 [0.068]	STANDARD
SMC1620CN	0.5 [20]	18.85 [0.742]	1.14 [0.045]	1.73 [0.068]	THIRD

SIZE 20



PART NUMBER	WIRE SIZE mm ² [AWG]	A	øB	øC	SEQUENTIAL MATE
SMC2020AN	0.5 [20]	23.93 [0.942]	1.14 [0.045]	1.73 [0.068]	FIRST
SMC2020BN	0.5 [20]	20.12 [0.792]	1.14 [0.045]	1.73 [0.068]	STANDARD
SMC2020CN	0.5 [20]	18.80 [0.740]	1.14 [0.045]	1.73 [0.068]	THIRD

MATERIALS:

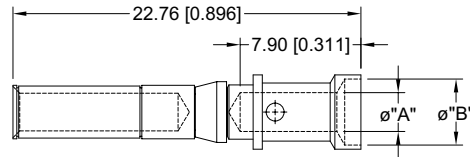
Contacts: Copper Alloy.
Retention Clips: Beryllium copper.

FINISH:

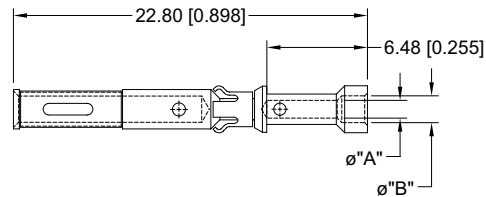
Gold flash over nickel plate.

SIZE 12, 16 AND 20 REMOVABLE CRIMP CONTACTS

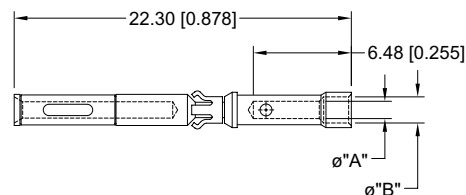
Contacts are rear insertion front release style

SIZE 12

PART NUMBER	WIRE SIZE mm ² [AWG]	øA	øB
SFC1210N2	5.3 [10]	3.73 [0.147]	N/A
SFC1212N2	4.0 [12]	2.54 [0.100]	4.19 [0.165]

SIZE 16

PART NUMBER	WIRE SIZE mm ² [AWG]	øA	øB
SFC1612N2	4.0 [12]	N/A	2.49 [0.098]
SFC1614N2	2.5 [14]	2.06 [0.081]	2.64 [0.104]
SFC1616N2	1.5 [16]	1.70 [0.067]	2.36 [0.093]
SFC1620N2	0.5 [20]	1.14 [0.045]	1.73 [0.068]

SIZE 20

PART NUMBER	WIRE SIZE mm ² [AWG]	øA	øB
SFC2020N2	0.5 [20]	1.14 [0.045]	1.73 [0.068]

MATERIALS:

Contacts: Copper Alloy.
Retention Clips: Beryllium copper.

FINISH:

Gold flash over nickel plate.

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.



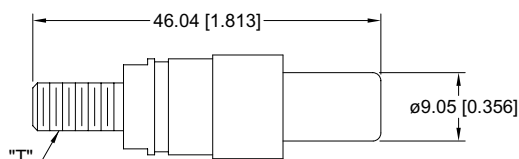
Positronic Industries
connectpositronic.com

REMOVABLE CONTACTS

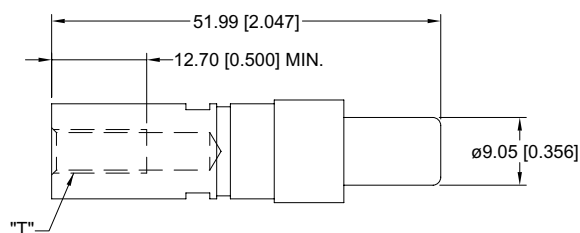
SUMO

SIZE 1/0 REMOVABLE CRIMP CONTACTS

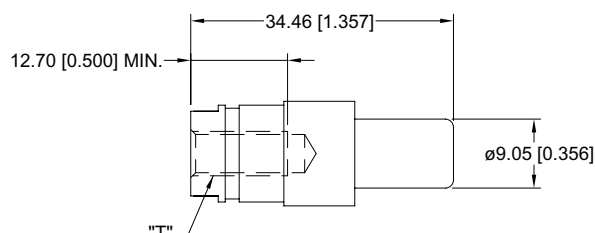
MALE CONTACTS



PART NUMBER	"T" Thread
SMET10S	1/4-20 UNC 2A
SMET10M	M6 X 1

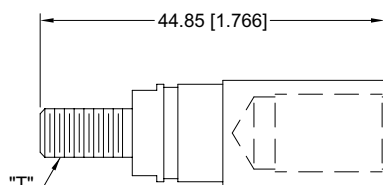


PART NUMBER	"T" Thread
SMIT10S	1/4-20 UNC 2A
SMIT10M	M6 X 1

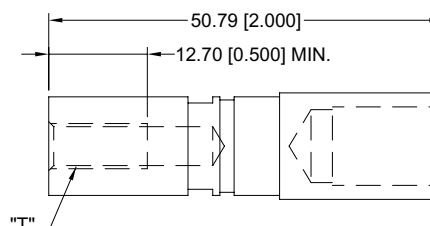


PART NUMBER	"T" Thread
SMSIT10S	1/4-20 UNC 2A
SMSIT10M	M6 X 1

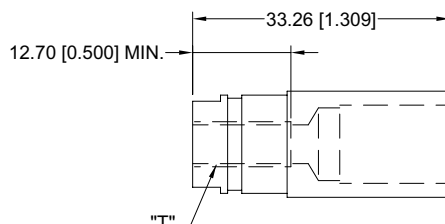
FEMALE CONTACTS



PART NUMBER	"T" Thread
SFET10S	1/4-20 UNC 2A
SFET10M	M6 X 1



PART NUMBER	"T" Thread
SFIT10S	1/4-20 UNC 2A
SFIT10M	M6 X 1



PART NUMBER	"T" Thread
SFSIT10S	1/4-20 UNC 2A
SFSIT10M	M6 X 1

MATERIALS:

Contacts: Copper Alloy.
Retention Clips: Beryllium copper.

FINISH:

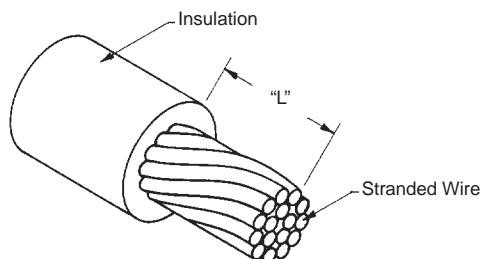
Gold flash over nickel plate.

CRIMPING INFORMATION FOR SUMO SERIES CRIMP CONTACTS

Step 1: Strip wire to indicated length.

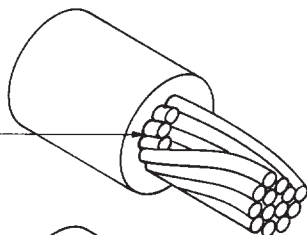
- Take care not to:
- Damage or remove strands.
 - Untwist or overtighten strands.
 - Leave insulation particles on strands.
 - Damage insulation.

Correctly Stripped Wire:



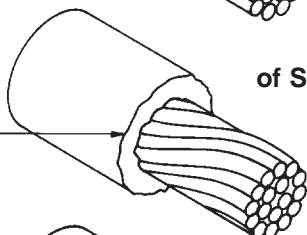
CONTACT SIZE	L ±0.51 [0.020]
12	7.37 [0.290]
16	5.84 [0.230]
20	5.84 [0.230]

Strands damaged or removed by stripping tool.

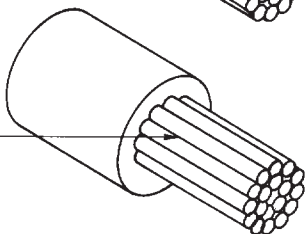


Examples of Stripping Faults

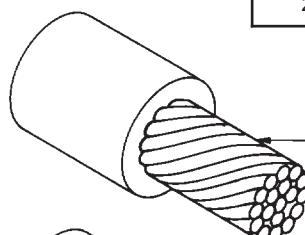
Insulation cut incorrectly.



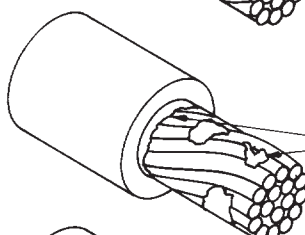
Strands untwisted.



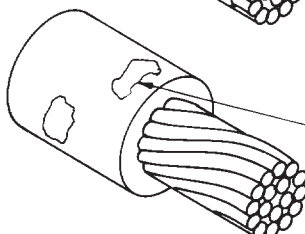
Strands overtightened.



Particles of insulation left on the stripped part of the wire.



Wire insulation damaged.



Step 2: Crimp wire to contact.

For Hand Crimp Tool:

- Place contact into crimping tool.
- Insert wire into contact.
- Center contact by slowly closing crimping tool until crimp indenters make contact with crimp barrel.
- Complete the cycle of the crimping tool in one smooth motion.
- Remove the crimped contact.

For Automatic Pneumatic Crimp Tool:

- Insert wire into the contact, positioned in the crimp tool by the plastic carrier.
- Depress the activating device of the crimping tool to start crimping cycle.
- Remove the crimped contact.



Positronic Industries
connectpositronic.com

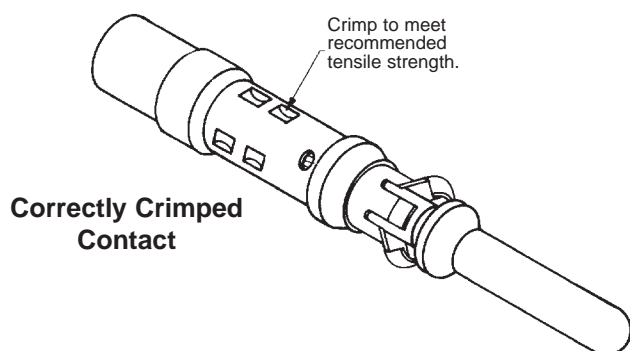
CONTACT CRIMPING INFORMATION

SUMO

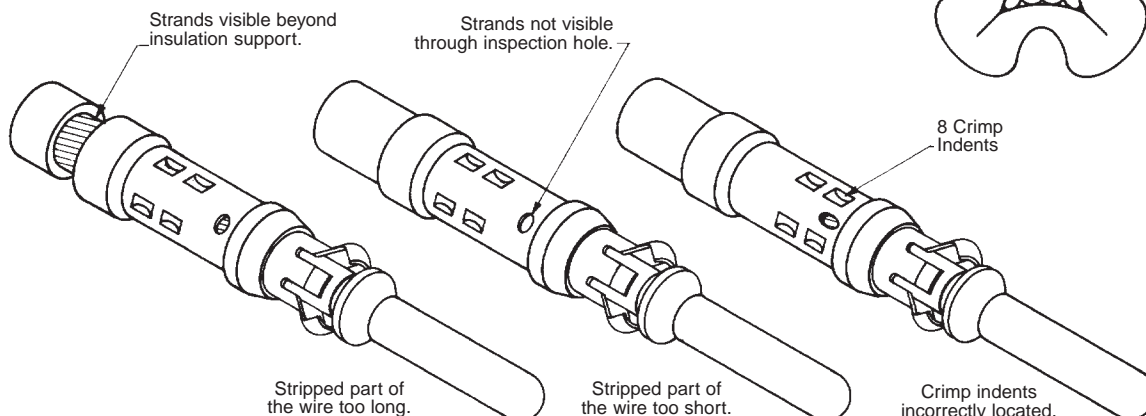
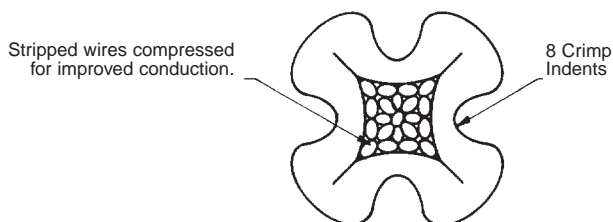
CRIMPING INFORMATION FOR SUMO SERIES CRIMP CONTACTS

Step 3: Inspect crimp.

- For All Tools:
- Strands to be visible through the inspection hole.
 - Strands not to be visible beyond the insulation support.
 - Crimped contact to meet recommended conductor tensile force shown in chart (below, left).
 - Check for peeled gold and bent contact.



Cross-section of Correctly Crimped Contact



Positronic Recommended Conductor Tensile Strength

WIRE SIZE	AXIAL LOAD
4.0 mm ² [12 AWG]	489N [110 lbs.]
2.5 mm ² [14 AWG]	311N [70 lbs.]
1.5 mm ² [16 AWG]	222N [50 lbs.]
1.0 mm ² [18 AWG]	125N [28 lbs.]
0.5 mm ² [20 AWG]	89N [20 lbs.]
0.3 mm ² [22 AWG]	53N [12 lbs.]
0.25 mm ² [24 AWG]	36N [8 lbs.]
0.12 mm ² [26 AWG]	22N [5 lbs.]

Examples of Crimping Faults

POSITRONIC RECOMMENDED TOOLS			
Tool Description	Size 12 Contact	Size 16 Contact	Size 20 Contact
Hand Crimp Tool	9501 with 9502-19-0-0 positioner	9501 with 9502-17-0-0 positioner for Male Contacts 9501 with 9502-26-0-0 positioner for Female Contacts	9507 with 9502-21-0-0 positioner for Male Contacts 9507 with 9502-25-0-0 positioner for Female Contacts
Contact Removal Tool	2711-0-0-0	9081-6-0-0	9081-5-0-0



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	SUM	13	M	6	FS	22	A1	/AA	

STEP 1 - BASIC SERIES

SUM- SUMO Series

STEP 2 - CONNECTOR VARIANTS

- 10 - 52W8 Crimp connector
- 13 - 52W8 Solder, Straight Printed Board Mount
- 14 - 52W8 Solder, Right Angle Printed Board Mount

STEP 3 - CONNECTOR GENDER

- M - Male Insulator
- F - Female Insulator

STEP 4 - CONTACT TERMINATION TYPE

- 0 - No size 0 contacts, ordered separately
- 6 - Size 0 contact with 1/4-20 UNC 2A External Threads
- 7 - Size 0 contact with M6 x 1 External Threads
- 8 - Size 0 contact with 1/4-20 UNC 2A Internal Threads
- 9 - Size 0 contact with M6 x 1 Internal Threads
- 81 - Size 0 contact with 1/4-20 UNC 2A Internal Threads
- 91 - Size 0 contact with M6 x 1 Internal Threads

STEP 5 - MOUNTING STYLE

- 0 - None
- FS - Float Mount Shoulder Screw with 10-32 UNF 2A Threads
- FM - Float Mount Shoulder Screw with M5 x 0.8 Threads
- RS - Inserts with 6-32 UNC 2B Threads, for Right Angle Mounting
- RM - Inserts with M3.5 x 0.5 Threads, for Right Angle Mounting.

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING:

- Select Loading
- Sequential Mating
- Other Special Options

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used.
Example: SUM13M6FS22A1



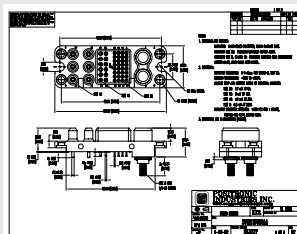
STEP 7 - CONTACT PLATING

- 0 - Removable Contacts, Ordered Separately
- A1 - Gold flash over nickel on mating end and gold flash over nickel on termination end.
- A2 - Gold flash over nickel on mating end and 5.00 microns [0.000200 inch] solder coat on termination end.
- C1 - 0.80 microns [0.000030 inch] gold over nickel on mating end and 0.80 microns [0.000030 inch] gold over nickel on termination end.
- C2 - 0.80 microns [0.000030 inch] gold over nickel on mating end and 5.00 microns [0.000200 inch] solder coat on termination end.

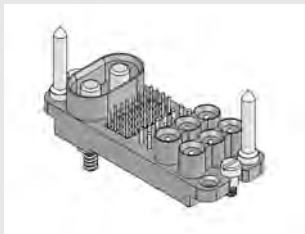
STEP 6 - BLIND MATE GUIDES

- 0 - No guides
- 11 - 6-32 UNC 2A threaded guides located at positions A and D.
- 12 - M3x0.5 threaded guides located at positions A and D.
- 21 - 6-32 UNC threaded guides located at positions B and C.
- 22 - M3x0.5 threaded guides located at positions B and C.
- 31 - 6-32 UNC 2A threaded guides located at positions A and C.
- 32 - M3x0.5 threaded guides located at positions A and C.
- 41 - 6-32 UNC 2A threaded guides located at positions B and D.
- 42 - M3x0.5 threaded guides located at positions B and D.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES file.



SK Drawing



3-dimensional model

POSITRONIC PRODUCTS

Power

Contact Sizes: 0, 8, 12, 16, 20 and 22
Current Ratings: To 150 amperes
Terminations: Crimp, wire solder, straight solder, right angle solder, straight press-fit and right angle press-fit
Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41



FEATURES: Hot swap capability • AC/DC operation in a single connector • Signal contacts for hardware management • Blind mating • Sequential mating • Large Surface Area Contact Mating System • Wide variety of accessories • Customer specified contact arrangements

D-Subminiature

Contact Sizes: 8, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle solder and straight press-fit
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-24308, Goddard Space Flight 311P, MIL-C-39029, IP65, IP67



FEATURES: Three performance levels available: professional quality, military quality and space-flight quality provide multiple performance to cost choices • Options include thermocouple contacts, filtered, environmentally sealed and dual port package including mixed density • Broad selection of accessories

Rectangular

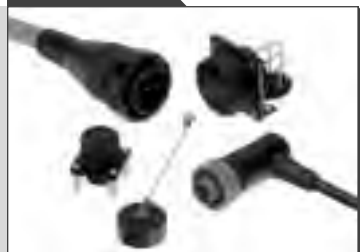
Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes
Terminations: Crimp, wire solder, straight solder and right angle solder
Configurations: Multiple variants in both standard and high densities
Qualifications: MIL-DTL-28748, MIL-C-39029, CCITT V.35



FEATURES: Two performance levels available: industrial quality and military quality provide two performance to cost choices • Large Surface Area Contact Mating System • A wide variety of accessories • Broad selection of contact variants and package sizes

Circular

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder and right angle solder
Configurations: Multiple variants in two package sizes
Qualifications: Environmental protection to IP67



FEATURES: Non-corrodible / lightweight composite construction • EMI/RFI shielded versions • Thermocouple contacts • Environmentally sealed versions • Rear insertion/ front release of removable contacts • Two level sequential mating • Overmolding available on full assemblies

Cable

All Positronic connector products can be supplied as part of cable assemblies whose technical characteristics would reflect those of the connectors being used within the assembly.



FEATURES: Shorten the supply chain and reduce additional costs and delays by "cablizing" • Overmolding available • Shielded and environmentally sealed versions available • Power cables and access boxes which meet the SAE J2496 specification

Hermetic

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feed through is standard; flying leads and board mount available upon request
Configurations: See D-Subminiature and Circular Configurations above
Qualifications: Space-D32



FEATURES: Intended for use as an electrical feedthrough in high vacuum applications • Leakage rate: 1×10^{-9} mbar.l/s • Signal, power, coax and high voltage versions available • Connectors can be mounted on flange assembly per customer specification

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office as given on the back of this catalog.

NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters

Factory Sales and Engineering Offices (800) 641-4054

PUERTO RICO, Ponce Factory

Factory Sales and Engineering Offices (800) 641-4054

MEXICO

Factory Sales and Engineering Offices (800) 872-7674

CANADA

Factory Sales and Engineering Offices (800) 327-8272

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices (65) 6842-1419

ASIA, Direct Sales Offices

Taiwan Sales Office (88) 62-2937-8775

China Sales Office (86) 755-2643-7578

Korea Sales Office (82) 31-909-8047/8

JAPAN

Sales and Engineering Offices (81) 3-5812-7720

INDIA

Factory Sales and Engineering Offices (91) 20-2439-4810

ASIA/PACIFIC, Technical Agents

Technical Agents in Malaysia, Australia, New Zealand, Philippines,
Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices 33 (0)5 62 63 44 91

EUROPE, Direct Sales Offices

Northern France Sales Office 33 (0)1 45 88 13 88

Southern France Sales Office 33 (0)4 67 72 80 28

Italy Sales Office 39 (0)2 54 116 106

Northern Germany Sales Office 49 (0)30 34 504 307

Southern Germany Sales Office 49 (0)2351 63 47 39

EUROPE, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece,
Ireland, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents

Technical Agents in Israel and Turkey



POSITRONIC INDUSTRIES, INC.

423 N Campbell Ave • PO Box 8247 • Springfield, MO 65801
Tel (417) 866-2322 • Fax (417) 866-4115 • Toll Free (800) 641-4054
info@connectpositronic.com

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies
France 32020 Auch Cedex 9
Telephone 33 (0)5 62 63 44 91 • Fax 33 (0)5 62 63 51 17
contact@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone (65) 6842 1419 • Fax (65) 6842 1421
singapore@connectpositronic.com

VPX SERIES



POSITRONIC™
GLOBAL *Connector* SOLUTIONS



VPX Series Features

- Six power contacts
- Three level of sequential mating
- Compatible with IEEE 1101.2 conduction cooled boards
- Compatible with popular high speed data connectors, no notching of the board required
- High reliability large surface area contact system

Compliant to VITA 41 VXS power connector requirements



**The dedicated power interface
between plug-in boards and backplanes**

Catalog C-035 Rev. C

Today, some customer applications have requirements for high bandwidth transfer between VMEbus cards. Requirements which even the most updated VME parallel bus cannot support. To meet this need the VITA 41 specification has been developed. VITA 41 VXS (VME Switched Serial) defines a common data plane interconnect using switched serial topologies.

Positronic's VPX power connector was developed to support VITA 41. The VPX series provides a dedicated power interface between boards and backplanes eliminating the need to use valuable high speed contacts to carry power.

The VPX series has a unique package size which allows compatibility with conduction cooled boards per IEEE 1101.2.

A unique size, multiple power contacts, three levels of sequential mating and high reliability make the VPX series suitable for VITA 41 or any similar application.



PICMG and the PICMG logo are registered trademarks of the PCI Industrial Computers Manufacturers Group.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel plate. Other finishes available upon request.

ELECTRICAL CHARACTERISTICS:

Contact Current Ratings, per UL 1977	See temperature rise curve for details.
Size 20 Power Contacts:	24 amperes continuous, all contacts under load.
Initial Contact Resistance:	0.001 ohms maximum, per IEC 512-2, Test 2b.
Insulator Resistance:	5 G ohms per IEC 512-2, Test 3a.
Working Voltage:	200 V r.m.s
Creepage and Clearance Distance; minimum:	2.0 mm [0.079 inch]

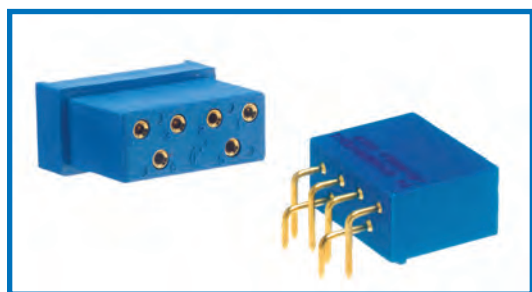
MECHANICAL CHARACTERISTICS:

Blind Mating System:	Male and female connector bodies provide "lead-in" for 1.0 mm [0.039 inch] diametral misalignment.
Polarization:	Provided by contact arrangement.
Fixed Contacts:	Printed board terminations. Female contacts feature "Closed Entry" design.
Fixed Contact Retention in Connector Body:	40 N [9 lbs.]
Sequential Contact Mating System:	First mate, Second mate and Third mate contacts available.
Power to be enabled through a last mate contact within VPX Series or another connector.	
See Sequential Mating Code Section for more Information.	

Printed Board Mounting:	Mounting holes provided in connector body for printed board. Self-tapping screws are available, see ordering information page.
Mechanical Operations:	250 couplings, minimum.

CLIMATIC CHARACTERISTICS:

Working Temperature:	-55°C to +125°C.
-----------------------------	------------------



VPX6W6F9300A1 and VPX6W6M400A1



For RoHS options see page 6.

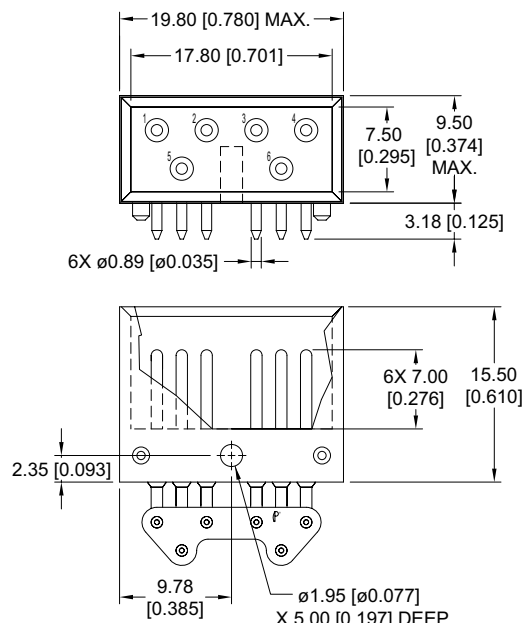
MALE CONNECTOR WITH RIGHT ANGLE (90°) SOLDER TERMINATIONS

CODE 4

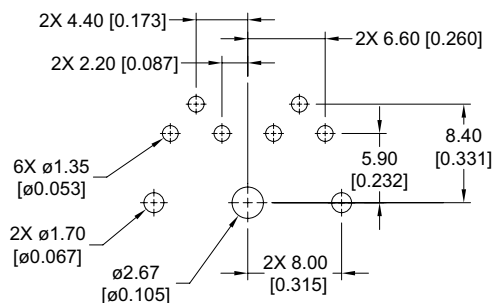
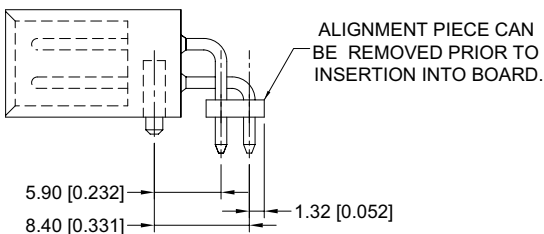
Typical Part Numbers

VPX6W6M400*

NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.



VPX6W6M400A1 shown for reference



CONTACT HOLE PATTERN

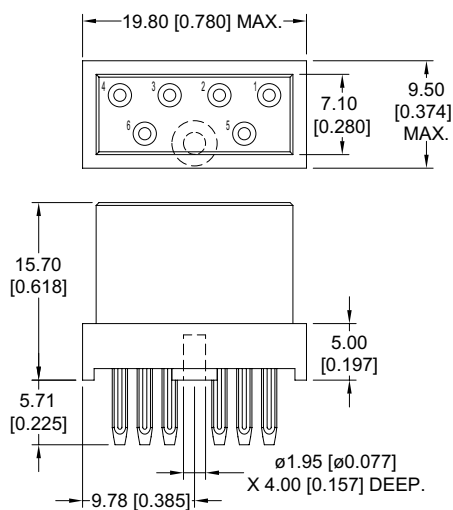
FEMALE CONNECTOR WITH COMPLIANT PRESS-FIT TERMINATIONS

CODE 93

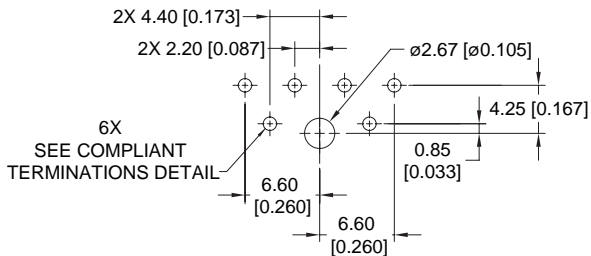
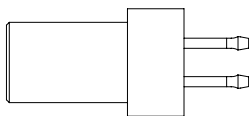
Typical Part Numbers

VPX6W6F9300*

NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.



VPX6W6F9300A1 shown for reference

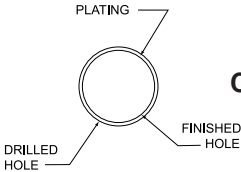
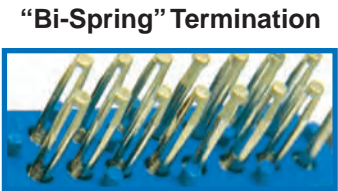


CONTACT HOLE PATTERN

NOTE: See next page for suggested printed board hole sizes.

SUGGESTED PRINTED BOARD HOLE SIZES
FOR COMPLIANT PRESS-FIT CONNECTORS

BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE /TYPE	DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	20 BI-SPRING	---	3μ [0.0001] minimum solder over 25μ [0.0010] min. copper	ø1.19±0.05 [ø0.047±0.002]



COMPLIANT PRESS-FIT CONTACT HOLE

Note: For PCB plating compositions, i.e. ENIG (Electroless Nickel, Immersion Gold), consult Technical Sales.

SEQUENTIAL MATING CODE

SELECTION GUIDE FOR ORDERING DIFFERENT CONTACT LENGTHS
STEP 9 OF ORDERING INFORMATION

SELECT CONNECTOR USING ORDERING INFORMATION ON PAGE 6
THEN CHOOSE STEPS BELOW FOR SEQUENTIAL MATING SYSTEM CONTACTS

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	A	1	B	2	B	3	C	4	C

STEP 1
Specify code for most frequently used contact mating length. This length is used for all contacts not specified in steps 2 through 9.

STEP 2
Position number for first special length contact.

STEP 3
Length of contact specified in step 2. (Choose from length code chart)

STEP 4
Position number for second special length contact.

STEP 5
Length of contact specified in step 4 (Choose from length code chart).

STEP 6
Position number for third special length contact.

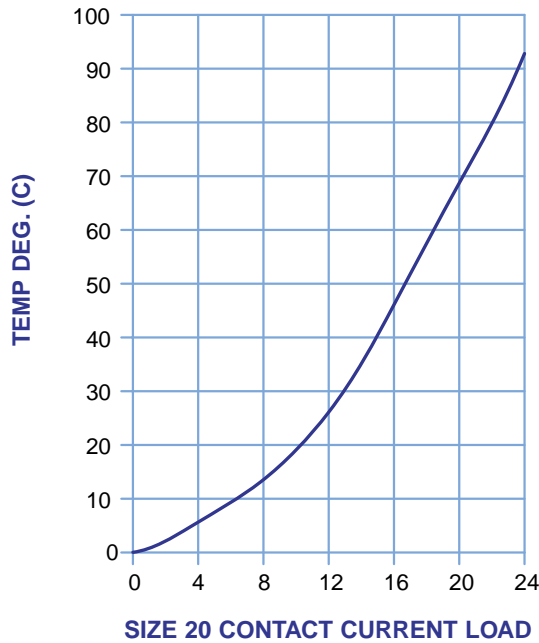
STEP 7
Length of contact specified in step 6 (Choose from length code chart).

STEP 8
Position number for fourth special length contact.

STEP 9
Length of contact specified in step 8 (Choose from length code chart).

CONTACT CODE	CONTACT LENGTH
A	8.50 [0.335]
B	7.00 [0.276] STANDARD
C	5.50 [0.217]

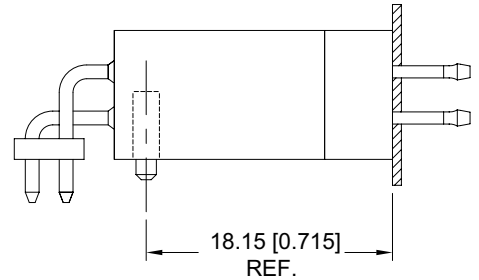
TEMPERATURE RISE CURVE



Temperature curve developed using VPX6W6F9300A1 and VPX6W6M400A1 connectors and 16 AWG wire.
All Size 20 Contacts under load.

MATING DIMENSIONS

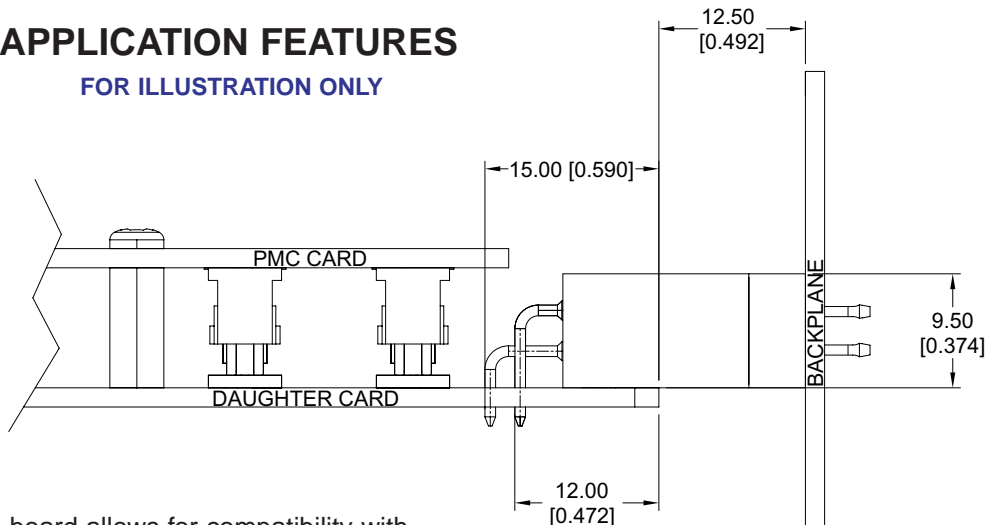
Right Angle (90°) Board Mount Male to Straight Board Mount Female (FULLY MATED)



1 mm [0.039 inch] separation allowed

APPLICATION FEATURES

FOR ILLUSTRATION ONLY



Height above the board allows for compatibility with conduction cooled cards per IEEE 1101.2.

Limited depth into the daughtercard allows compatibility with many popular PMC card configurations.
(Alignment piece may need to be removed prior to installation).

Products described within this catalog may be protected by one or more of the following US. patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

**Positronic Industries' FEDERAL SUPPLY CODE
(Cage Code) FOR MANUFACTURERS is 28198**

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	VPX	6W6	F	93	0	0	A1	/AA	
STEP 1 - BASIC SERIES VPX - VP Series									STEP 9 - SPECIAL OPTIONS Sequential mating system - See page 4 for details. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS
STEP 2 - CONNECTOR VARIANTS 6W6 - All contact positions populated.									
STEP 3 - CONNECTOR GENDER M - Male F - Female									STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS) Note: If compliance to environmental legislation is not required, this step will not be used. Example: VPX6W6F9300A1
STEP 4 - TYPE OF CONTACT 4 - Right Angle (90°) Board Mount, Solder. Male only 93 - Straight Board Mount, Compliant Press-fit. Female only									
STEP 5 0 - None									STEP 7 - CONTACT PLATING A1 - Gold flash over nickel on mating end and termination end. A2 - Gold flash over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 93 in step 4. C1 - 0.76μ [0.000030 inch] gold over nickel on mating end and termination end. C2 - 0.76μ [0.000030 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coated termination end. Not available with code 93 in step 4. D1 - 1.27μ [0.000050 inch] gold over nickel on mating end and termination end. D2 - 1.27μ [0.000050 inch] gold over nickel on mating end and 5.00μ [0.00020 inch] tin-lead solder coated termination end. Not available with code 93 in step 4.
<ul style="list-style-type: none"> VP Series connectors are designed to be mounted to the PCB with screws. Please use the following type: Phillips Pan Head Self-Tapping Screw, 2-28 Triplask II Trilobular threads or equivalent. Screws are available from Positronic Industries. See chart for part number. Female contact press-fit connectors require a press-fit tool, part number 9513-308-4-41, for installation. 									
STEP 6 0 - None									



MOUNTING SCREWS

STEEL SCREW PART NUMBER	STAINLESS STEEL SCREW PART NUMBER	THREAD LENGTH
4546-7-1-16	4546-7-6-4	6.35+0.00-0.76 [0.250+0.000-0.030]
4546-7-2-16	4546-7-7-4	7.93+0.00-0.76 [0.312+0.000-0.030]
4546-7-3-16	4546-7-8-4	9.53+0.00-0.76 [0.375+0.000-0.030]
4546-7-4-16	4546-7-9-4	11.11+0.00-0.76 [0.438+0.000-0.030]

Mounting hole in connector is 4.00 [0.157] deep.

Contact Technical Sales for RoHS compliant mounting screw information.

Let us work with you to develop variants of the VP Series to meet your specific requirements.

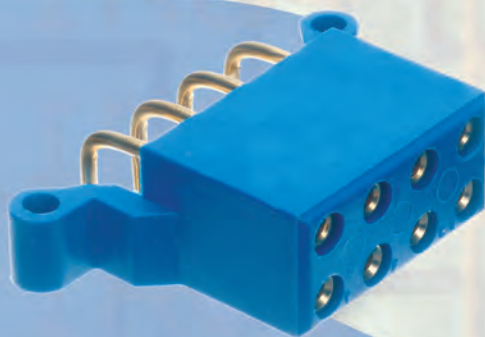
Unless otherwise specified, dimensional tolerances are:

- 1) ±0.03 mm [0.001 inches] for male contact mating diameters.
- 2) ±0.08 mm [0.003 inches] for contact termination diameters.
- 3) ±0.13 mm [0.005 inches] for all other diameters.
- 4) ±0.38 mm [0.015 inches] for all other dimensions.

VPN SERIES



POSITRONICTM
GLOBAL *Connector* SOLUTIONS



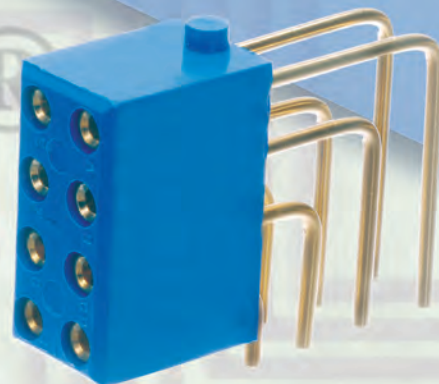
VPN Series Features

Eight power contacts

Four levels of sequential mating

Compatibility with popular high speed data connectors,
no notching of the board required

High reliability large surface area contact system



**The dedicated power interface
between plug-in boards and backplanes**

Catalog C-036 Rev. C

Plug-in boards used in today's computing platforms must provide higher reliability, greater functionality and require more power than ever before. Many next generation platforms are utilizing dedicated interfaces to provide power to plug-in boards. Dedicated power interfaces allow data connectors on the board to be fully utilized for data transport on and off the board.

Positronic's VP Series was developed as a **dedicated power interface** between backplanes and boards. The **VPN** offers eight power contacts, four levels of sequential mating, and high reliability in a small package. The **VPN's features** make it suitable for a wide variety of applications which require transferring high power from backplanes to plug-in boards.

Positronic is proud to be involved in the important work of PICMG (PCI Industrial Computer Manufacturers Group).



www.picmg.com

PICMG and the PICMG logo are registered trademarks of the PCI Industrial Computers Manufacturers Group.

TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator: Glass filled polyester, UL 94V-0.
Contacts: Precision machined copper alloy with gold flash over nickel, or 0.000030 inch [0.76µ] gold over nickel. Solder-coated terminations optional.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: See Temperature Rise Curve on page 5.

VPN Series: 25 amperes
VPNH Series: 35 amperes

Initial Contact Resistance:

VPN Series: 0.0022 ohms max. per IEC 512-2, Test 2b.
VPNH Series: 0.0007 ohms max. per IEC 512-2, Test 2b.

Insulation Resistance: 5 G ohms per IEC 512-2, Test 3a, Method A.

Voltage Proof: 2000 Vrms per IEC 512-2, Test 4a, Method C.

Creepage Distance: 0.157 inch [4mm] minimum.

Clearance Distance: 0.125 inch [3.2mm] minimum.

Working Temperature: -55°C to +125°C.

Working Voltage: Designed to meet UL 660 VAC and CSA 600 VAC.

MECHANICAL CHARACTERISTICS:

Fixed Contacts: Size 16, 0.062 inch [1.57mm] diameter male contact. Female contact has "closed entry" design for highest reliability.

Contact Retention in Insulator: 15 lbs. [67N] per IEC 512-8, Test 15a.

Contact Terminations: Straight and right angle (90°) solder printed board mount, 0.051 inch [1.30 mm] tail diameter. Compliant and solid termination press-fit.

Contact Insertion and Withdrawal Forces: 8 oz. [2.2 N] nominal per contact.

Sequential Mating System:

Male contacts provide as many as four mating lengths.

Power to be enabled through a last mate contact within VPN Series or another connector.

Mechanical Operations: 1000 operations per IEC 512-5.

MECHANICAL CHARACTERISTICS OF COMPLIANT PRESS-FIT CONNECTORS:

Press-Fit Contact Bi-Spring Construction, Compliant Termination:

0.0695 inch [1.77mm] diameter with 0.050 inch [1.27mm] lead-in diameter.

Contact Retention in Insulator and 0.125 inch [3.2mm] thick printed board:

5 lbs. [22N] minimum combined retention forces per MIL-STD-2166, Type III compliant contact classification, after third repair- replacement of contact in insulator and plated-through-hole, 0.064 inch [1.63mm] diameter in a 0.125 inch [3.2mm] thick printed board.

Vibration:

No electrical discontinuity of 1µ second or greater when tested per MIL-STD-1344, Method 2005, Test conditioning.

Initial Press-In Force of Individual Contact into Plated-Through-Hole:

10 lbs. [44N] average when pushed into a 0.064 inch [1.63mm] Ø hole in a 0.125 inch [3.2mm] thick printed board.

Initial Push-Out Force of Individual Contact into Plated-Through-Hole:

8.5 lbs. [38N] average when pushed out of an 0.064 inch [1.63mm] Ø hole in a 0.125 inch [3.2mm] thick printed board.

Contact Positronic for other connector needs
w w w . c o n n e c t p o s i t r o n i c . c o m



Power



D-subminiature

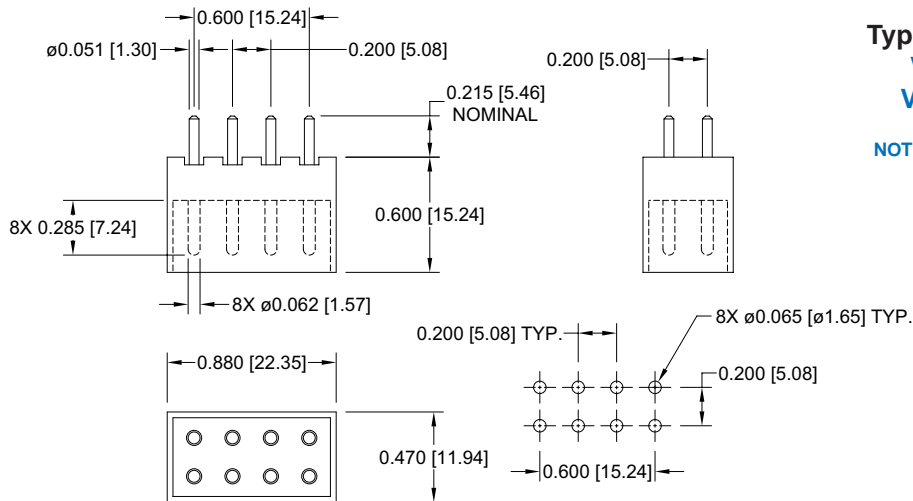


Rectangular



Circular

MALE CONNECTOR WITH STRAIGHT SOLDER TERMINATIONS CODE 3



Typical Part Numbers

VPN8W8M300*

VPNH8W8M300*

NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.

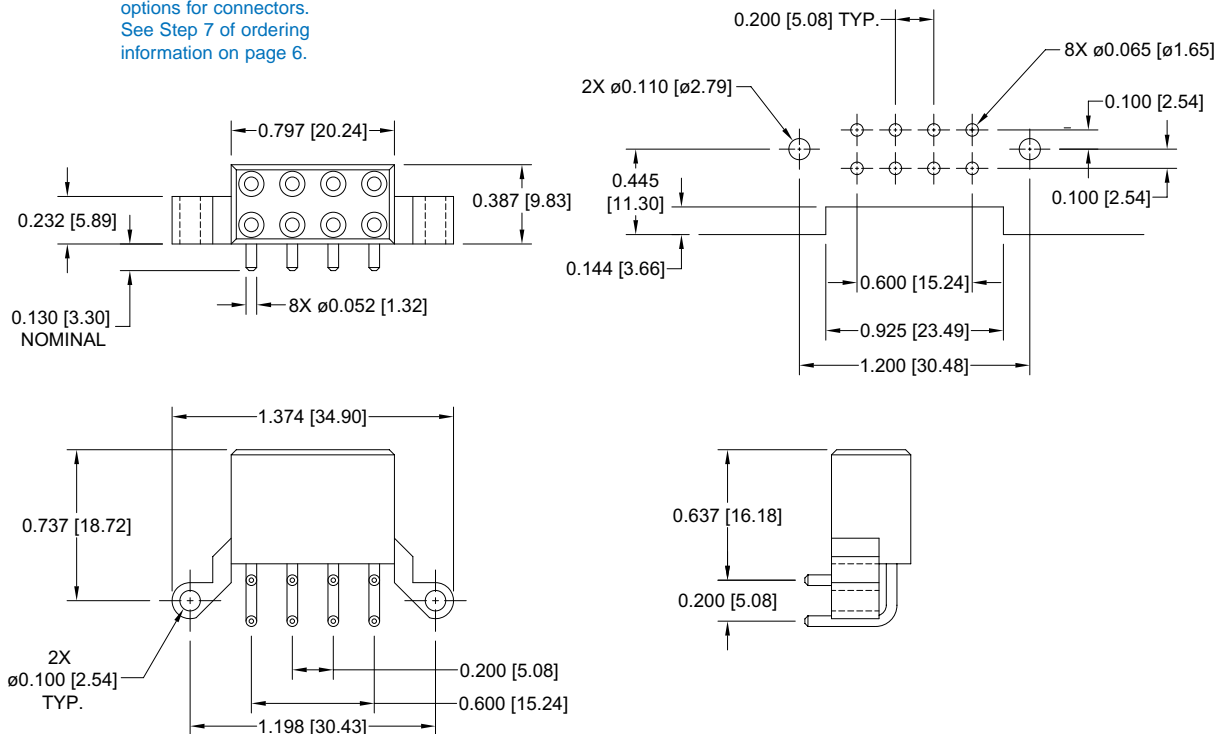
FEMALE CONNECTOR WITH RIGHT ANGLE (90°) SOLDER TERMINATIONS CODE 4

Typical Part Numbers

VPN8W8F400*

VPNH8W8F400*

NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.



Products described within this catalog may be protected by one or more of the following US. patents:

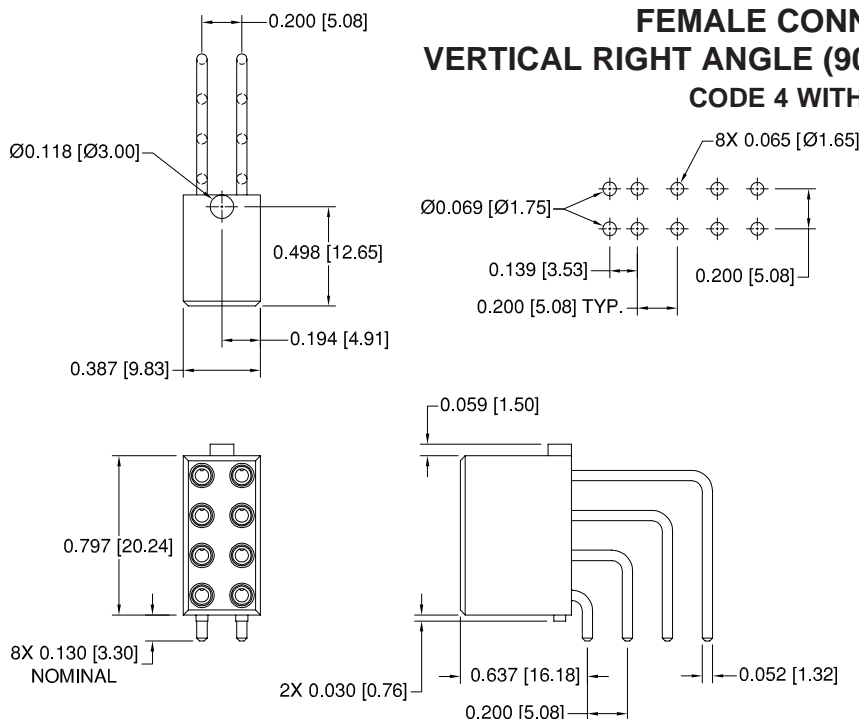
#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

**Positronic Industries' FEDERAL SUPPLY CODE
(Cage Code) FOR MANUFACTURERS is 28198**

FEMALE CONNECTOR WITH VERTICAL RIGHT ANGLE (90°) SOLDER TERMINATIONS CODE 4 WITH -426.0 MOS



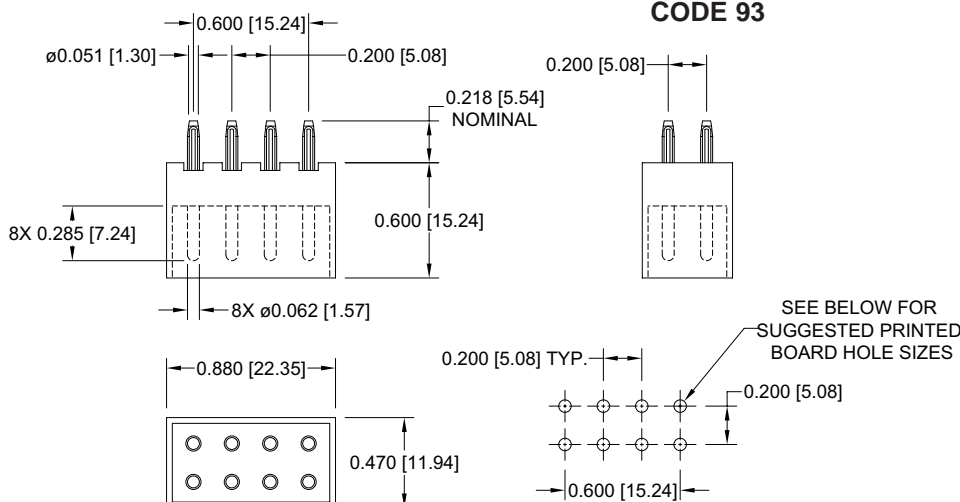
Typical Part Numbers
VPN8W8F400*-426.0
VPNH8W8F400*-426.0

NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.



VPN8W8M9300A1 VPN8W8F400A1-426.0

MALE CONNECTOR WITH COMPLIANT PRESS-FIT TERMINATIONS CODE 93



Typical Part Numbers
VPN8W8M9300*
VPNH8W8M9300*

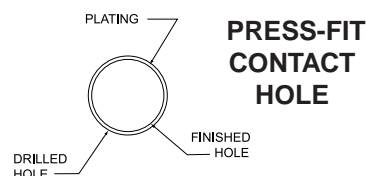
NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

Traditionally, tin-lead has been a popular plating for PBC holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE / TYPE	DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	16 BI-SPRING	$\varnothing 0.068 \pm 0.001$ [$\varnothing 1.73 \pm 0.03$]	0.0006 [15 μ] minimum solder over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	16 BI-SPRING	$\varnothing 0.068 \pm 0.001$ [$\varnothing 1.73 \pm 0.03$]	0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
IMMERSION TIN PCB	16 BI-SPRING	$\varnothing 0.068 \pm 0.001$ [$\varnothing 1.73 \pm 0.03$]	0.000033 \pm 0.000006 [0.85 \pm 0.15 μ] immersion tin over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
IMMERSION SILVER PCB	16 BI-SPRING	$\varnothing 0.068 \pm 0.001$ [$\varnothing 1.73 \pm 0.03$]	0.000013 \pm 0.000007 [0.34 \pm 0.17 μ] immersion silver over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]
ELECTROLESS NICKEL / IMMERSION GOLD PCB	16 BI-SPRING	$\varnothing 0.068 \pm 0.001$ [$\varnothing 1.73 \pm 0.03$]	0.000002 [0.05 μ] min. immersion gold over 0.000177 \pm 0.000059 [4.5 \pm 1.5 μ] electroless nickel per IPC-4552 over 0.0010 [25 μ] min. copper	$\varnothing 0.0630 \pm 0.0035 - 0.0024$ [$\varnothing 1.600 \pm 0.090 - 0.060$]

"Bi-Spring" Termination

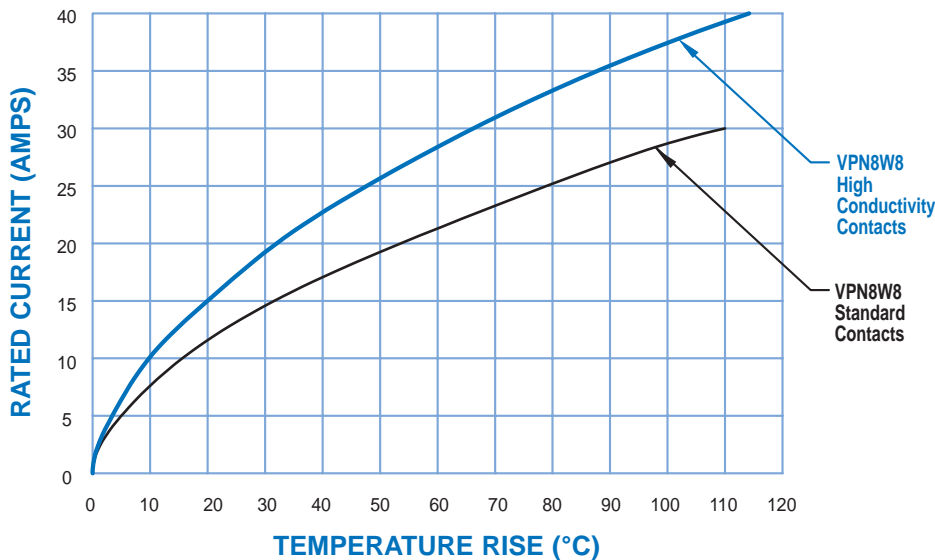


Note: For PCB plating compositions not shown, consult Technical Sales.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

TEMPERATURE RISE CURVE

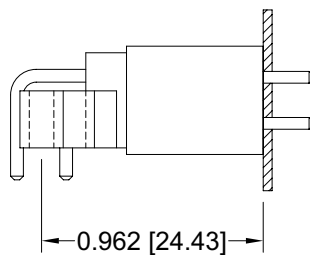
TESTED IN ACCORDANCE WITH U.L. 1977



TEST DETAIL:

Each curve was developed using individual connector bodies fully loaded with contacts. All power contacts energized through 16 awg wire. Temperature rise was measured in the contact mating area. Test was conducted with connectors in static air. Terminations of test connectors were straight compliant press-fit to Right Angle (90°) solder.

MATING DIMENSIONS



Right Angle (90°) Board
Mount Female to Straight
Board Mount Male
(FULLY MATED)

SEQUENTIAL MATING CODE

SELECTION GUIDE FOR ORDERING DIFFERENT CONTACT LENGTHS

STEP 9 OF ORDERING INFORMATION

SELECT CONNECTOR USING ORDERING INFORMATION ON PAGE 6
THEN CHOOSE STEPS BELOW FOR SEQUENTIAL MATING SYSTEM CONTACTS

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	A	1	B	2	B	3	D	4	D

CONTACT CODE	CONTACT LENGTH
A	0.325 [8.26]
B	0.285 [7.24] STANDARD
C	0.245 [6.22]
D	0.205 [5.21]

STEP 1

Specify code for most frequently used contact mating length. This length is used for all contacts not specified in steps 2 through 9.

STEP 2

Position number for first special length contact.

STEP 3

Length of contact specified in step 2. (Choose from length code chart)

STEP 4

Position number for second special length contact.

STEP 9

Length of contact specified in step 8 (Choose from length code chart).

STEP 8

Position number for fourth special length contact.

STEP 7

Length of contact specified in step 6 (Choose from length code chart).

STEP 6

Position number for third special length contact.

STEP 5

Length of contact specified in step 4 (Choose from length code chart).

ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	VPN	8W8	F	93	0	0	A1	/AA	

STEP 1 - BASIC SERIES

VPN - Standard Contact Material

VPNH - High Conductivity Contact Material

STEP 2 - CONNECTOR VARIANTS

8W8 - All contact positions populated

STEP 3 - CONNECTOR GENDER

M - Male

F - Female

STEP 4 - TYPE OF CONTACT

4 - Right Angle (90°) Board Mount, Solder. Female only

3 - Straight Board Mount, Solder. Male only

*93 - Straight Board Mount, Press-fit. Male only

STEP 5

0 - None

STEP 6

0 - None

STEP 7 - CONTACT PLATING

A1 - Gold flash over nickel on mating end and termination end.

A2 - Gold flash over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coat on termination end. Not available with code 93 in step 4.

C1 - 0.000030 inch [0.76μ] gold over nickel on mating end and termination end.

C2 - 0.000030 inch [0.76μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end. Not available with code 93 in step 4.

D1 - 0.000050 inch [1.27μ] gold over nickel on mating end and termination end.

D2 - 0.000050 inch [1.27μ] gold over nickel on mating end and 0.00020 inch [5.00μ] tin-lead solder coated termination end. Not available with code 93 in step 4.

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

Note: If compliance to environmental legislation is not required, this step will not be used. Example: VPN8W8F9300A1

STEP 9 - SPECIAL OPTIONS

-426.0 - Right Angle (90°) vertically mounted female connector.

Sequential mating system - See page 5 for details.

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

*Male contact press-fit connectors **require a press-fit tool:**

For **standard part number** VPN8W8M9300A1 use seating tool 9513-308-7-41 and support tool 9513-400-9-41, for installation.

Contact Technical Sales for **sequential mating** press-fit tools.

Let us work with you to develop variants of the VP Series to meet your specific requirements.

Unless otherwise specified, dimensional tolerances are:

- 1) ±0.001 inches [0.03 mm] for male contact mating diameters.
- 2) ±0.003 inches [0.08 mm] for contact termination diameters.
- 3) ±0.005 inches [0.13 mm] for all other diameters.
- 4) ±0.015 inches [0.38 mm] for all other dimensions.

HERMETIC CONNECTORS



POSITRONIC[®]
GLOBAL *Connector* SOLUTIONS



LOOK
FOR OUR
NEW PRODUCTS!

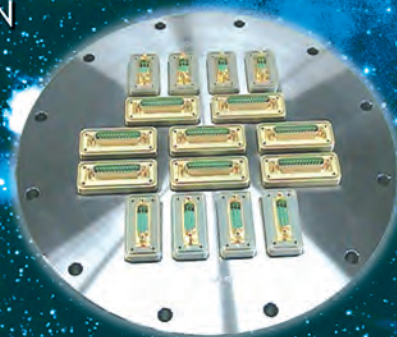
D-SUB FROM SPACE QUALITY PRODUCTS
TO INDUSTRIAL APPLICATIONS



- HELIUM LEAK RATE: $< 5 \times 10^{-9}$ mbar.l/s
- STANDARD CONNECTION SYSTEMS
- SHOCKS & VIBRATION RESISTANT
- MIXED CONTACT CONNECTORS
 - Normal Density
 - High Density
 - Thermocouple
 - Power and Coaxial

THE FEEDTHROUGH SOLUTIONS

CUSTOM DESIGN



Catalog F-001
Rev. E

www.connectpositronic.com

Connector Excellence®

Positronic Provides Complete Capability

Experience

- Founded in **1966**
- **Involvement** in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and **unique connector products** to the electronics industry.
- Patent holder for many **unique connector features and manufacturing techniques**.
- **Vertically integrated** manufacturing – raw materials to finished connectors.

Technology

- **Expertise** with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is **capable of testing** to IEC, EIA, UL, CUL, military and customer-specified requirements.
- **In-house design and development** of connectors based on market need or individual customer requirements.
- **Internal manufacturing capabilities** include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- **Manufacturing locations** in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- **Quality Systems:** Select locations qualified to ISO 9001, ISO 14001, AS9100, MIL-STD-790 and customer “dock to stock” programs. Applicable products qualified to MIL-DTL-24308, SAE AS39029, DSCC 85039, MIL-DTL-28748, Space D32, GSFC S-311-P-4 and GSFC S-311-P-10.
- Compliance to a variety of international and customer specific **environmental requirements**.
- Large **in-house inventory** of finished connectors. Customer specific **stocking programs**.
- Factory direct **technical sales support** in major cities worldwide.
- **One-on-one customer support** from worldwide factory locations.
- World class **web site**.
- **Value-added solutions** and willingness to **develop custom products** with reasonable price and delivery.

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”



Regional Headquarters

Springfield, MO



Auch, France



Singapore



Products described within this catalog may be protected by one or more of the following US patents:

#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Patented in Canada, 1992 Other Patents Pending

Positronic Industries' **FEDERAL SUPPLY CODE** (Cage Code)
FOR MANUFACTURERS is **28198**

Unless otherwise specified, **dimensional tolerances** are:

- 1) ± 0.03 mm [0.001 inches] for male contact mating diameters.
- 2) ± 0.08 mm [0.003 inches] for contact termination diameters.
- 3) ± 0.13 mm [0.005 inches] for all other diameters.
- 4) ± 0.38 mm [0.015 inches] for all other dimensions.

POSITRONIC® IS AN ITAR REGISTERED COMPANY

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic Industries assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic®, Positronic Industries, Inc.®, P+ logo, Positronic Global Connector Solutions®, Connector Excellence® and their logo designs are registered trademarks of Positronic Industries, Inc. Blue colored connectors shown in this catalog are a trademark of Positronic Industries, Inc.®, registered in the U.S. Patent and Trademark Office.

THIS CATALOG SHOULD BE ACCOMPANIED BY COPIES
OF POSITRONIC INDUSTRIES CONNECTOR
CATALOGS AS PICTURED BELOW.



Positronic Industries
www.connectpositronic.com



SPACE APPLICATIONS D-SUBMINIATURE CONNECTORS

COMBO-D D-SUBMINIATURE CONNECTORS WITH MIXED CONTACT COMBINATIONS



FRONT RUNNER SERIES CIRCULAR CONNECTORS

CATALOG OF INDUSTRIAL AND MILITARY APPLICATION D-SUBMINIATURE CONNECTORS





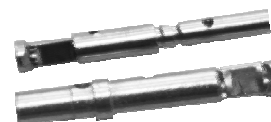
Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

TABLE OF CONTENTS

Contact PosiBand 1-2

The posiband contact system has many advantages over the legacy split tine design.



Xavac® Series Connectors 3-6

Xavac® series connectors are D-Subminiature feedthroughs for space or industrial vacuum applications.



Savac® Series Connectors 7-10

Savac® series connectors are D-Subminiature feedthroughs for space or industrial vacuum applications.



Thermocouple Connectors 11

The thermocouple connectors are available in D-Subminiature connectors version and also in hermetic version (D-subminiature feedthrough).



Xavac® / Savac® BNC 12-13

Savac® and Xavac® series connectors are BNC feedthroughs for space or industrial vacuum applications.



HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

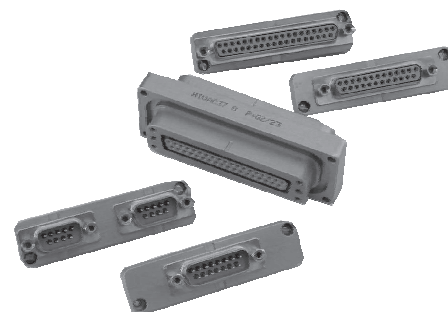


Positronic Industries
www.connectpositronic.com

TABLE OF CONTENTS

Hivac® Series Connectors 14-18

Hivac® series connectors are feedthroughs equipped with D-Subminiature adapter connectors for space or industrial vacuum applications.



Civac® Series Connectors 19-21

Civac® series connectors are circular feedthroughs for industrial vacuum applications.



Civac® BNC 22-23

Civac® is BNC feedthrough for industrial vacuum applications.



Custom Design 24-28

Examples of custom design.



Technical Information 29



Positronic Industries
www.connectpositronic.com

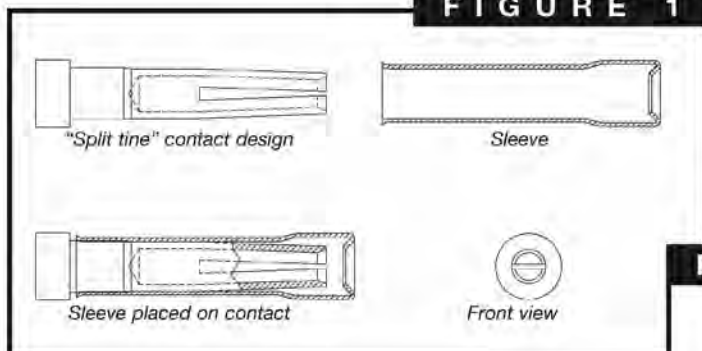
HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

What Makes Positronic's New "PosiBand®" Contact Interface a Significant Improvement?



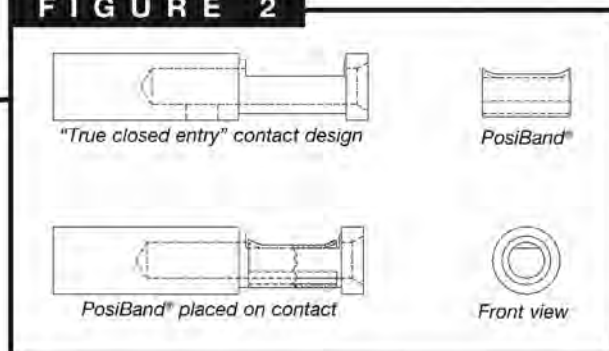
High reliability connectors utilize female **closed entry contacts** that provide an unbroken ring of solid material at the face of the contact. The closed entry feature is **crucial in preventing damage** to female contacts used in harsh environments, repeated mating cycles, blind mate applications and applications requiring highest reliability.

FIGURE 1



The most common **closed entry design** utilized by connector manufacturers is a split tine and sleeve concept. **See figure 1.** With this design, both the mechanical forces and

FIGURE 2



electrical interface are provided only at the tip of the female contact.

Positronic's new **PosiBand technology** takes a unique approach for closed entry female contacts.

PosiBand contacts utilize a two-piece contact design. **See figure 2.** Each piece serves a separate function, providing a more mechanically robust contact and more consistent electrical performance.

The main body of the **PosiBand** contact provides a true closed entry opening to enhance robustness. The **PosiBand** spring clip provides normal force on the male contact. Consistent electrical performance is supported through a larger area of contact interface between the male and female contact along the entire "floor" of the contact body. **PosiBand** contacts are QPL listed under **SAE AS39029** and **MIL-DLT-24308** specifications. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C** to the higher 40 gram contact separation test.

continued on next page . . .

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

continued from previous page . . .

The PosiBand® contact system has many advantages over the legacy split tine design.

- X** **PosiBand** is more robust than split tine contact, which can be pried open in harsh environments, resulting in reduced normal force and degradation of electrical performance.
- X** **PosiBand** has greater surface area at the male and female contact interface, resulting in more consistent electrical performance.
- X** **PosiBand** has lower average insertion forces, resulting in greater ease in mating, especially in larger high density connectors. The average lower insertion force is accomplished while meeting or exceeding performance requirements.
- X** The **PosiBand's** contact body does not require annealing of the crimp barrels, as does the split tine design. This eliminates concern of unintentionally heat-treating the mating end of the contact, which can cause electrical failure.
- X** **PosiBand** is qualified under **SAE AS39029** and **MIL-DTL-24308** specifications. **PosiBand** is also qualified under **GSFC S-311-P4/08 Rev C** and **GSFC S-311-P4/10 Rev C** to the higher 40 gram contact separation test requirement.



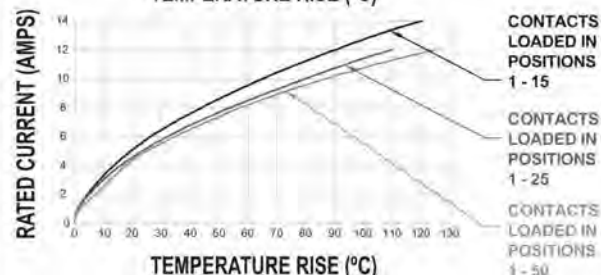
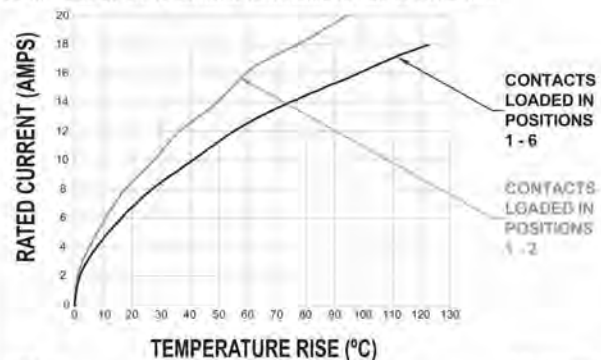
For more details about the **advantages of the PosiBand®** system, please view the detailed white paper at www.connectpositronic.com/content/37/ or visit our web site at www.connectpositronic.com.



TEMPERATURE RISE CURVES Test conducted in accordance with UL1977.

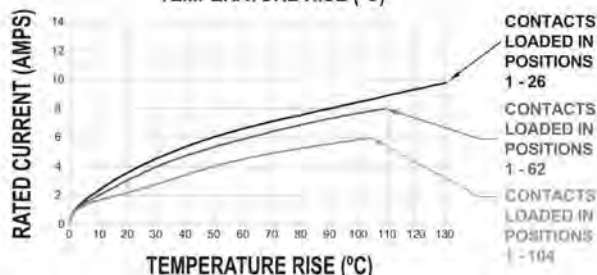
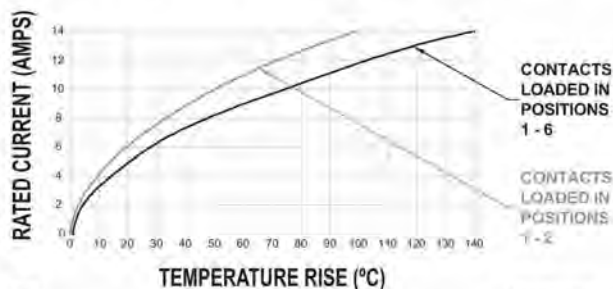
Size 20 PosiBand Contacts

Initial Contact Resistance: 0.004 ohms, maximum.
Curve developed using Standard Density D-subminiature connectors loaded with size 20 crimp contacts terminated to size 20 AWG wire.



Size 22 PosiBand Contacts

Initial Contact Resistance: 0.005 ohms, maximum.
Curve developed using High Density D-subminiature connectors loaded with size 22 crimp contacts terminated to size 22 AWG wire.

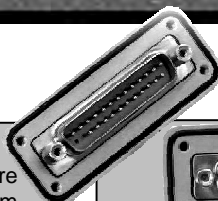




Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

XAVAC®



XAVAC® Series Connectors are D-Subminiature feedthroughs for SPACE or INDUSTRIAL vacuum applications.

Both sides contain four threaded mounting holes, an o-ring groove and fixed female jackscrews. These redundant features allow either side of the connector to be mounted toward the vacuum, giving the customer the ultimate in flexibility.

The type of contacts is according to the customer request: with normal density insulators 9, 15, 25, 37, and 50 contacts (AWG20): Male/Female, Male/Male, or Female/Female. With high density insulators: 15, 26, 44, 62, 78 and 104 contacts (AWG22): Male/Female. With mixed contact combinations (Power, Coaxial, and Signal contacts): Male/Female.

All XAVAC® Series connectors are 100 % leak tested after fabrication.

In addition to the standard options, Positronic can supply XAVAC® connectors as board mount varieties or with flying leads.

XAVAC® series connectors utilize precision machined contacts for strength and durability. The materials and finishes, as well as the technical characteristics of the XAVAC® series connectors conform to MIL-DTL-24308, Goddard and the SPACE-D32 specifications.

MATERIALS AND FINISHES

Insulator:	Glass-filled DAP per ASTM-D-5948 or polyester glass-filled per ASTM D 5927, UL94V0, ASTM E-595, NASA-RP-1124.
Contacts:	Precision machined copper alloy.
Posiband Spring Clip:	BeCu (Copper alloy).
Contact Plating:	0,000050 inch (1,25 microns) gold over copper plate.
Shells:	Brass with 0,000050 inch (1,25 microns) gold over copper plate or stainless steel.
Housing:	Aluminium alloy, golden brown conversion coating.
O-ring:	Viton (fluorocarbon). Other material per request. One mounting and one for spare part.

MECHANICAL CHARACTERISTICS

Fixed Contacts:	Size 8 Contact: 0,142 inch (3,61mm) mating diameter. Female contact: Features large surface area (L.S.A.) closed entry design utilizing BeCu mechanical retention member. Size 20 Contact: 0,040 inch (1,02mm) mating diameter. Female Posiband Contact: Closed entry design. Size 22 Contact: 0,030 inch (0,76mm) mating diameter. Female Posiband Contact: Closed entry design.
Contact Retention In Insert:	9 lbs. (40 N).
Shells:	Male shells may be dimpled for EMI/ESD ground paths. Trapezoidally shaped shells.
Polarization:	500 operations, minimum, per IEC 60512-5.
Mechanical Operations:	

CLIMATIC CHARACTERISTICS

Temperature Range:	-40 to +125°C. The temperature range can be expended under certain conditions. Consult factory.
Helium Leak Rate At Ambient Temperature:	< 5x10 ⁻⁹ mbar.l/s under a vacuum of 1.5x10 ⁻² mbar.
Outgassing Non-Metallic Material:	Total Mass Loss – TML < 1 %. Collected Volatile Condensable Materials – CVCM < 0,1 %.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

SIGNAL CONTACTS

Contact Current Rating:	14 A nominal, size 20. 10 A nominal, size 22.
Initial Contact Resistance:	0,005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

POWER CONTACTS

Contact Current Rating:	10, 15, 20, 30 and 40 amperes nominal.
Initial Contact Resistance:	0.0005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SHIELDED CONTACTS

Initial Contact Resistance:	0.008 ohms maximum.
Nominal Impedance:	50 ohms.
Insertion Loss:	-0.46 dB at 1 GHz -1.5 dB at 2 GHz.
VSWR:	1.15 average at 1 GHz. 1.56 average at 2 GHz.

Above values measured using frequency domain techniques.

HIGH VOLTAGE CONTACTS

Flash over Voltage:	3600 V r.m.s.
Proof Voltage:	2700 V r.m.s.
Initial Contact Resistance:	0.008 ohms maximum.

CONNECTOR

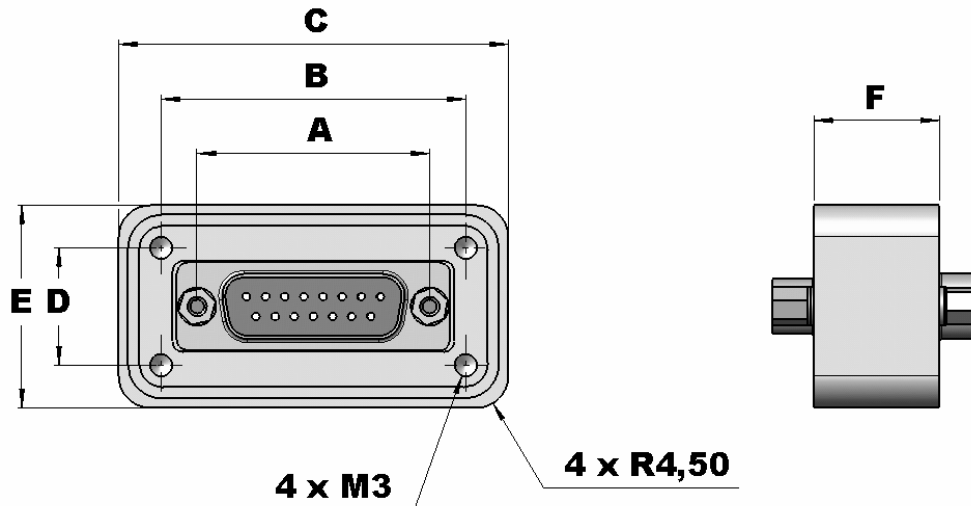
Insulator Resistance:	5 G ohms.
Clearance and Creepage Distance:	0.039 inch (1.0mm) minimum.
Working Voltage:	300 V r.m.s.
Residual Magnetism For Space Flight Versions :	Consult factory.

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

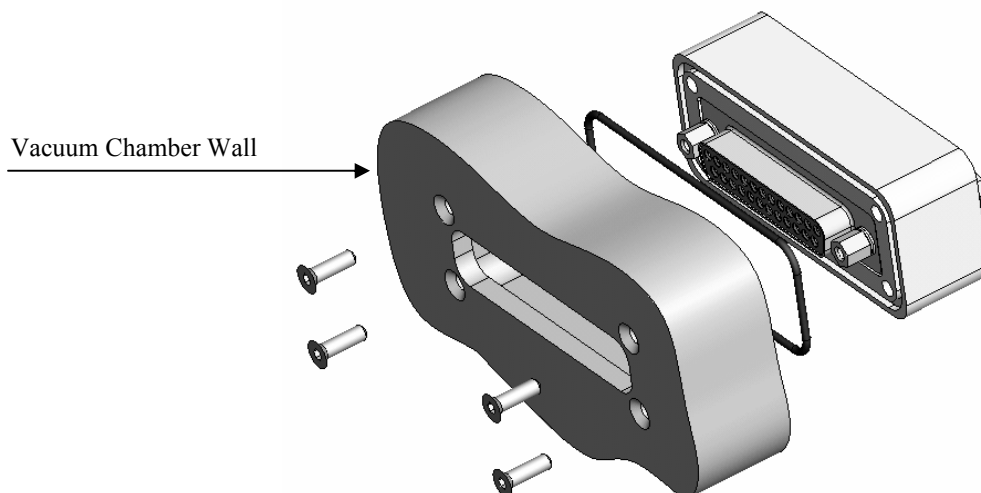
XAVAC® DIMENSIONS



	A	B	C	D	E	F	
						Type 0-1-5*	Type 2-3-4*
SHELL SIZE 1	24,99	34,29	46,37	16,00	28,08	18	24
SHELL SIZE 2	33,32	43,64	55,79	16,76	28,92	18	24
SHELL SIZE 3	47,04	56,36	67,42	16,02	27,08	18	24
SHELL SIZE 4	63,50	73,46	85,38	16,90	28,82	18	24
SHELL SIZE 5	61,11	71,28	82,99	19,68	31,40	18	24
SHELL SIZE 6	63,50	73,26	84,38	20,88	32,00	18	24

* See ordering information: STEP 5 – Type of contacts

XAVAC® MOUNTING



All dimensions are in mm.

All dimensions are subject to change.

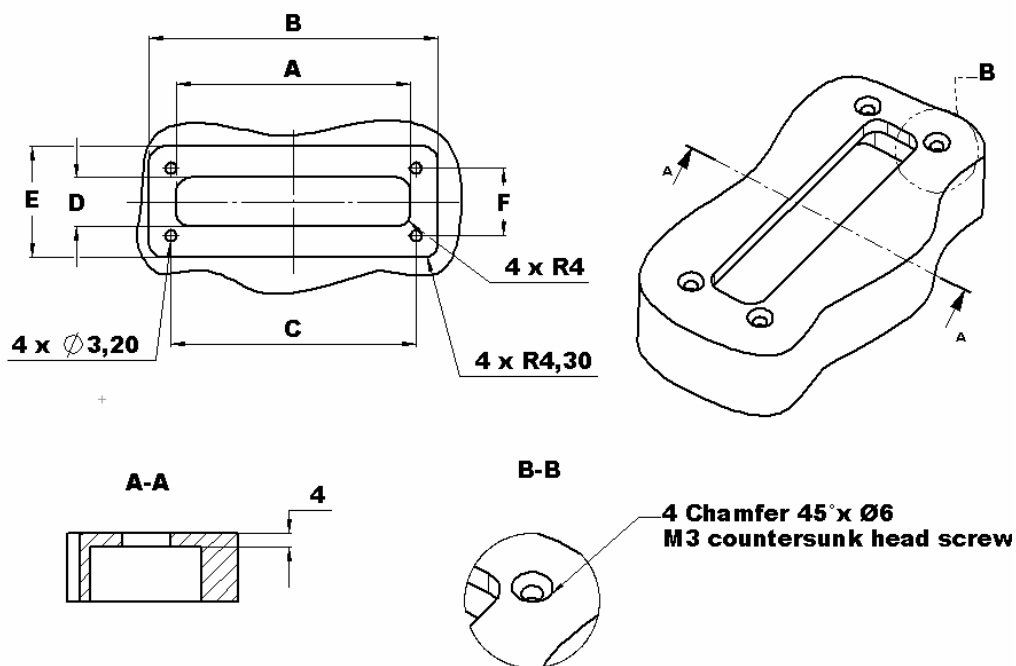


Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

XAVAC® PANEL CUTOUT INFORMATION

The depths are identical for all XAVAC® sizes



	A	B	C	D	E	F
SHELL SIZE1	32,00	47,40	34,29	12,50	29,10	16,00
SHELL SIZE2	40,30	56,80	43,64	12,50	29,90	16,76
SHELL SIZE3	54,00	68,40	56,36	12,50	28,10	16,02
SHELL SIZE4	70,50	86,40	73,46	12,50	29,80	16,90
SHELL SIZE5	68,10	84,00	71,28	15,25	32,40	19,68
SHELL SIZE6	70,50	85,40	73,26	16,80	33,00	20,88

*All dimensions are in mm.
All dimensions are subject to change.*

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	6
EXAMPLE	XAVAC	15	M/S	G	.0	- S****
STEP 1 – BASIC SERIES XAVAC series		STEP 2 – CONNECTOR VARIANTS Normal density 9-15-25-37-50 High density 15-26-44-62-78-104 Mixed combinations (Consult Combo-D catalog) 2WK2 up to 46W4		STEP 3 – CONNECTOR GENDER M/S : Male/Female Posiband M/M : Male/Male Marking inverted on the two insulators front side Not available for high density / mixed combinations S/S : Female Posiband/Female Posiband Marking inverted on the two insulators front side Not available for high density / mixed combinations		STEP 4 – TYPE OF APPLICATIONS G : Gold for Space version D : Gold and Dimpled for Space version S : Stainless-steel for Space version Residual magnetism, consult factory I : Stainless-steel for Industrial version
				STEP 5 – TYPE OF CONTACTS 0 : Normal density 1 : High density 2 : Power and/or mixed combinations 3 : Coax and/or mixed combinations 4 : High voltage 5* : Thermocouple contact (only normal density)		STEP 6 – SPECIAL OPTIONS Consult Sales Department

5*: Thermocouple contact

	Material	Position of thermocouple contacts: - The first cavity is always loaded. - Even cavities for negative contacts (-) - Odd cavities for positive contacts (+)
5 K	Chromel ® (+) Alumel ® (-)	
5 T	Copper (+) with gold flash Constantan (-)	
5 J**	Iron (+) Constantan (-)	
5E**	Chromel ® (+) Constantan (-)	

** Consult sales department

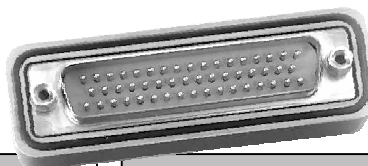
Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company



Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

SAVAC®



SAVAC® Series Connectors are D-Subminiature feedthroughs for SPACE or INDUSTRIAL vacuum applications.

Both sides contain two threaded mounting holes (female jackscrews) and a o-ring groove. These redundant features allow either side of the connector to be mounted toward the vacuum, giving the customer the ultimate in flexibility.

The type of contacts is according to the customer request: with normal density insulators 9, 15, 25, 37, and 50 contacts (AWG20): Male/Female, Male/Male, or Female/Female. With high density insulators: 15, 26, 44, 62, 78 and 104 contacts (AWG22): Male/Female. With mixed contact combinations (Power, Coaxial, and Signal contacts): Male/Female.

All SAVAC® Series connectors are 100 % leak tested after fabrication.

In addition to the standard options, Positronic can supply SAVAC® connectors as board mount varieties or with flying leads.

SAVAC® series connectors utilize precision machined contacts for strength and durability. The materials and finishes, as well as the technical characteristics of the SAVAC® series connectors conform to MIL-DTL-24308, Goddard, and the SPACE-D32 specifications.

MATERIALS AND FINISHES

Insulator:	Glass-filled DAP per ASTM-D-5948 or polyester glass-filled per ASTM D 5927, UL94V0, ASTM E-595, NASA-RP-1124.
Contacts:	Precision machined copper alloy.
Posiband Spring Clip:	BeCu (Copper alloy).
Contact Plating:	0,000050 inch (1,25 microns) gold over copper plate.
Shells:	Brass with 0,000050 inch (1,25 microns) gold over copper plate or stainless steel.
Housing:	Aluminium alloy, golden brown conversion coating.
O-ring:	Viton (fluorocarbon). Other material per request. One mounting and one for spare part.

MECHANICAL CHARACTERISTICS

Fixed Contacts:	Size 8 Contact: 0,142 inch (3,61mm) mating diameter. Female contact: Features large surface area (L.S.A.) closed entry design utilizing BeCu mechanical retention member.
	Size 20 Contact: 0,040 inch (1,02mm) mating diameter. Female Posiband Contact: Closed entry design.
	Size 22 Contact: 0,030 inch (0,76mm) mating diameter. Female Posiband Contact: Closed entry design.
Contact Retention In Insert:	9 lbs. (40 N).
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.
Mechanical Operations:	500 operations, minimum, per IEC 60512-5.

CLIMATIC CHARACTERISTICS

Temperature Range:	40 to +125°C. The temperature range can be expended under certain conditions. Consult factory.
Helium Leak Rate At Ambient Temperature:	< 5x10 ⁻⁹ mbar.l/s under a vacuum of 1.5x10 ⁻² mbar.
Outgassing Non-Metallic Material:	Total Mass Loss – TML < 1 %.
	Collected Volatile Condensable Materials – CVCM < 0,1 %.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

SIGNAL CONTACTS

Contact Current Rating:	14 A nominal, size 20. 10 A nominal, size 22.
Initial Contact Resistance:	0,005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

POWER CONTACTS

Contact Current Rating:	10, 15, 20, 30 and 40 amperes nominal.
Initial Contact Resistance:	0.0005 ohms maximum.
Proof Voltage:	1000 V r.m.s.

SHIELDED CONTACTS

Initial Contact Resistance:	0.008 ohms maximum.
Nominal Impedance:	50 ohms.
Insertion Loss:	-0.46 dB at 1 GHz -1.5 dB at 2 GHz.
VSWR:	1.15 average at 1 GHz. 1.56 average at 2 GHz.

Above values measured using frequency domain techniques.

HIGH VOLTAGE CONTACTS

Flash Over Voltage:	3600 V r.m.s.
Proof Voltage:	2700 V r.m.s.
Initial Contact Resistance:	0.008 ohms maximum.

CONNECTOR

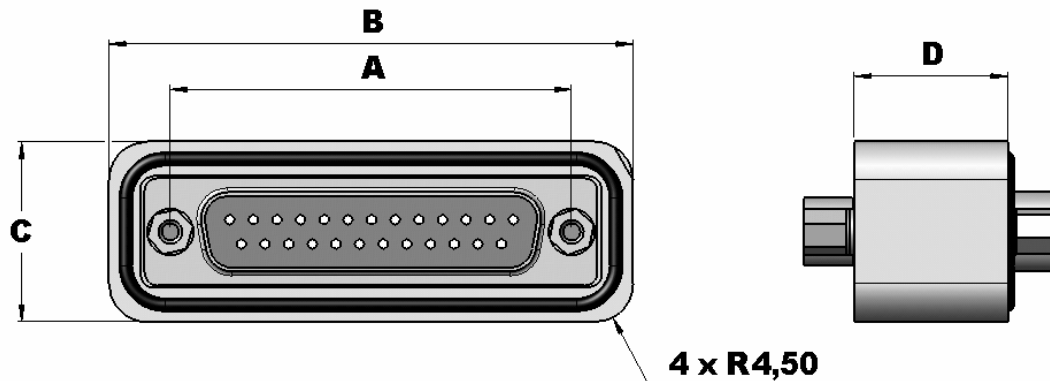
Insulator Resistance:	5 G ohms.
Clearance And Creepage Distance:	0.039 inch (1.0mm) minimum.
Working Voltage:	300 V r.m.s.
Residual Magnetism For Space Flight Versions :	Consult factory.

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

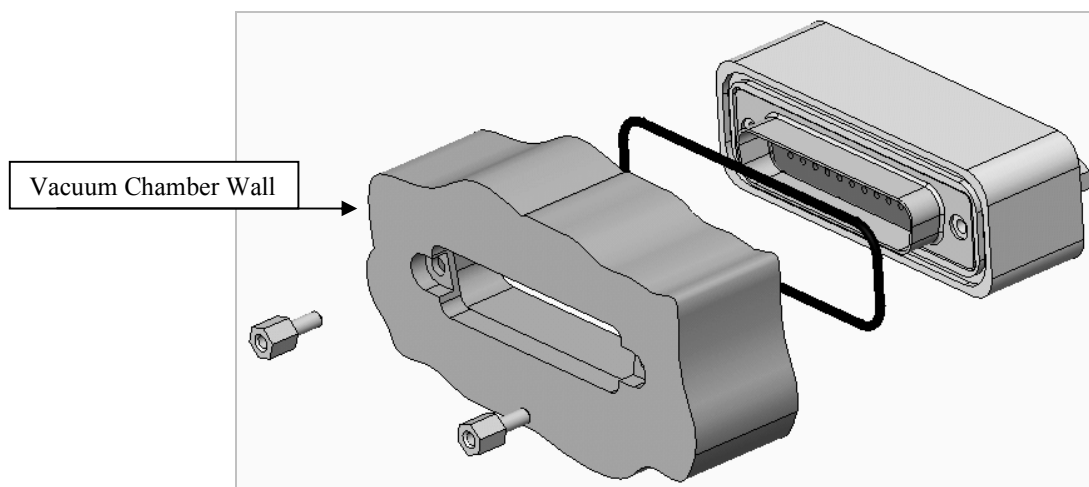
SAVAC® DIMENSIONS



	A	B	C	D	
				Type 0-1-5*	Type 2-3-4*
SHELL SIZE 1	24.99	39.37	21.08	18	24
SHELL SIZE 2	33.32	47.7	21.08	18	24
SHELL SIZE 3	47.04	61.42	21.08	18	24
SHELL SIZE 4	63.5	77.88	21.08	18	24
SHELL SIZE 5	61.11	75.49	23.9	18	24
SHELL SIZE 6	63.5	77.88	25.5	18	24

*See ordering information: STEP 5 – Type of contacts

SAVAC® MOUNTING



All dimensions are in mm.
All dimensions are subject to change.

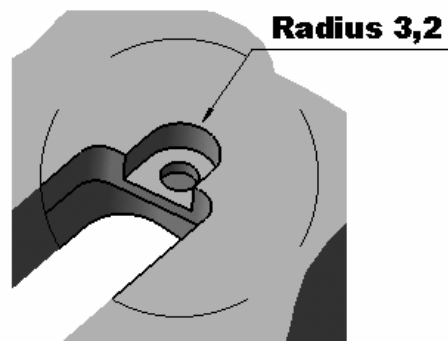
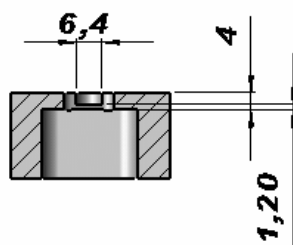
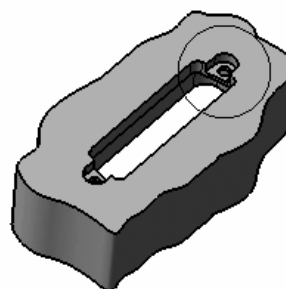
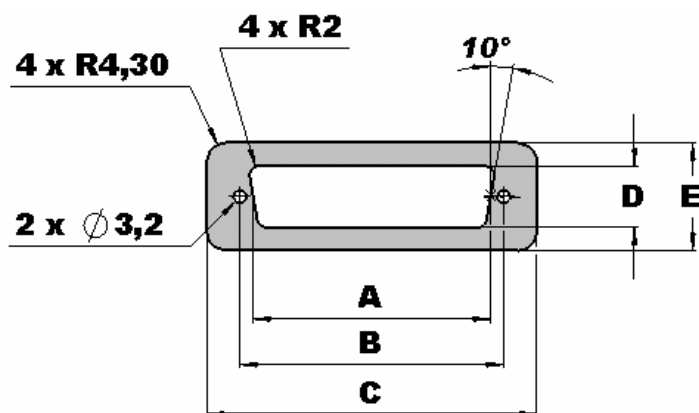


Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

SAVAC® PANEL CUTOUT INFORMATION

The depths are identical for all SAVAC sizes



	A	B	C	D	E
SHELL SIZE 1	19.70	24.99	40.40	11.70	22.10
SHELL SIZE 2	28.10	33.32	48.70	11.70	22.10
SHELL SIZE 3	41.90	47.04	62.50	11.70	22.10
SHELL SIZE 4	58.40	63.50	78.90	11.70	22.10
SHELL SIZE 5	55.20	61.11	76.50	14.70	24.90
SHELL SIZE 6	58.40	63.50	78.90	16.00	26.50

All dimensions are in mm.
All dimensions are subject to change.

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	6
EXAMPLE	SAVAC	15	M/S	G	.0	S****
STEP 1 – BASIC SERIES SAVAC series		STEP 6 – SPECIAL OPTIONS Consult Sales Department				
STEP 2 – CONNECTOR VARIANTS Normal density 9-15-25-37-50 High density 15-26-44-62-78-104 Mixed combinations (Consult Combo-D catalog) 2WK2 up to 46W4		STEP 5 – TYPE OF CONTACTS 0 : Normal density 1 : High density 2 : Power and/or mixed combinations 3 : Coax and/or mixed combinations 4 : High voltage 5* : Thermocouple contact (only normal density)				
STEP 3 – CONNECTOR GENDER M/S : Male/Female Posiband M/M : Male/Male Marking inverted on the two insulators front side Not available for high density / mixed combinations S/S : Female Posiband/Female Posiband Marking inverted on the two insulators front side Not available for high density / mixed combinations		STEP 4 – TYPE OF APPLICATIONS G : Gold for Space version D : Gold and Dimpled for Space version S : Stainless-steel for Space version Residual magnetism, consult factory I : Stainless-steel for Industrial version				

5* : Thermocouple contact

	Material	Position of thermocouple contacts: - The first cavity is always loaded. - Even cavities for negative contacts (-) - Odd cavities for positive contacts (+)
5 K	Chromel ® (+) Alumel ® (-)	
5 T	Copper (+) with gold flash Constantan (-)	
5 J**	Iron (+) Constantan (-)	
5E**	Chromel ® (+) Constantan (-)	

** Consult sales department

Chromel® and Alumel® are registered trademarks of Hoskins Manufacturing Company.



Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

THERMOCOUPLE CONNECTORS



D-subminiature connectors with thermocouple crimp contacts.



D-subminiature feed through equipped with thermocouple contacts and the counterparts with thermocouple crimp contacts.

The thermocouple connectors are available in D-subminiature connectors version and also in hermetic version (D-subminiature feed-through).

D-subminiature Connector

See Positronic D-subminiature connectors catalog (Standard and Space Versions).

Thermocouple crimp contacts:

- Dimensional conformity to SAE AS39029.
- Precision machined contacts.
- Size 20 contacts.
- Thermocouple alloy.

Female and male crimp contacts Part-Number				
	Material	Male	Female	Color code
Type K	Chromel [®] (+)	MC6020DCH	FC6020D2CH	White
	Alumel [®] (-)	MC6020DAL	FC6020D2AL	Green
Type T	Copper (+) with gold flash	MC6020DCU	FC6020D2CU	Red
	Constantan (-)	MC6020DCO	FC6020D2CO	Yellow
Type J*	Iron (+)	MC6020DIR	FC6020D2IR	Black
	Constantan (-)	MC6020DCO	FC6020D2CO	Yellow
Type E*	Chromel [®] (+)	MC6020DCH	FC6020D2CH	White
	Constantan (-)	MC6020DCO	FC6020D2CO	Yellow

* Consult sales department

D-subminiature feed-through:

- Conform to MIL-DTL-24308
- Size 20 contacts
- Type of contacts : Male/Female
- Type of contacts : Type K "Chromel[®] (+) / Alumel[®] (-)
- Type of contacts : Type T "Copper (+) with gold flash / Constantan (-)
- Type of contacts : Type J* "Iron (+) / Constantan (-)
- Type of contacts : Type E* "Chromel[®] (+) / Constantan (-)

* Consult sales department

Position of thermocouple contacts:

- The first cavity is always loaded.
- Even cavities for negative contacts (-)
- Odd cavities for positive contacts (+)

Chromel[®] and Alumel[®] are registered trademarks of Hoskins Manufacturing Company.

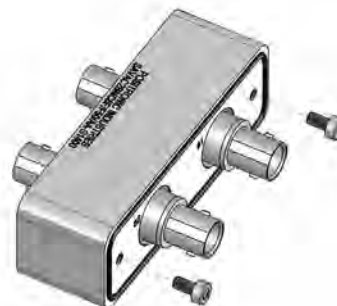
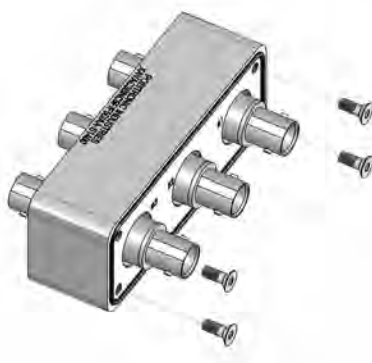
HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com



XAVAC® / SAVAC® BNC



MATERIALS AND FINISHES

Dielectric Material:	PTFE and Epoxy Resin.
Outer Contacts:	Brass. Silver finish 0,000016 inch (0,40 microns) min.
Center Contacts:	Copper alloy with brass. Gold finish 0,000050 inch min. (1,25 microns), over copper.
Housing:	Aluminium alloy, golden brown conversion coating.
O-Ring:	Viton (fluorocarbon). Other material per request. One mounting and one for spare part.
Fixation Screws:	Stainless Steel (kitted).

MECHANICAL CHARACTERISTICS

Durability:	500 operations minimum.
Center Contact Retention:	27,2N min. (in molding).
Force To Engage And Disengage:	13,6 N max.

CLIMATIC CHARACTERISTICS

Temperature Range:	-40°C to +125°C. The temperature range can be extended under certain conditions. Consult factory.
Helium Leak Rate At Ambient Temperature:	< 5×10^{-9} mbar.l/s under a vacuum of 1.5×10^{-2} mbar.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

Frequency Range:	50 Ω :DC – 4 GHz 75 Ω :DC – 1 GHz
Working Voltage:	500 V RMS (Leakage current 2mA max).
Dielectric Withstanding Voltage:	1500 V RMS (Leakage current 2mA max).
Insulation Resistance:	5 G Ω min. at 500 V DC. Between center contact & outer contact. <u>Only with special option S1400:</u> 5 G Ω min. at 500 V DC. Between outer contact & aluminium housing.
Contact Resistance:	Center contact: 4 m Ω . Outer contact: 2,5 m Ω .
ROHS Compliant:	Connectors are ROHS compliant per ROHS directive 2002/95/EC of Jan 2003.

BNC SOCKET CONTACT INTERFACE IN ACCORDANCE TO MIL-STD-348 / MIL-C-39012/17H.



Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

ORDERING INFORMATION CODE NUMBERING SYSTEMS

XAVAC



STEP	1	2	3	4	5	6	7
EXAMPLE	XAVAC	3 BNC	5	F/F	50	/AA	S****

STEP 1 - BASIC SERIES

XAVAC Series

STEP 2 - CONNECTOR VARIANTS

BNC Quantity

1 BNC, 2 BNC, 3 BNC, 4 BNC

STEP 3 - HOUSING SIZE

5: Housing size 5

6: Housing size 6

STEP 4 - CONNECTOR GENDER

F/F only

STEP 7 - SPECIAL OPTIONS

S1400 : Dielectric material between outer contact and aluminium housing (*)

Only with 1 BNC, 2 BNC and 3 BNC

STEP 6 - ENVIRONMENTAL COMPLIANT OPTIONS

/AA Only - Compliant per EU Directive
2002/95/EC (RoHS)

STEP 5 - IMPEDANCE

50 - nominal impedance 50 Ω

75 - nominal impedance 75 Ω

(*) connector variants 4BNC5 and 4BNC6 are not possible with special option S1400.

SAVAC

STEP	1	2	3	4	5	6	7
EXAMPLE	SAVAC	2 BNC	5	F/F	50	/AA	S****

STEP 1 - BASIC SERIES

SAVAC Series

STEP 2 - CONNECTOR VARIANTS

BNC Quantity

1 BNC, 2 BNC

STEP 3 - HOUSING SIZE

5: Housing size 5

6: Housing size 6

STEP 4 - CONNECTOR GENDER

F/F only

STEP 7 - SPECIAL OPTIONS

S1400 : Dielectric material between outer contact and aluminium housing

STEP 6 - ENVIRONMENTAL COMPLIANT OPTION

/AA Only - Compliant per EU Directive
2002/95/EC (RoHS)

STEP 5 - IMPEDANCE

50 - nominal impedance 50 ohms

75 - nominal impedance 75 ohms

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

HIVAC®



HIVAC® Series Connectors are feedthroughs equipped with D-Subminiature Adapter Connectors for SPACE or INDUSTRIAL vacuum applications.

The HIVAC® Connector configuration requires three separate units to function properly. The center unit is the feedthrough. This feedthrough requires two adapter units, one for the atmospheric side and one for the vacuum side.

Both sides of the feedthrough contain four threaded mounting holes and an o-ring groove. These redundant features allow either side of the connector to be mounted toward the vacuum, giving the customer the ultimate in flexibility.

The feedthrough has always Female/Female contacts.

The contact type of Adapter Connector is always as male next to the feedthrough and the other sides are according to the Customer request, Male/Male or Male/Female for the normal density, and for the high density it is systematically Male/Female.

A feedthrough has 5 types of insulators: 37 or 50 contacts for normal D and 44, 62 and 104 contacts for high D.

An Adapter Connector allows several combinations with a feedthrough.

The advantage of this system is that it allows the user the flexibility to purchase a single feedthrough and use it with a variety of adapters.

HIVAC® series connectors utilize precision machined contacts for strength and durability. The materials and finishes, as well as the technical characteristics of the HIVAC® series connectors, conform to MIL-DTL-24308, Goddard and SPACE-D32 specifications.

All HIVAC® Series connectors are 100 % leak tested after fabrication.

MATERIALS AND FINISHES

Insulator:	Glass-filled DAP per ASTM-D-5948 or polyester glass-filled per ASTM D 5927, UL94V0, ASTM E-595, NASA-RP-1124.
Contacts:	Precision machined copper alloy.
Posiband Spring Clip:	BeCu (Copper alloy).
Contact Plating:	0,000050 inch (1,25 microns) gold over copper plate.
Shells:	Brass with 0,000050 inch (1,25 microns) gold over copper plate or stainless steel.
Housing:	Aluminium alloy, golden brown conversion coating.
O-ring:	Viton (fluorocarbon). Other material per request. One mounting and one for spare part.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

Contact Current Rating:	7,5A nominal, size 20 5A nominal, size 22
Initial Contact Resistance:	0.005 ohms maximum.
Proof Voltage:	1000 V r.m.s.
Insulator Resistance:	5 G ohms.
Clearance And Creepage Distance:	0.039 inch (1,0 mm) minimum.
Working Voltage:	300 V r.m.s.
Residual Magnetism for Space Flight Versions :	Consult factory.

MECHANICAL CHARACTERISTICS

Fixed Contacts:	Size 20 Contact: 0,040 inch (1,02mm) mating diameter. Female Posiband contact: Closed entry design
	Size 22 Contact: 0,030 inch (0,76mm) mating diameter. Female Posiband Contact: Closed entry design.
Contact Adapter:	Male to female.
Contact Retention In Insert:	9 lbs. (40 N).
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells.
Mechanical Operations:	500 operations, minimum, per IEC 60512-5.

CLIMATIC CHARACTERISTICS

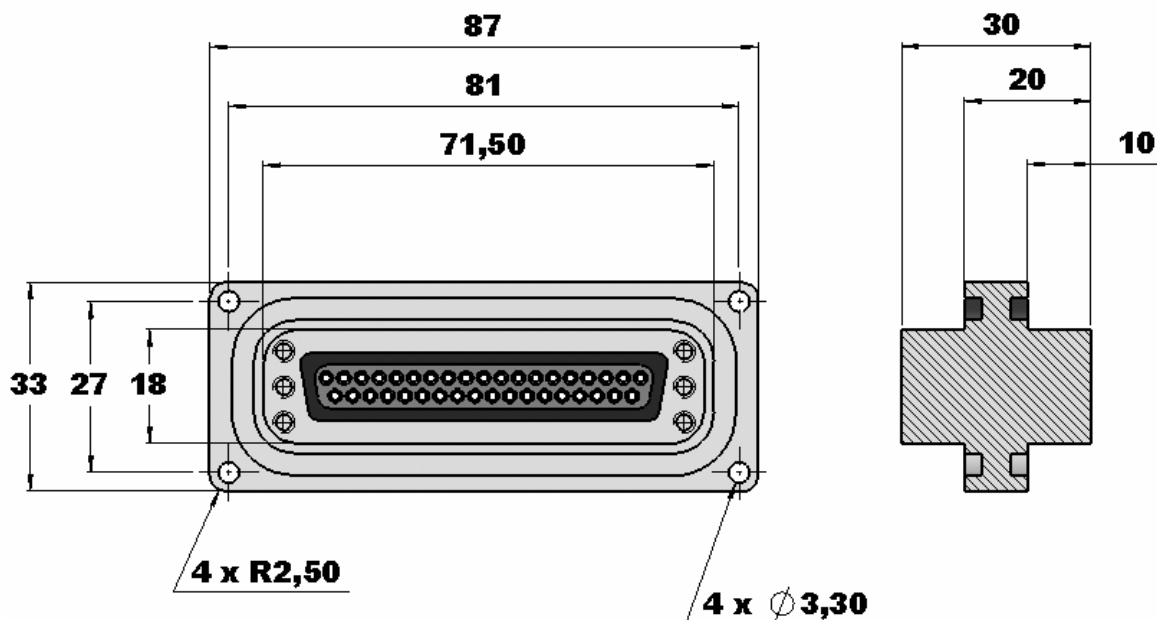
Temperature Range:	-40 to +125°C. The temperature range can be expended under certain conditions. Consult factory.
Helium Leak Rate At Ambient temperature:	< 5x10 ⁻⁹ mbar.l/s under a vacuum of 1.5x10 ⁻² mbar.
Outgassing Non-Metallic Material:	Total Mass Loss – TML < 1 %. Collected Volatile Condensable Materials – CVCM < 0,1 %.



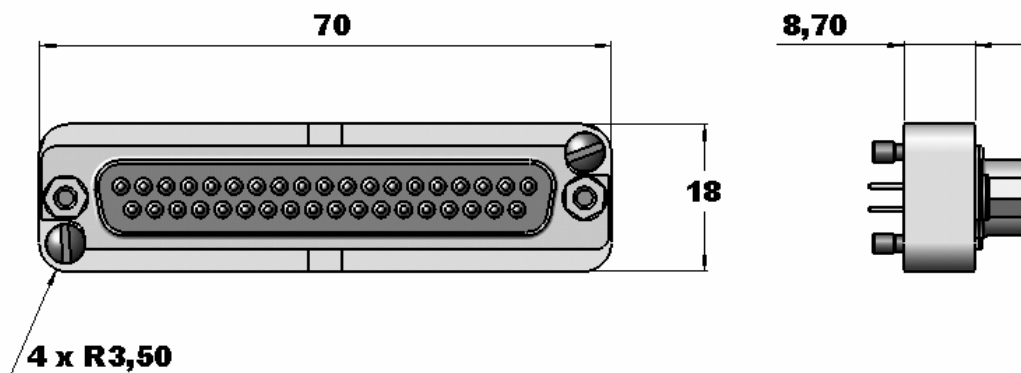
Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

HIVAC® FEEDTHROUGH DIMENSIONS



HIVAC® ADAPTER DIMENSIONS



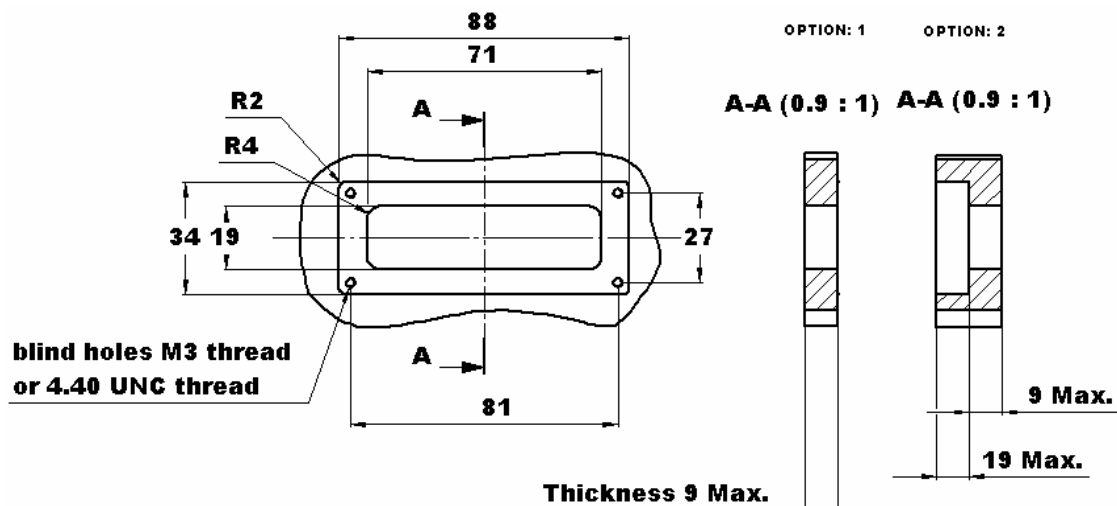
*All dimensions are in mm.
All dimensions are subject to change.*

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

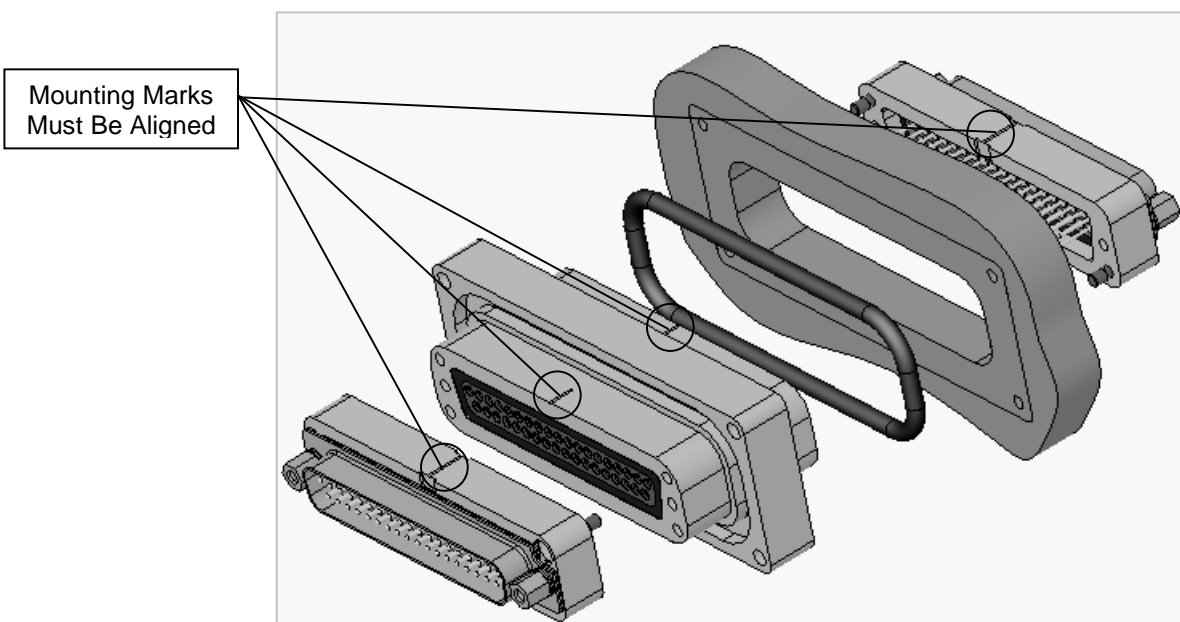


Positronic Industries
www.connectpositronic.com

HIVAC® FEEDTHROUGH PANEL CUTOUT INFORMATION



HIVAC® FEEDTHROUGH AND HIVAC ADAPTER MOUNTING



All dimensions are in mm.
All dimensions are subject to change.



Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

FEEDTHROUGH PART-NUMBERS

STEP	1	2	3	4
EXAMPLE	HIVAC	37	.0	S****
STEP 1 – BASIC SERIES HIVAC FEEDTHROUGH		STEP 4 – SPECIAL OPTIONS Consult Sales Department		
STEP 2 – CONNECTOR VARIANTS Normal density 37-50 High density 44-62-104		STEP 3 – TYPE OF CONTACTS LAYOUTS 0 : Normal density 1 : High density		

ADAPTER PART-NUMBERS

STEP	1	2	3	4	5	6
EXAMPLE	HIVAC	37	.25	M	G	S****
STEP 1 – BASIC SERIES HIVAC ADAPTER		STEP 6 – SPECIAL OPTIONS Consult Sales Department				
STEP 2 – HIVAC FEED-THROUGH Normal density 37-50 High density 44-62-104		STEP 5 – TYPE OF APPLICATIONS G : Gold for Space version D : Gold and Dimpled for Space Version S : Stainless-steel for Space version Residual magnetism, consult factory				
STEP 3 – HIVAC ADAPTER CONTACT VARIANTS Normal density with 37 variant 9-2X9-15-25-37 Normal density with 50 variant 9-2X9-15-25-50 High density with 44 variant 15-26-44 High density with 62 variant 62 High density with 104 variant 78-104		STEP 4 – ADAPTER GENDER M : Male contact S : Female Posiband MM-SS: Use only with 37.2X9 and 50.2X9 Hivac Adapter MS : Use only with 37.2X9 Hivac Adapter For normal density : 2 Male Hivac Adapters or 1 Male Hivac Adapter with 1 Female Hivac Adapter For high density : 1 Male Hivac Adapter with 1 Female Hivac Adapter				

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

RECAPITULATIVE PART-NUMBERS

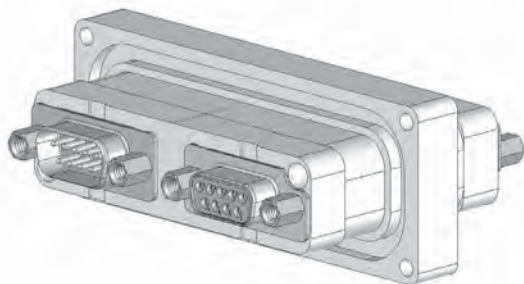
With All Adapter Variants

HIVAC Adapter	HIVAC Feedthrough	HIVAC Adapter	HIVAC Adapter	HIVAC Feedthrough	HIVAC Adapter
HIVAC37.9M*	HIVAC37.0	HIVAC37.9S*	HIVAC50.9M*	HIVAC50.0	HIVAC50.9S*
HIVAC37.9M*		HIVAC37.9M*	HIVAC50.9M*		HIVAC50.9M*
HIVAC37.9S*		HIVAC37.9S*	HIVAC50.9S*		HIVAC50.9S*
			HIVAC50.2X9MM*		HIVAC50.2X9SS*
HIVAC37.2X9MS*		HIVAC37.2X9SM*	HIVAC50.15M*		HIVAC50.15S*
HIVAC37.2X9MS*		HIVAC37.2X9MS*	HIVAC50.15M*		HIVAC50.15M*
HIVAC37.2X9MM*		HIVAC37.2X9SS*	HIVAC50.15S*		HIVAC50.15S*
HIVAC37.2X9MM*		HIVAC37.2X9MM*	HIVAC50.25M*		HIVAC50.25S*
HIVAC37.2X9MM*		HIVAC37.2X9MS*	HIVAC50.25M*		HIVAC50.25M*
HIVAC37.2X9MM*		HIVAC37.2X9SM*	HIVAC50.25S*		HIVAC50.25S*
HIVAC37.2X9SS*		HIVAC37.2X9SS*	HIVAC50.50M*		HIVAC50.50S*
HIVAC37.2X9SS*		HIVAC37.2X9MS*	HIVAC50.50M*		HIVAC50.50M*
HIVAC37.2X9SS*		HIVAC37.2X9SM*	HIVAC50.50S*		HIVAC50.50S*
HIVAC37.15M*		HIVAC37.15S*	HIVAC44.15M*	HIVAC44.1	HIVAC44.15S*
HIVAC37.15M*		HIVAC37.15M*	HIVAC44.26M*		HIVAC44.26S*
HIVAC37.15S*		HIVAC37.15S*	HIVAC44.44M*		HIVAC44.44MS*
HIVAC37.25M*		HIVAC37.25S*			
HIVAC37.25M*		HIVAC37.25M*	HIVAC62.62M*	HIVAC62.1	HIVAC62.62S*
HIVAC37.25S*		HIVAC37.25S*			
HIVAC37.37M*		HIVAC37.37S*	HIVAC104.78M*	HIVAC104.1	HIVAC104.78S*
HIVAC37.37M*		HIVAC37.37M*	HIVAC104.15M*		HIVAC104.15S*
HIVAC37.37S*		HIVAC37.37S*	HIVAC104.104M*		HIVAC104.104S*

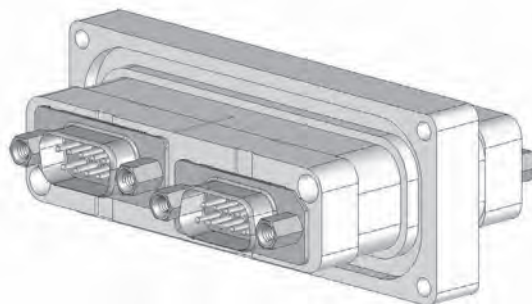
* Type of application: G, D or S (See Code Numbering System).

** For high density: 1 Male HIVAC adapter with 1 Female HIVAC adapter.

Example: HIVAC37.2x9MS



Example: HIVAC50.2x9MMS





Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

CIVAC®



TECHNICAL CHARACTERISTICS

MATERIAL AND FINISHES

Insulator:	Glass-filled DAP, type SDG-F, black color, UL 94V0.
Contacts:	Precision machined copper alloy.
Contact Plating:	0,000030 inch (0,76 microns) gold plate over nickel plate.
Shells:	Aluminium alloy, golden brown conversion coating.
	Stainless steel.
Flange:	Aluminium Alloy.
	Stainless steel.
O-ring:	Viton (fluorocarbon). Other material per request. One mounting and one for spare part.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

Contact Current Rating:	25A nominal, size 12. 13A nominal, size 16. 7,5A nominal, size 20. 5A nominal, size 22.
Initial Contact Resistance:	0,003 ohms max., size 12. 0,003 ohms max., size 16. 0,007 ohms max., size 20. 0,012 ohms max., size 22.
Insulator Resistance:	5 G ohms.
Clearance And Creepage:	See Front Runner Series Product catalog.
Working Voltage:	See Front Runner Series Product catalog.
EMI/RFI Shielding Characteristics:	Consult factory.

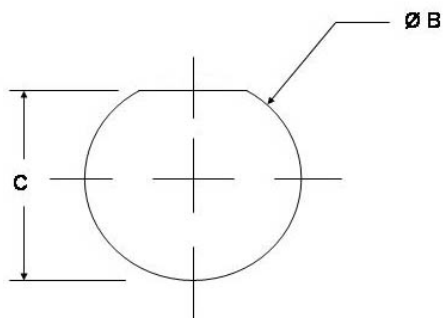
MECHANICAL CHARACTERISTICS

Fixed Contacts:	Size 12 contact: 0,094 inch (2,4mm) mating diameter. Size 16 contact: 0,0625 inch (1,588mm) mating diameter. Size 20 contact: 0,040 inch (1,02mm) mating diameter. Size 22 contact: 0,030 inch (0,76mm) mating diameter. Female contacts: closed entry design for highest reliability.
Contact Retention In Insulator:	Size 12: 20 lbs (89 N). Size 16: 20 lbs (89 N). Size 20: 10 lbs (44 N). Size 22: 6 lbs (27 N). 500 coupling.
Mechanical Operators:	

CLIMATIC CHARACTERISTICS

Temperature Range:	-40 to +125°C. The temperature range can be expended under certain conditions. Consult factory.
Helium Leak Rate At Ambient Temperature:	< 5x10 ⁻⁹ mbar.l/s under a vacuum of 1.5x10 ⁻² mbar.
Outgassing:	Total Mass Loss – TML < 1 %. Collected Volatile Condensable Materials – CVCMM < 0,1 %.

PANEL MOUNTING CUTOUTS FOR CIVAC WITHOUT FLANGE



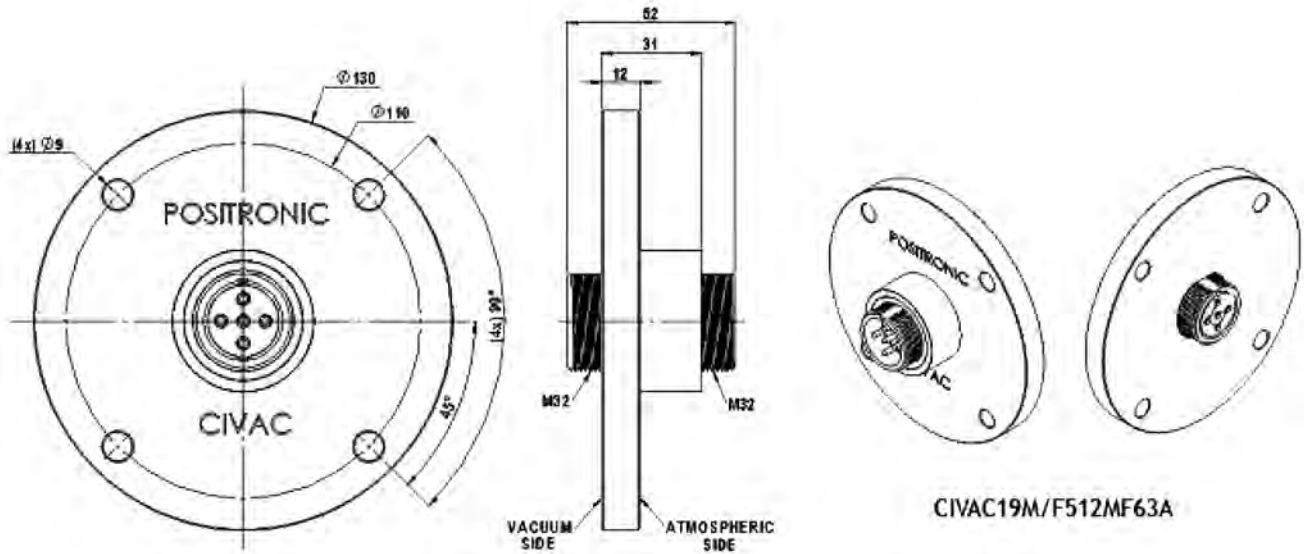
Dimension	Size 11 Housing	Size 19 Housing
Ø B	0.760 ± 0.003 (19.30 ± 0.08)	1.275 ± 0.003 (32.39 ± 0.08)
C	0.715 ± 0.003 (18.16 ± 0.08)	1.227 ± 0.003 (31.17 ± 0.08)

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

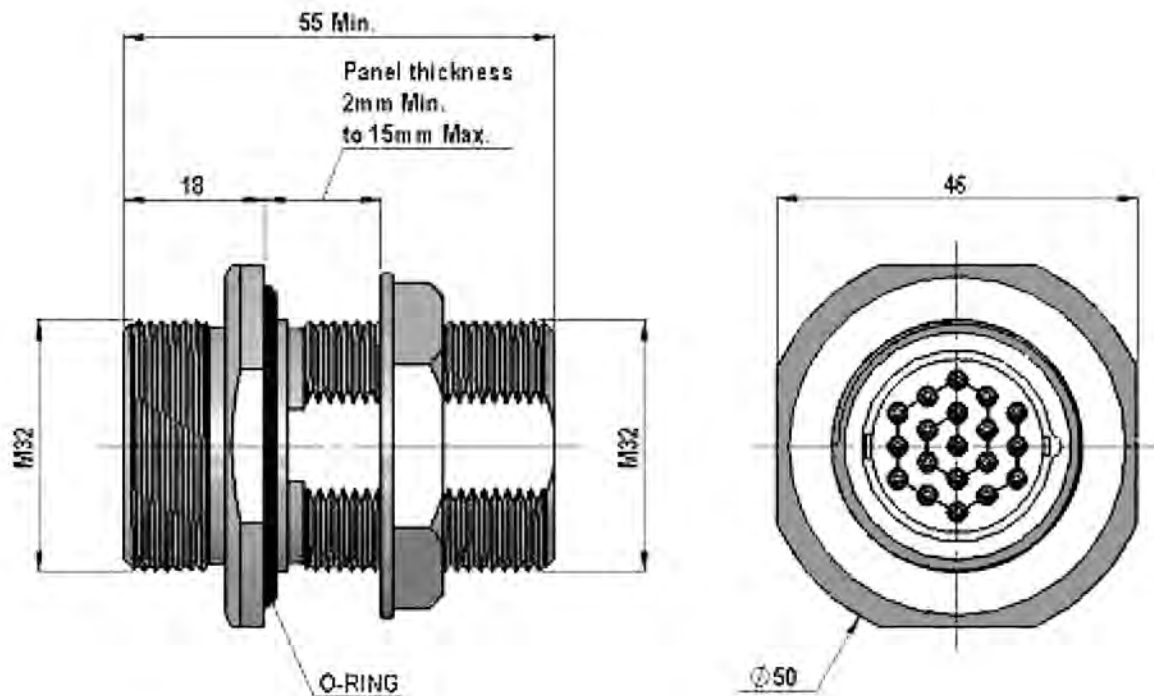


Positronic Industries
www.connectpositronic.com

CIVAC® WITH FLANGE F63



CIVAC® WITHOUT FLANGE



CIVAC19M/F1920005



Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

ORDERING INFORMATION – CODE NUMBERING SYSTEMS

STEP	1	2	3	4	5	6	7
EXAMPLE	CIVAC	11	M/M	316	M	K63A	S****
STEP 1 CIVAC – Circular Vacuum Connector							STEP 7 Consult factory
STEP 2 – HOUSING SIZE 11 – Size 11 Housing 19 – Size 19 Housing							STEP 6 – FLANGE TYPE 0A(S) ① – without flange A = Shell in aluminium steel S = Shell in Stainless steel ① Consult factory for panel thickness K63A(S)② - with flange F63A(S)② - with flange K63 : Flange DN63 - ISO-K equipped with one size 11 or one size 19 connector. F63 : Flange DN63 - ISO-F equipped with one size 11 or one size 19 connector. A : Flange in aluminium alloy S : Flange in stainless steel ② Consult factory for another flange dimensions
STEP 3 – GENDER First letter is mounted outside Vacuum equipment M/M Male/Male F/F Female/Female M/F Male/Female F/M Female/Male							STEP 5 – SERVICE CLASS O – Standard M – EMI/RFI Shielded: consult factory.

STEP 4 – SIZE CONTACT ARRANGEMENT*

Size 11 Housing	Size 19 Housing
316 – 3 size 16	312 – 3 size 12
420 – 4 size 20	512 – 5 size 12
520 – 5 size 20	712 – 7 size 12
722 – 7 size 22	716 – 7 size 16
822 – 8 size 22	916 – 9 size 16
922 – 9 size 22	920 – 9 size 20
	1220 – 12 size 20
	1822 – 18 size 22
	1920 – 19 size 20
	2922 – 29 size 22

* See Front Runner Series Product Catalog for detailed dimensional information.

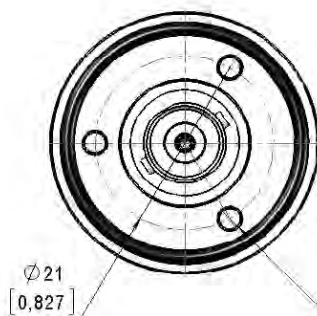
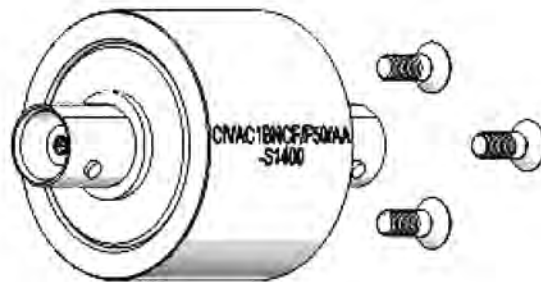
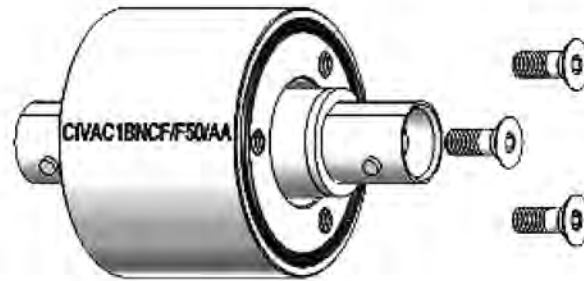
HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS



Positronic Industries
www.connectpositronic.com

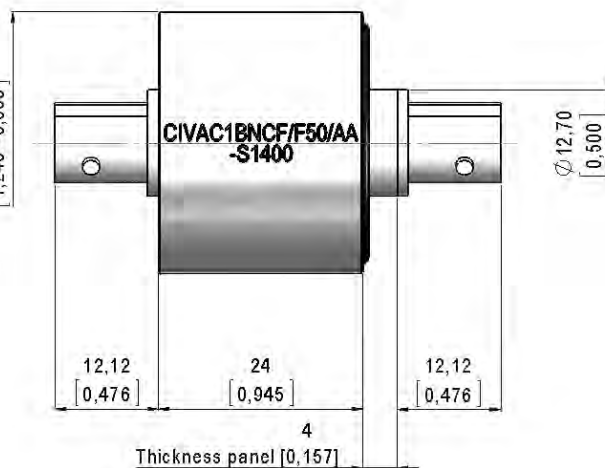


CIVAC®
BNC



3x M3
Thread depth
5,00 [0,197] Max.
4,50 [0,177] Min.

+0,30
-0,20
+0,012
-0,008
Ø 31,50
1,240





Positronic Industries
www.connectpositronic.com

HERMETIC FEEDTHROUGH FOR SPACE OR INDUSTRIAL VACUUM APPLICATIONS

CIVAC® BNC

MATERIALS AND FINISHES

Dielectric Material:	PTFE and Epoxy Resin.
Outer Contacts:	Brass. Silver finish 0,000016 inch (0,40 microns) min.
Center Contacts:	Copper alloy with brass. Gold finish 0,000050 inch min. (1,25 microns), over copper.
Housing:	Aluminium alloy, golden brown conversion coating.
O-Ring:	Viton (fluorocarbon). Other material per request. One mounting and one for spare part.
Fixation Screws:	Stainless Steel (kitted).

MECHANICAL CHARACTERISTICS

Durability:	500 operations minimum.
Center Contact Retention:	27,2 N min. (in molding).
Force To Engage And Disengage:	13,6 N max.

CLIMATIC CHARACTERISTICS

Temperature Range:	-40°C to +125°C. The temperature range can be extended Under certain conditions. Consult factory.
Helium Leak Rate At Ambient Temperature:	< 5x10 ⁻⁹ mbar.l/s under a vacuum of 1.5x10 ⁻² mbar.

ELECTRICAL CHARACTERISTICS AT SEA LEVEL

Frequency Range:	50 Ω : DC – 4 GHz 75 Ω : DC – 1 GHz
Working Voltage:	500 V RMS (Leakage current 2mA max).
Dielectric Withstanding Voltage:	1500 V RMS (Leakage current 2mA max).
Insulation Resistance:	5 GΩ min. at 500 V DC. Between center contact & outer contact. <u>Only with special option S1400:</u> 5 GΩ min. at 500 V DC. Between outer contact & aluminium housing.
Contact Resistance:	Center contact: 4 mΩ. Outer contact: 2,5 mΩ.
ROHS Compliant:	Connectors are ROHS compliant per ROHS directive 2002/95/EC of Jan 2003.

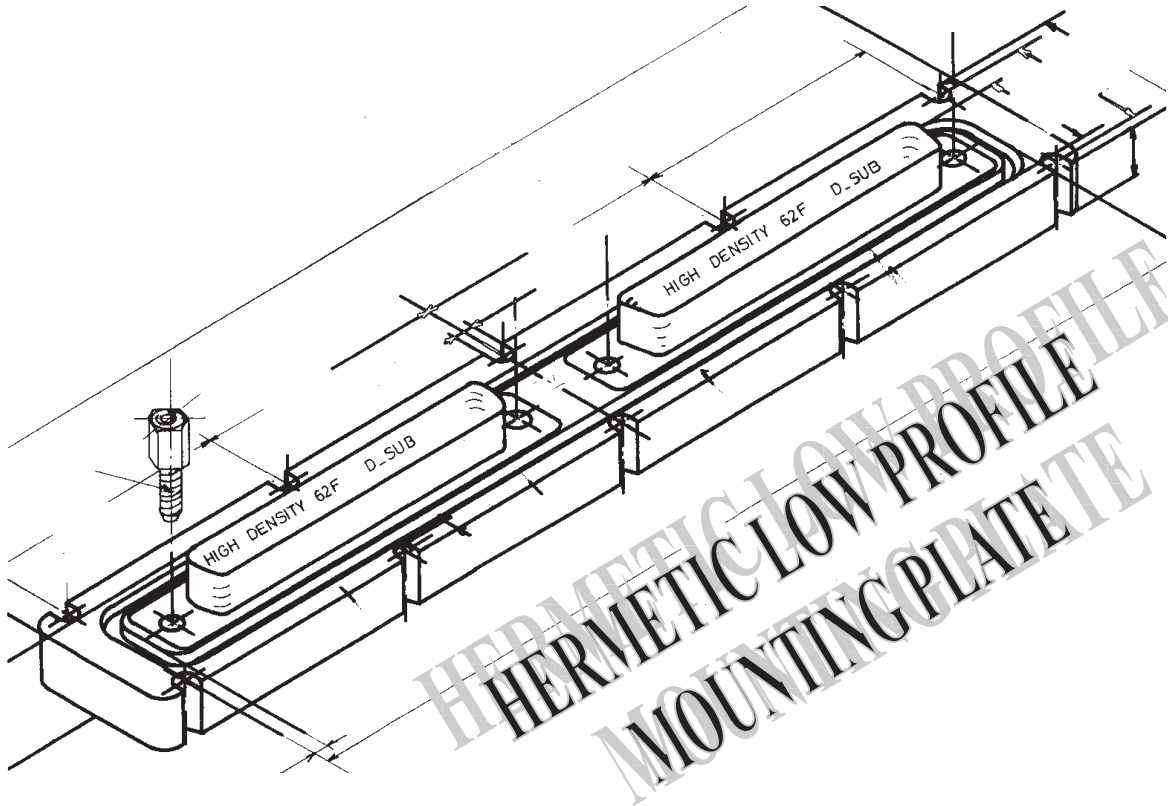
BNC SOCKET CONTACT INTERFACE IN ACCORDANCE TO MIL-STD-348 / MIL-C-39012/17H.

STEP	1	2	3	4	5	6
EXAMPLE	CIVAC	1 BNC	F/F	50	/AA	S****
STEP 1 – BASIC SERIES CIVAC Series		STEP 6 – SPECIAL OPTIONS S1400: Dielectric materiel between Outer contact and aluminium housing (Other options on request)				
STEP 2 – CONNECTOR VARIANTS 1 BNC (Other configurations On request)		STEP 5 – ENVIRONMENTAL COMPLIANCE OPTIONS /AA Only – Compliant per EU Directive 2002/95/EC (RoHs)				
STEP 3 – CONNECTOR GENDER F/F only		STEP 4 – IMPEDANCE 50 – nominal impedance 50 ohms 75 – nominal impedance 75 ohms				

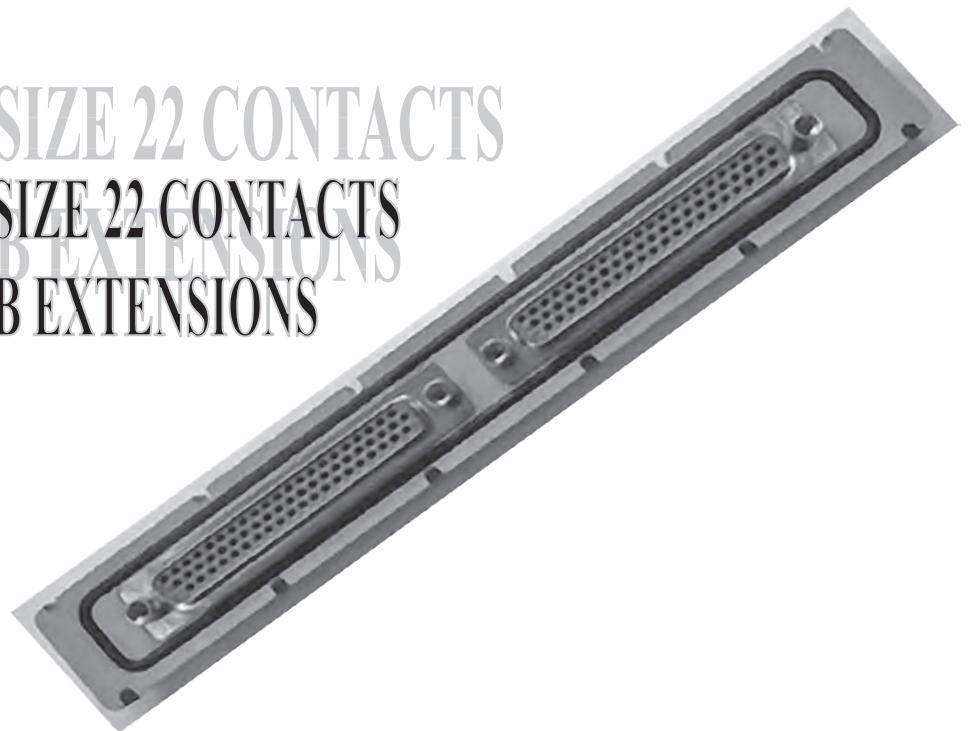
HERMETIC CONNECTORS / FEEDTHROUGH CUSTOM DESIGN



Positronic Industries
www.connectpositronic.com



124 FEMALE SIZE 22 CONTACTS
124 FEMALE SIZE 22 CONTACTS
WITH PCB EXTENSIONS



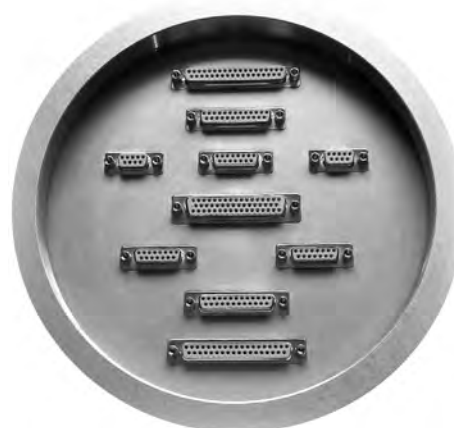


Positronic Industries
www.connectpositronic.com

HERMETIC CONNECTORS / FEEDTHROUGH CUSTOM DESIGN

HERMETIC ROUND FLANGES FOR INTERCONNECTION SYSTEM

10 D-SUBMINIATURE FEEDTHROUGHS



237 MALE / FEMALE SIZE 20 CONTACTS

HERMETIC ROUND FLANGES FOR VACUUM CHAMBERS

2 XAVAC® CONNECTORS



5 MALE/FEMALE SIZE 8 CONTACTS
20 MALE/FEMALE SIZE 20 CONTACTS

7 SAVAC® CONNECTORS



546 MALE/FEMALE SIZE 22 CONTACTS

HERMETIC FLANGE FOR VACUUM CHAMBERS

16 XAVAC® CONNECTORS



548 MALE/FEMALE SIZE 20 CONTACTS

HERMETIC ROUND FLANGE FOR VACUUM CHAMBERS

39 XAVAC® CONNECTORS



174 MALE / FEMALE SIZE 20 CONTACTS
1884 MALE / FEMALE SIZE 22 CONTACTS



Positronic Industries
www.connectpositronic.com

HERMETIC CONNECTORS / FEEDTHROUGH CUSTOM DESIGN

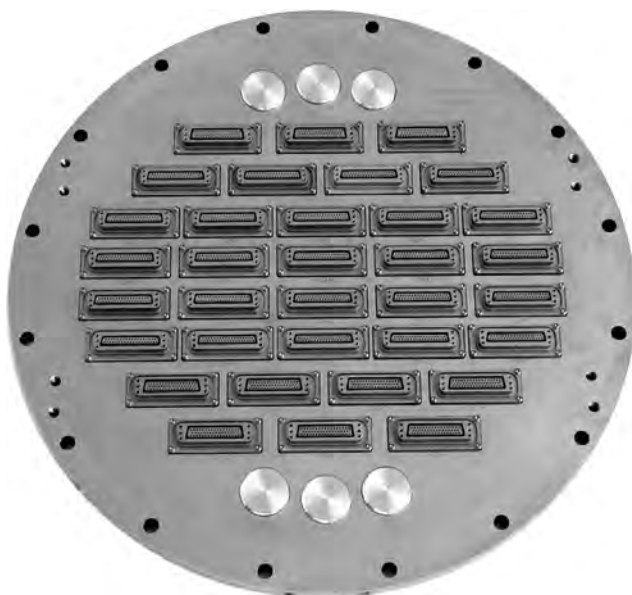
Our Hermetic Connectors are widely recognized for their reliability, durability and performance capabilities. They are utilized worldwide in Scientific Laboratories and Space Industries.

For quality and service at a competitive price, Positronic Industries is unbeaten. Give us a try.



HERMETIC ROUND FLANGE FOR VACUUM CHAMBERS

34 HIVAC® CONNECTORS



HERMETIC FLANGE REALIZED FOR
INTESPACE TOULOUSE - FRANCE

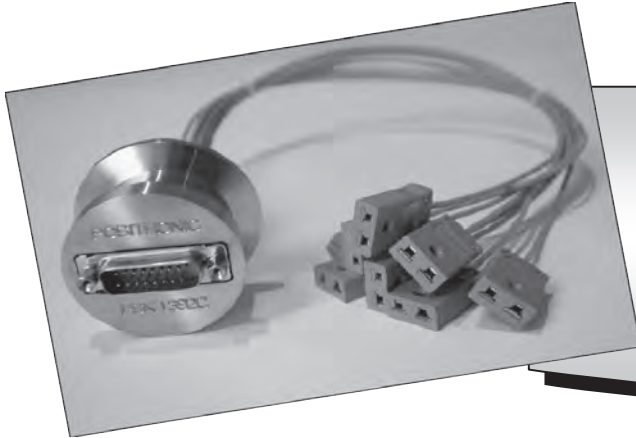
1531 FEMALE/FEMALE SIZE 20 CONTACTS

HERMETIC CONNECTORS / FEEDTHROUGH CUSTOM DESIGN



Positronic Industries
www.connectpositronic.com

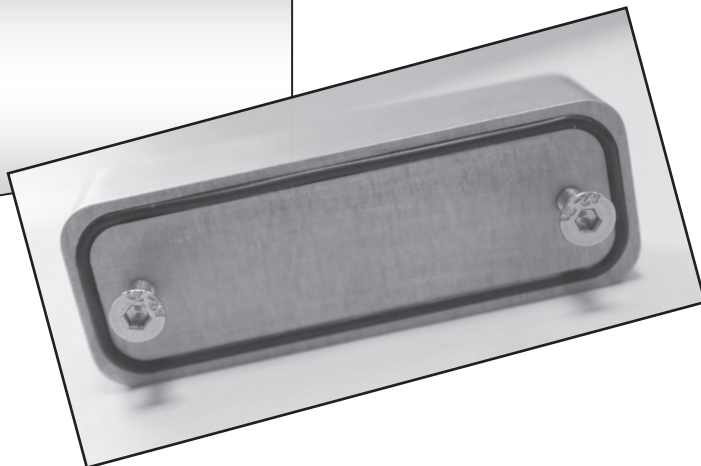
HERMETIC ROUND FLANGE FOR VACUUM CHAMBERS



THERMOCOUPLE SUBMINIATURE-D
FEEDTHROUGH
WITH SOCKET CONNECTORS
AND THERMOCOUPLE WIRES

HERMETIC OBTURATOR

OPTIONS ON REQUEST
CONSULT FACTORY





Positronic Industries
www.connectpositronic.com

TECHNICAL INFORMATION

CONVERSION TABLE

	Pascal	Bar	Kg/cm ²	Atmosph.
Pascal	1	10 ⁻⁵	1,02.10 ⁻⁵	0,9869.10 ⁻⁵
Bar	105	1	1,02	0,9869
Kg/cm ²	0,980.10 ⁻⁵	0,980	1	0,968
Atmosph.	1013.10 ⁻⁵	1,013	1,033	1
Torr	133,3	0,1333.10 ⁻²	1,36.10 ⁻³	1315.10 ⁻³
Mbar	100	01.10 ⁻²	1,02.10 ⁻³	0,9869.10 ⁻³
Inch.Hg	3386	3,386.10 ⁻²	0,03453	0,03345
Psi	6990	6,89.10 ⁻²	0,0703	0,008

	Torr	Mbar	Inch.hg	Psi
Pascal	0,75.10 ⁻²	10 ⁻²	0,2953.10 ⁻³	0,1451.10 ⁻³
Bar	750	1000	29,53	14,51
Kg/cm ²	735	980	28,96	14,22
Atmosph.	760	1013	29,95	14,70
Torr	1	1,333	0,03937	0,01934
Mbar	0,750	1	0,02953	0,01451
Inch.Hg	25,4	33,86	1	0,4910
Psi	51,75	69,947	2,041	1



Connector Excellence[®]

Positronic HIGH RELIABILITY Products

POWER



FEATURES:

- High current density
- Energy saving - low contact resistance
- Hot swap capability
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

Contact Sizes: 0, 8, 12, 16, 20, 22 and 24
Current Ratings: To 200 amperes per contact
Terminations: Crimp and fixed cable connector, straight solder, right angle (90°) compliant solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in a variety of package sizes
Compliance: PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

D-SUBMINIATURE



FEATURES:

- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

Contact Sizes: 8, 16, 20 and 22
Current Ratings: To 100 amperes
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, straight compliant press-in and right angle (90°) compliant press-in

Configurations: Multiple variants in both standard and high densities, seven connector housing sizes
Qualifications: MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

RECTANGULAR



FEATURES:

- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

Contact Sizes: 16, 20 and 22
Current Ratings: To 13 amperes nominal
Terminations: Crimp, wire solder, straight solder, right angle (90°) solder, and straight compliant press-in

Configurations: Multiple variants in both standard and high densities, thirty package sizes
Qualifications: MIL-DTL-28748, SAE AS39029, CCITT V.35

CIRCULAR



FEATURES:

- Non-corrodible / lightweight composite construction
- EMI/RFI shielded versions
- Thermocouple contacts
- Environmentally sealed versions
- Rear insertion/ front release of removable contacts
- Two level sequential mating
- Overmolding available on full assemblies

Contact Sizes: 12, 16, 20 and 22
Current Ratings: To 25 amperes nominal
Terminations: Crimp, wire solder, straight solder, and right angle (90°) solder
Configurations: Multiple variants in four package sizes
Qualifications: Environmental protection to IP67

CABLE



FEATURES:

- Shorten the supply chain and reduce additional costs and delays by "cabling" your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

- ✓ Design assemblies in accordance with customer specifications.
- ✓ Prepare cabled connector configuration and performance specifications.
- ✓ Design each system in accordance with applicable customer, domestic, and international standards.
- ✓ Define and conduct performance and verification testing.

HERMETIC



FEATURES:

- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature: $< 5 \times 10^{-9}$ mbar.l/s under a vacuum 1.5×10^{-2} mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

Contact Sizes: 8, 12, 16, 20 and 22
Current Ratings: To 40 amperes nominal
Terminations: Feedthrough is standard; flying leads and board mount available upon request
Configurations: See D-subminiature and circular configurations above
Compliance: Space-D32

For more information, visit www.connectpositronic.com or call your nearest Positronic sales office listed on the back of this catalog.



POSITRONIC®
GLOBAL *Connector* SOLUTIONS

HERMETIC CONNECTORS

POSITRONIC INDUSTRIES, INC.

423 N Campbell Avenue • PO Box 8247 • Springfield, MO 65801
Tel 417 866 2322 • Fax 417 866 4115 • Toll Free 800 641 4054 • info@connectpositronic.com

AMERICAS LOCATIONS

NORTH AMERICA

United States, Springfield, Missouri, Corporate Headquarters	800 641 4054	info@connectpositronic.com
Factory, Sales and Engineering Offices		
Canada Sales Office	800 327 8272	info@connectpositronic.com
Mexico Sales Office	800 872 7674	info@connectpositronic.com
Puerto Rico Factory and Sales Office	800 641 4054	info@connectpositronic.com

SOUTH AMERICA

Argentina Sales Office	417 866 2322	info@connectpositronic.com
Brazil Sales Office	417 866 2322	info@connectpositronic.com
Chile Sales Office	417 866 2322	info@connectpositronic.com

POSITRONIC ASIA PTE LTD.

3014A Ubi Road 1 #07-01 • Singapore 408703
Telephone 65 6842 1419 • Fax 65 6842 1421 • singapore@connectpositronic.com

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters

Factory Sales and Engineering Offices	65 6842 1419	singapore@connectpositronic.com
---------------------------------------	--------------	--

ASIA, Direct Sales Offices

China - Zhuhai Factory and Sales Office	86 756 362 6762	zhuhai@connectpositronic.com
Shenzhen Sales Office	86 755 8655 1199	shenzhen@connectpositronic.com
Shanghai Sales Office	86 21 6307 4606	shanghai@connectpositronic.com
Xian Sales Office	86 29 8839 5306	xian@connectpositronic.com
Beijing Sales Office	86 10 8203 7718	beijing@connectpositronic.com
Korea Sales Office	82 31 909 8047	korea@connectpositronic.com
Taiwan Sales Office	886 2 2937 8775	taiwan@connectpositronic.com

JAPAN, Direct Sales Offices

Sales and Engineering Offices	81 3 6310 5830	japan@connectpositronic.com
-------------------------------	----------------	--

INDIA, Direct Sales Offices

Factory Sales and Engineering Offices	91 20 2469 9910	india@connectpositronic.com
New Delhi Sales Office	91 80 1071 1175	delhi@connectpositronic.com

ASIA/PACIFIC, Technical Agents

Technical Agents in Australia, Hong Kong, Malaysia, New Zealand, Philippines, Thailand and Vietnam.

POSITRONIC INDUSTRIES, S.A.S.

Zone Industrielle d'Engachies • 46 Route d'Engachies • F-32020 Auch Cedex 9 France
Telephone 33 5 6263 4491 • Fax 33 5 6263 5117 • contact@connectpositronic.com

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters

Factory Sales and Engineering Offices	33 5 6263 4491	contact@connectpositronic.com
---------------------------------------	----------------	--

EUROPE, Direct Sales Offices

North France Sales Office	33 1 4588 1388	jchalaux@connectpositronic.com
South France Sales Office	33 5 6263 4491	plafon@connectpositronic.com
Eire + Northern Ireland	33 686 48 33 26	tauvin@connectpositronic.com
Germany Sales Office	49 23 5163 4739	cbouche@connectpositronic.com
Israel Sales Office	972 3 732 5552	nirharpoz@connectpositronic.com
Italy Sales Office	39 02 5411 6106	rmagni@connectpositronic.com
Poland	421 907 040 458	jharustak@connectpositronic.com
Slovakia / Czech Republic / Hungary / Romania / Bulgaria	421 907 040 458	jharustak@connectpositronic.com
UK Sales Office	44 7975 682 488	lbridwell@connectpositronic.com

EUROPE & MIDEAST, Technical Agents

Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Russia, Scandinavia, Spain, Switzerland, Turkey, Ukraine and the United Kingdom.

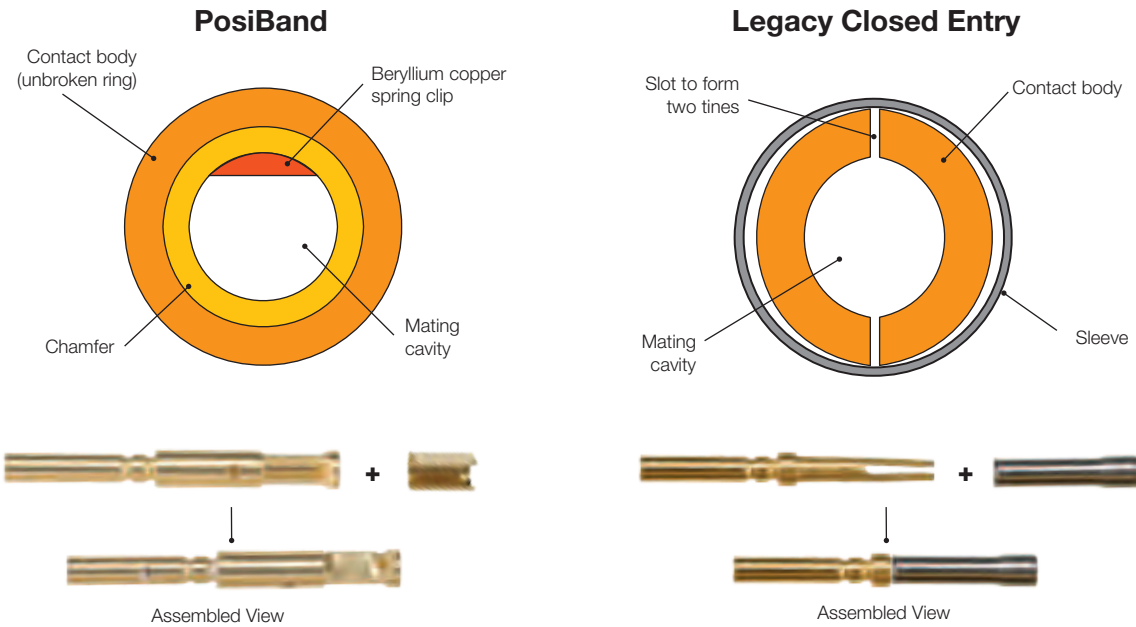
For most current sales office information, please visit http://www.connectpositronic.com/contact/sales_offices.html

LOCATIONS

Catalog F-001
Rev. E

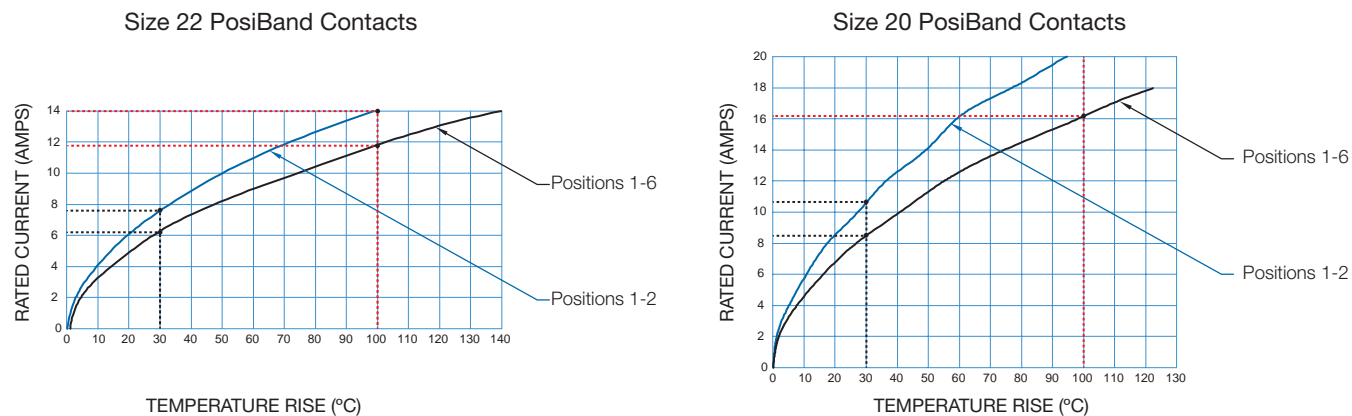
www.connectpositronic.com

CONTACT CROSS SECTIONS



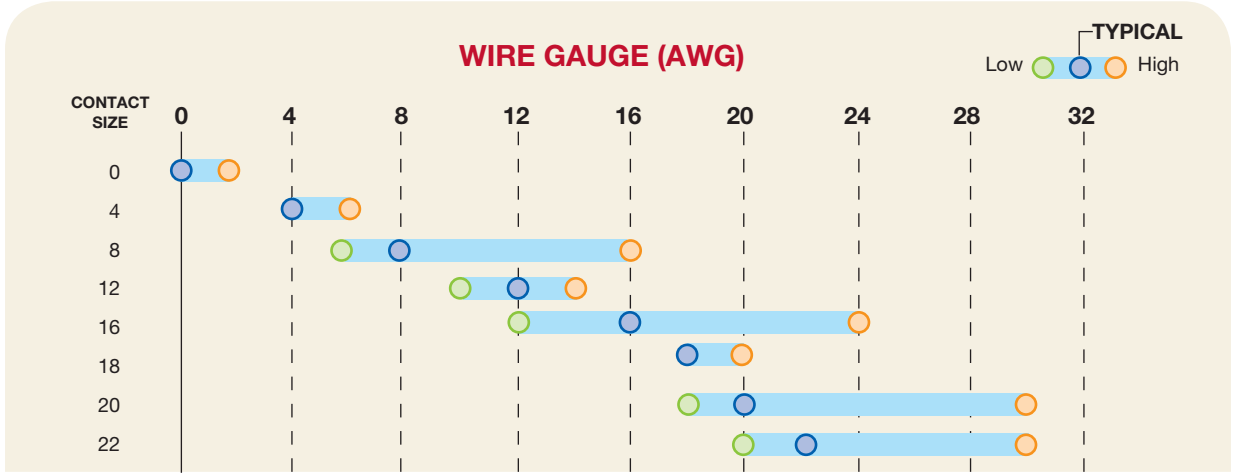
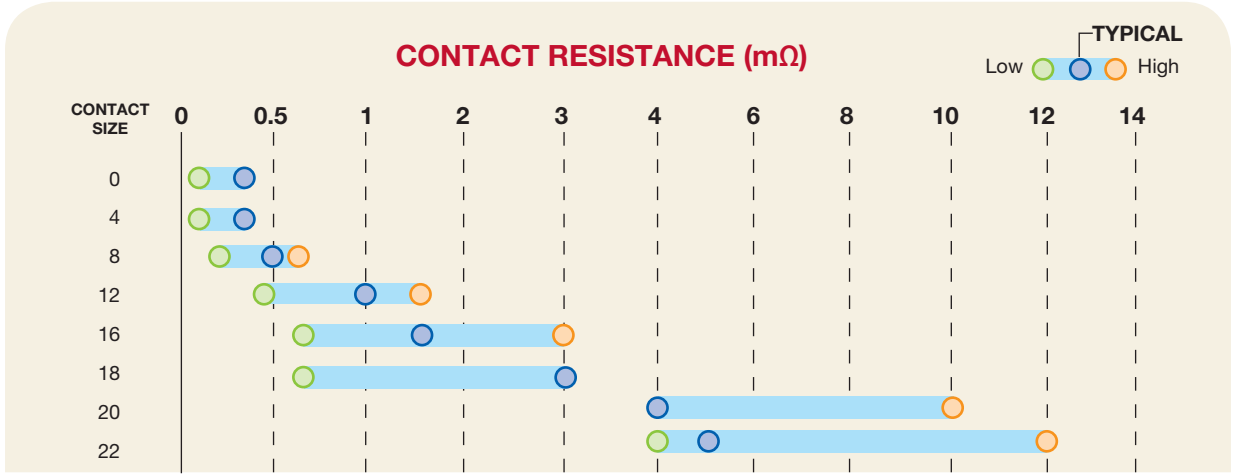
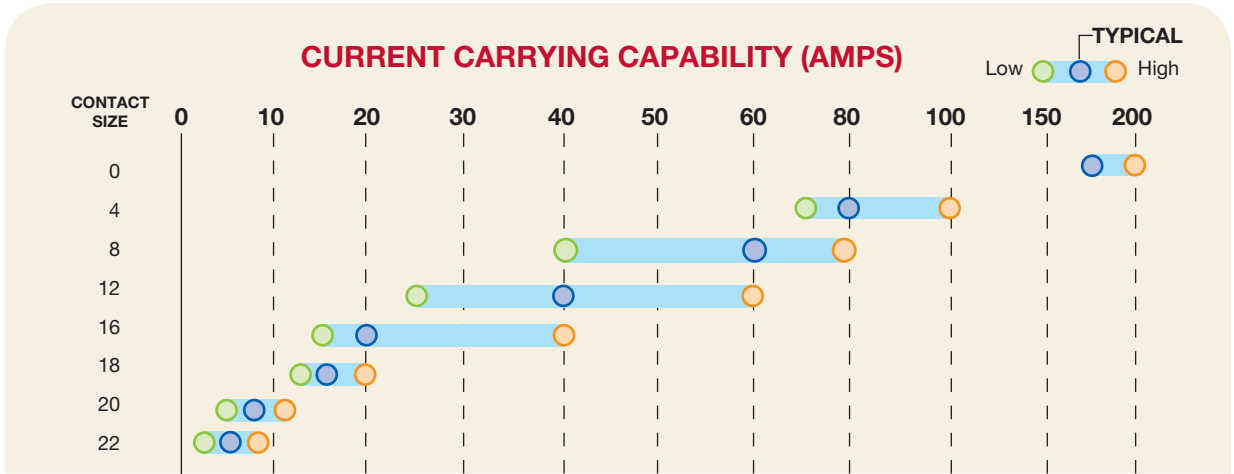
	POSIBAND	LEGACY
Conductivity	Excellent	Excellent
Mechanical Integrity	Uncompromised	Compromised
Surface to Surface Contact	Excellent	Average
Contact Resistance	Excellent	Average
Annealing	Not required	Required
Military Qualification	SAE AS39029	SAE AS39029
Current Carrying Capability	Excellent	Average
Concentricity	Round	Oval

TEMPERATURE RISE CURVES



..... 30°C Rise (standard benchmark)
..... 100°C Rise (upper operating limit of connector)

connectpositronic.com/L48hD



Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

Positronic | USA
423 N Campbell Ave
Springfield MO 65806 USA
+1 800 641 4054
info@connectpositronic.com

Positronic | Europe
46, route d'Engachies
F-32020 Auch Cedex 9 France
+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia
3014A Ubi Rd 1 #07-01
+65 6842 1419
Singapore 408703
singapore@connectpositronic.com

Sales Offices
Positronic has local sales representation all over the world. For nearest sales office visit www.connectpositronic.com/locations

global connector solutions®

PRIKLJUČCI KONEKTORY
连接器 STIK CONNECTEURS
CONNECTIONS

TENGI
KONEKTOR
连接器
CONNETTORI

KONNEKTÖRLÈRI
KONEKTOR
KONNEKTÖR
CONECTORES

PRIKLJUČKI
KONEKTOR
KONNEKTÖR
PAZĚEMY

CSATLAKOZÓK
KONEKTOR
KONNEKTÖR
KONNETTORI

CHÓNAISC
CONNETTORI

PENYAMBUNG

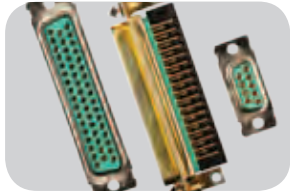
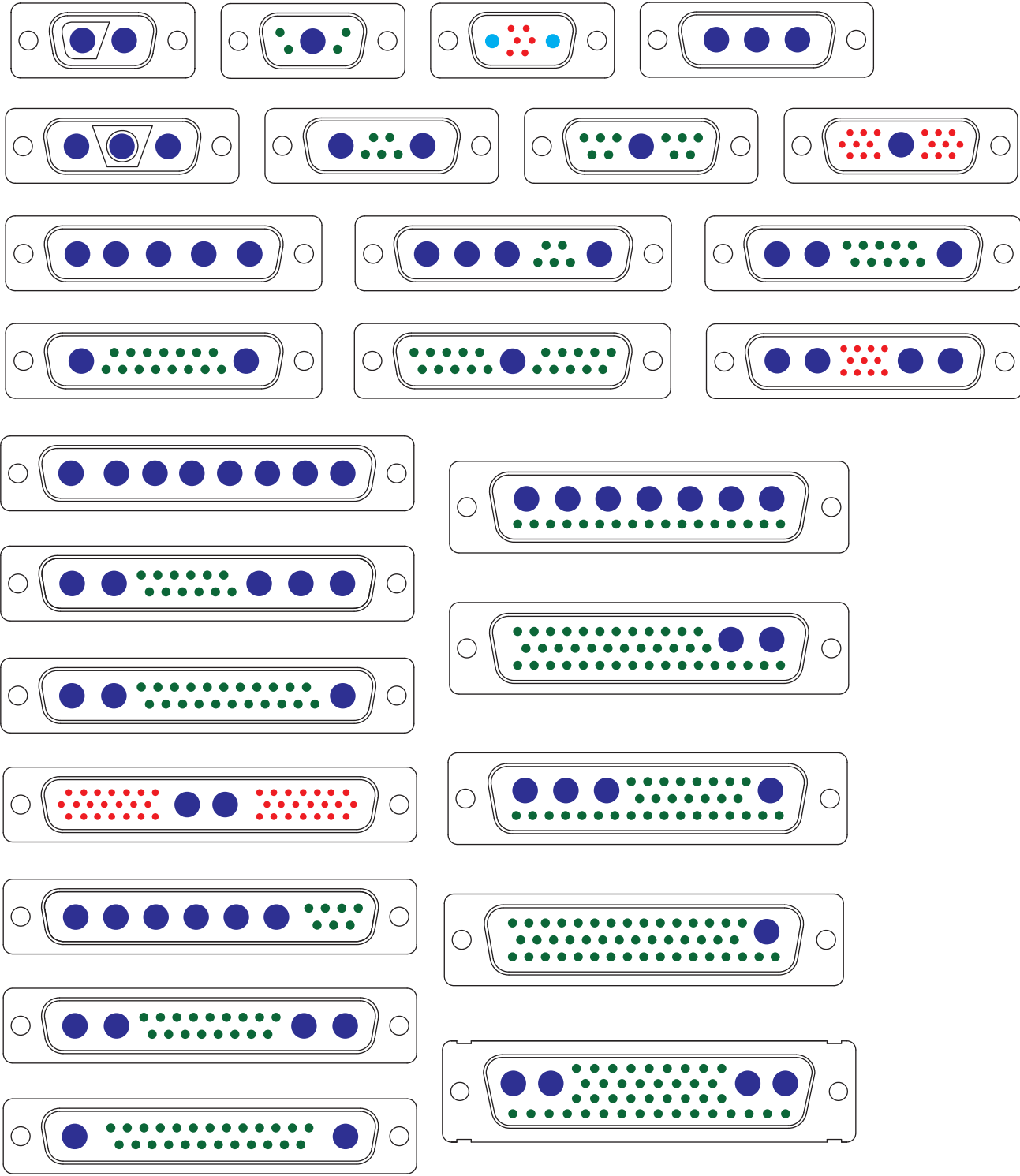
KONTAKTER



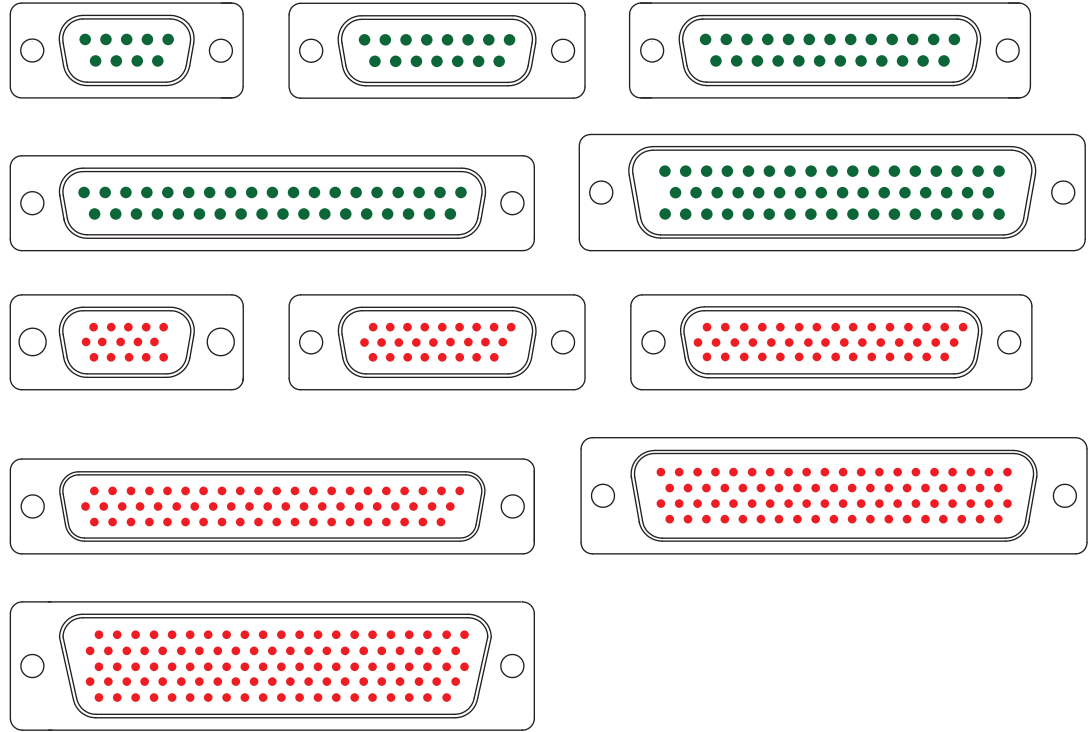
Positronic®



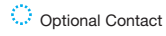
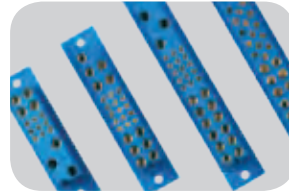
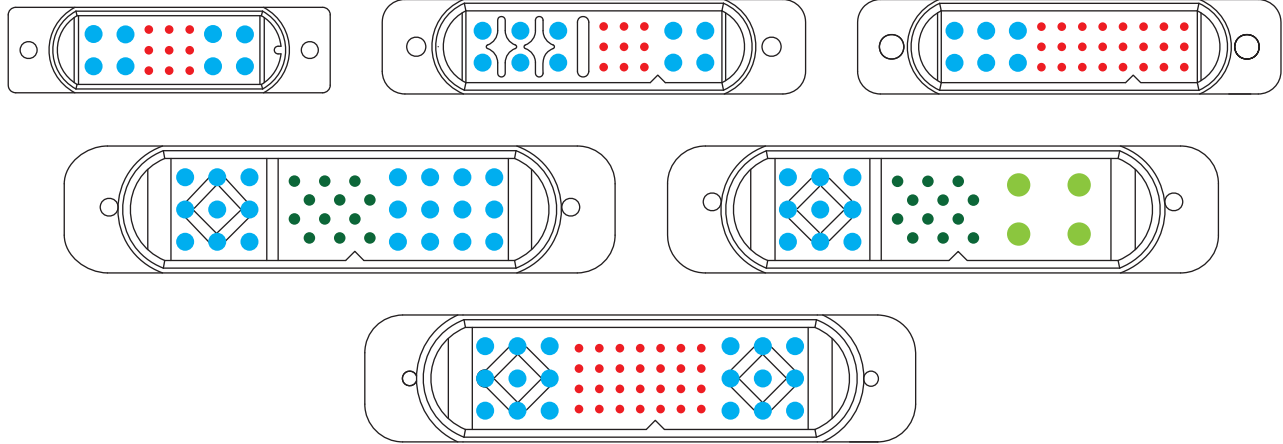
COMBO-D
connectpositronic.com/q97zv



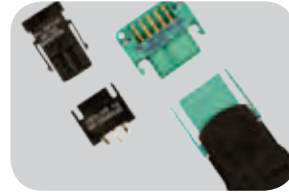
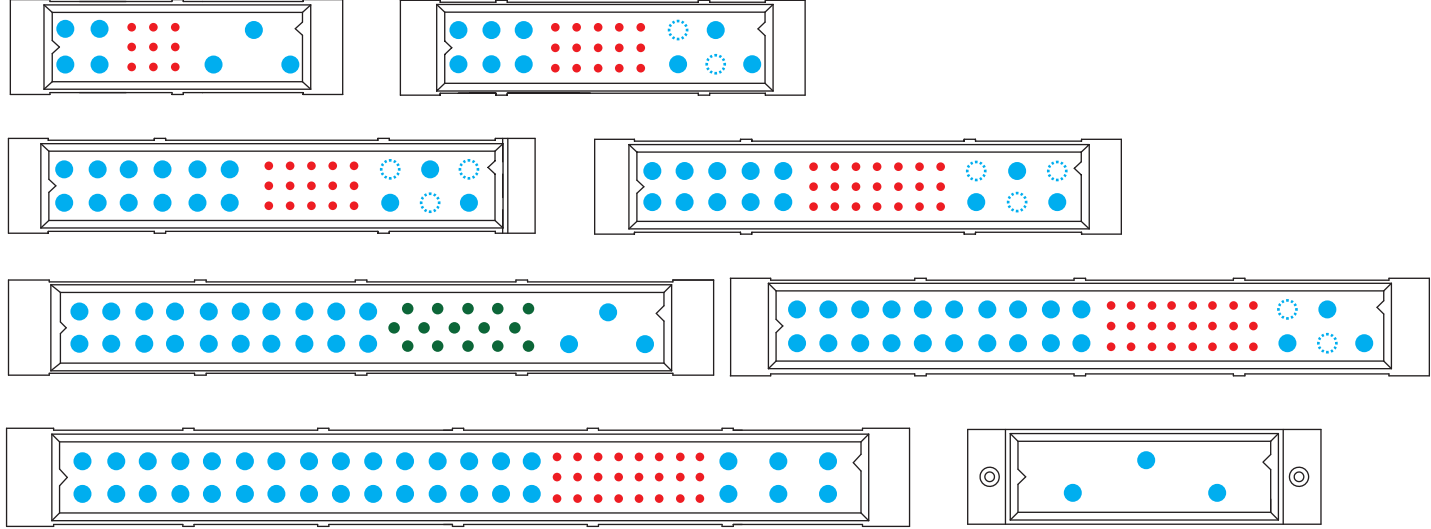
D-SUBMINIATURE
connectpositronic.com/x3wwW



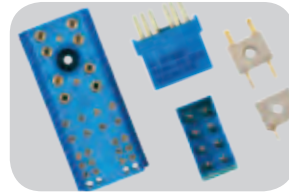
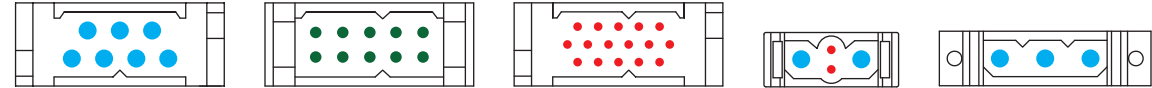
GOLDFISH
connectpositronic.com/1Jht7



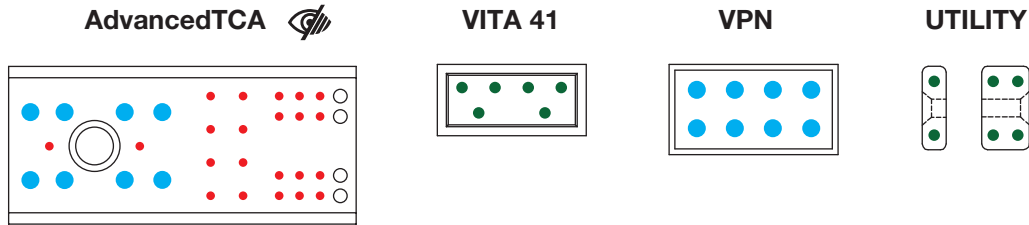
COMPACT POWER CONNECTOR
connectpositronic.com/t8tOz

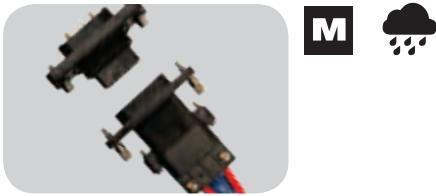


DRAGONFLY
connectpositronic.com/4hdqT

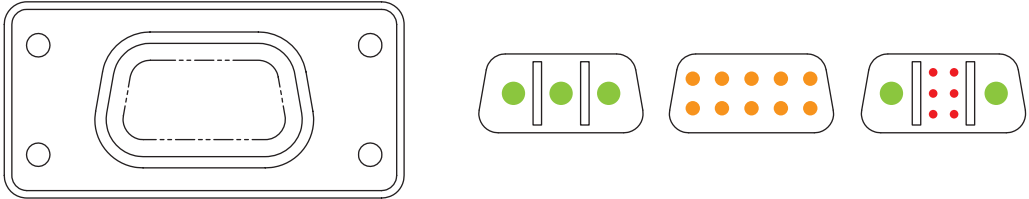


MISCELLANEOUS

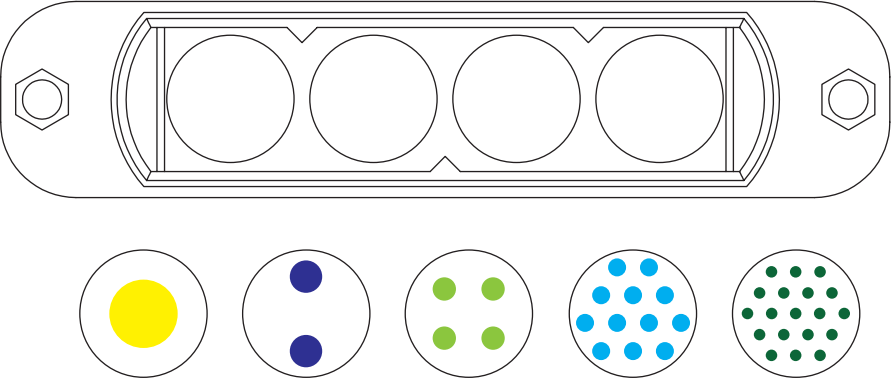




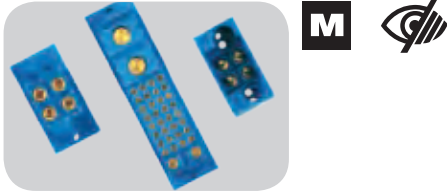
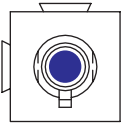
PANTHER
connectpositronic.com/zsCYU



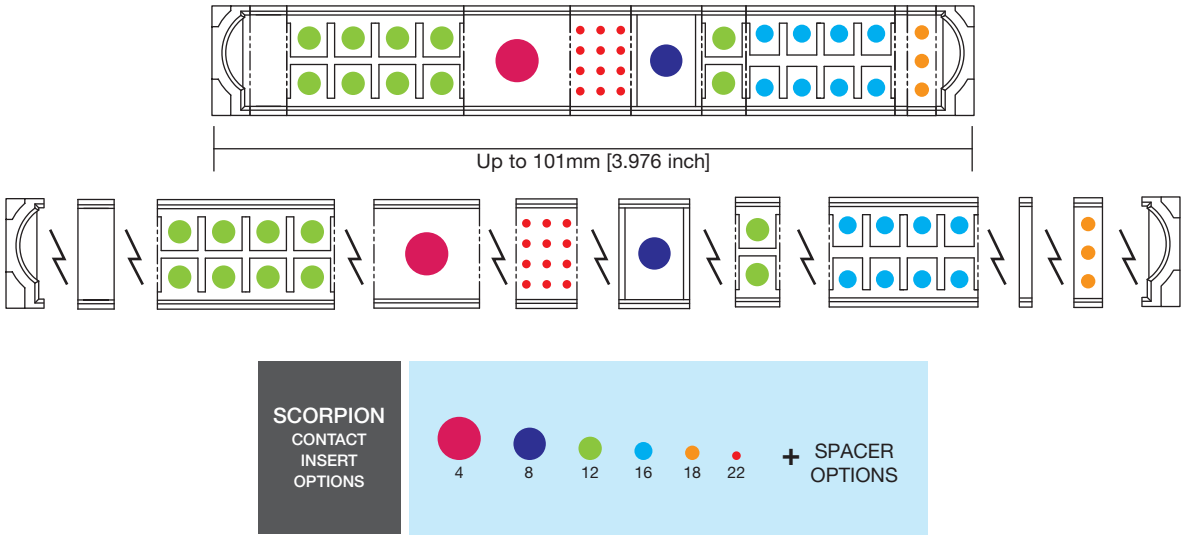
GREAT GOLDEN
connectpositronic.com/z5MIS



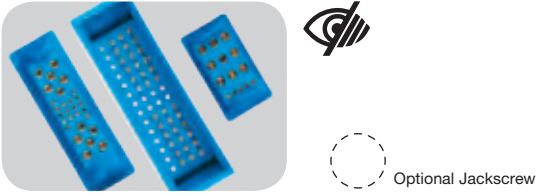
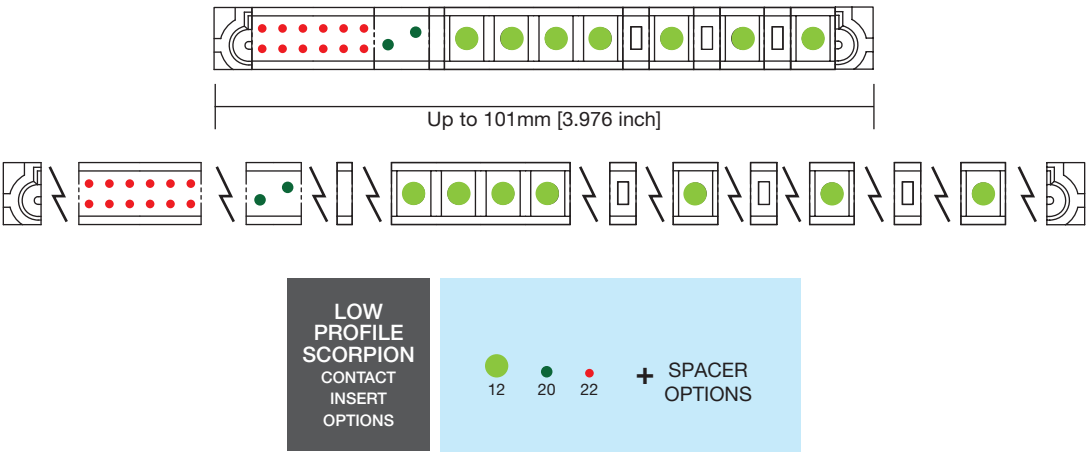
WONDERSUN
connectpositronic.com/gE2xt



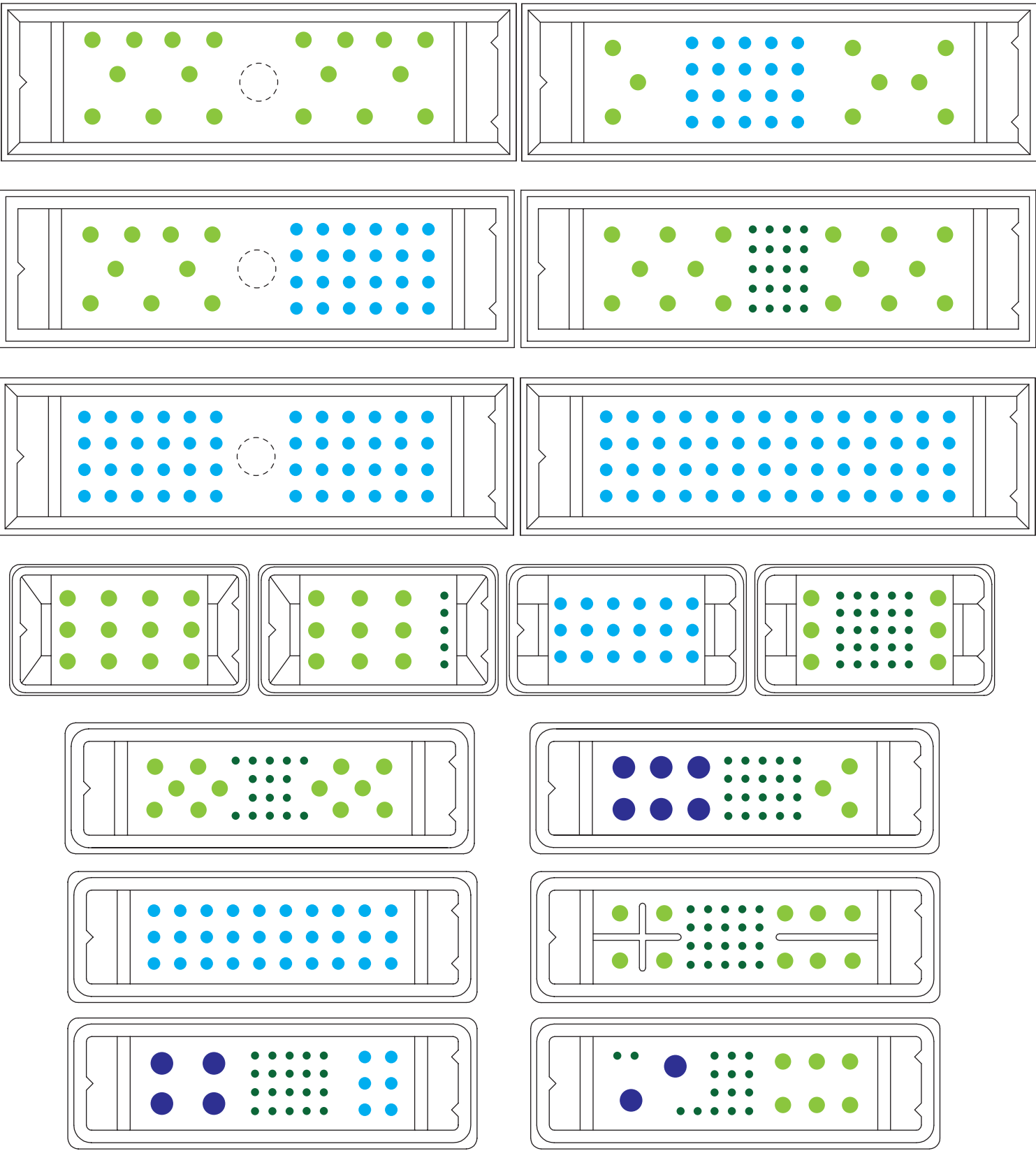
SCORPION
connectpositronic.com/eRr8C



LOW PROFILE SCORPION
connectpositronic.com/3Xi9R



INFINITY
connectpositronic.com/hK9DB



Connectors shown at **actual size**. All Positronic products utilize solid, machined contacts.

CONTACT SIZES

0

4

8

12

16

18

20

22

Features

Waterproof

Blind Mating

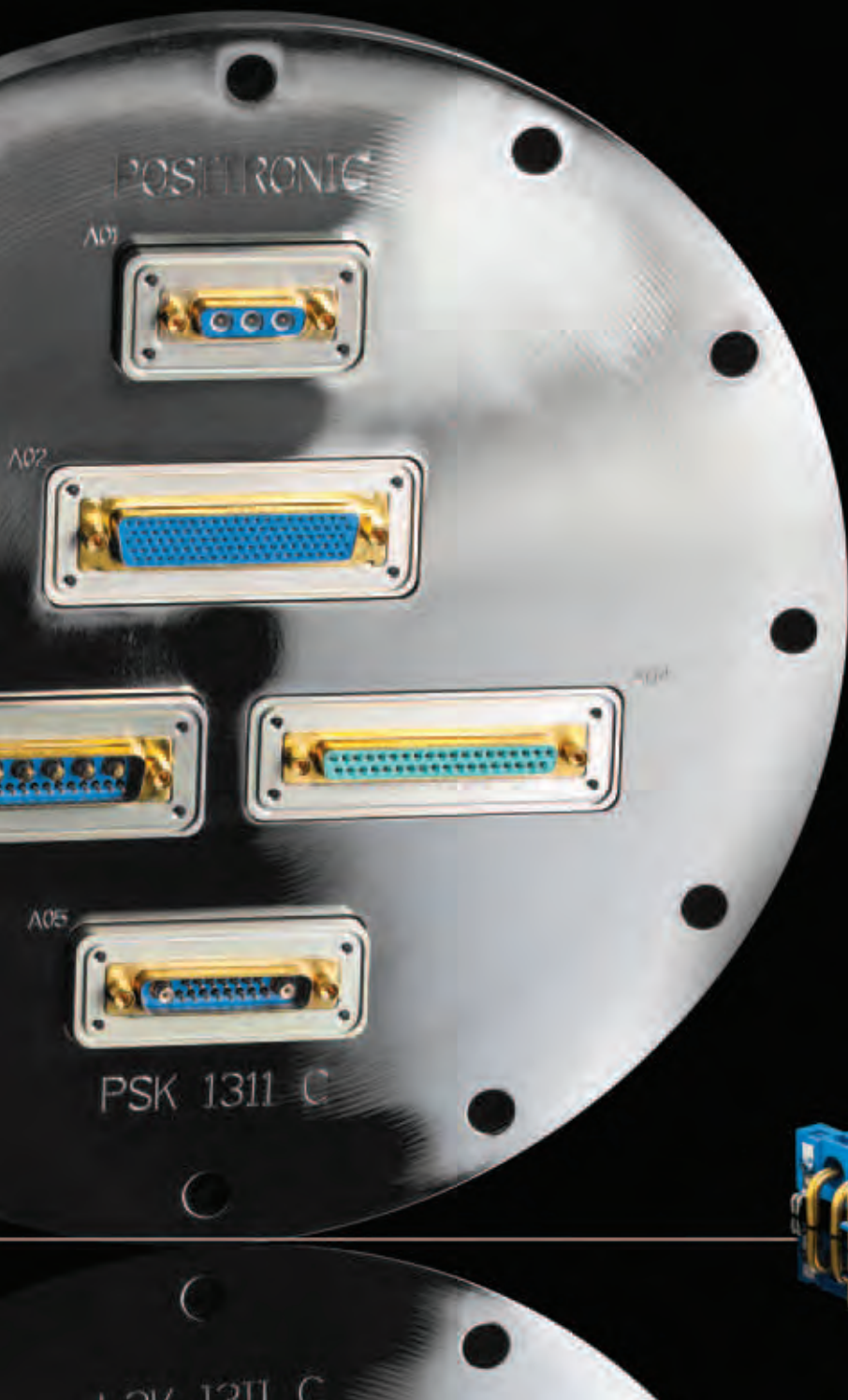
Modular



Positronic®

Connector Excellence®

2015 Product Catalog



M02U-NC

CONTENTS

OVERVIEW

- 1 Timeline & History
- 2 Vertical Integration
- 4 Our Focus / Our Strengths

TECHNICAL SPECIFICATIONS

- 6 Tech Specs

PRODUCTS

Power

- 8 Scorpion
- 10 Low-Profile Scorpion
- 11 Power Connection Systems
- 12 Goldfish
- 13 Great Golden
- 14 Compact Power Connector
- 15 Dragonfly
- 16 Infinity
- 17 AutoShunt
- 18 Power Input Connector / Safety Shroud
Wondersun / VITA 41 (VXS)

PICMG Standards

- 19 AdvancedTCA / MicroTCA
CompactPCI / AdvancedTCA RTM

D-subminiature

- 20 Standard Density
- 21 High Density
- 22 Combo-D
- 23 Spaceflight
- 24 Waterproof
- 25 Dual Port (Stacked)
- 26 Optik-D / Backshells & Accessories

Rectangular

- 27 Standard Density
- 28 High Density
- 29 Utility

Circular

- 29 Circle Hex
- 30 Front Runner
- 31 King Cobra

ADDITIONAL INFORMATION

- 32 PosiBand Contacts
- 33 LSA & Press-Fit Contacts
- 34 Cable Assemblies
- 35 Custom Connectors
- 36 Contact Us

TIMELINE & HISTORY

ABOUT US

1966
Founded as
an aerospace
component
manufacturer

1978
Qualified to
MIL-DTL-28748

1980
Qualified to
MIL-DTL-24308
& MIL-C-39029

1983
Operations
in Europe
began

1991
Operations
in Puerto
Rico
began

1993
Qualified
to NASA
GSFC

1995
Operations
in Asia
began

1999
CompactPCI P47
standard power
connector interface
adopted

2005
Operations
in India began

2009
Revolutionary
PosiBand contact
introduced

2010
PosiBand receives
SAE AS39029 and
NASA qualification

Modular Scorpion
product released

2016
50th Anniversary

Since 1966, Positronic has provided connector solutions to customers around the world.

Positronic offers a wide variety of power, D-subminiature, circular and rectangular connector products and accessories. Value-added services are also available.

Our connectors feature precision machined contacts and can be provided to industrial or military performance levels to meet various target price points.

Our products are used in all areas of the electronics industry from basic power supplies to advanced weapon systems.

Founded in 1966

Divisional headquarters in
Americas, Europe and Asia

AS9100 / ISO9001

Global sales and service network

Higher level subassembly capability

Vertically integrated
manufacturing capability

Patent holder for various
connector technologies

Involved in international
connector standards development

VERTICAL INTEGRATION

DESIGN & SUSTAINING ENGINEERING



The Engineering department accomplishes a variety of key company objectives such as designing new products for standard and customer-specific applications, modifying existing products to meet customer demands, undertaking value engineering initiatives, and offering technical support for existing product lines. A focus on 3D modeling during the design process is augmented by in-house 3D printing capabilities.

TOOLING



The Tooling department has a host of capable machines like CNCs and EDMs that are used to manufacture punch press dies, molds, assembly fixtures, cams and other tools for in-house use. The department also manufactures assembly tools used by Positronic customers worldwide.

METAL FABRICATION / STAMPING



The Metal Fab department boasts a number of punch presses in varying sizes and capabilities that are used to manufacture connector shells, backshells, angle brackets, cable clamps and other metal accessories.

TEST LABORATORY



With a variety of test equipment to choose from, the Positronic test lab is certified to carry out a variety of tests to IEC standards plus QPL testing to military standards MIL-DTL-24308, SAE AS39029 and MIL-DTL-28748. In addition, the lab is approved by UL as part of the Client Test Data program and has the ability to verify product performance to IP65 and IP67 requirements.

MOLDING



The Molding department houses multiple thermoplastic and thermoset plastic molding machines that are used to mold connector insulators, backshells, angle brackets, cable clamps and other plastic accessories. Overmolding is also available through the Positronic cable assembly divisions.

MACHINING



One of the core competencies of Positronic is screw machine technology. Across all locations, Positronic has over 200 automatic lathes to manufacture thousands of varieties of electrical contacts for use in its broad connector product lines. These machines are also used to manufacture certain types of component hardware.

PLATING



The internal plating shop applies gold, nickel, copper, zinc, tin, chromate conversion, electroless nickel and anodic coatings to connector components prior to the assembly process. Plating inspection technology exists to verify plating thickness, adhesion and appearance to meet military specifications.

MANUFACTURING ENGINEERING



Manufacturing Engineering designs and implements state of the art manufacturing processes and proprietary equipment for in-house use. This includes automated, high-speed assembly tools and robotic equipment used to maximize efficiency while minimizing manufacturing defects.

STOCKING



Positronic has multiple stocking locations around the world for both components and finished goods. Finished goods are available to ship within 1 business day from the time the order is received and PosiShop, the e-Commerce division of Positronic, offers thousands of products for sale online.

ASSEMBLY & SECONDARY OPS



The Assembly department handles finished connector assembly along with a variety of secondary manufacturing operations such as slotting, drilling, tapping, milling, depressing, sleeving, striping and reeling, among others.

QUALITY ASSURANCE



Positronic has a robust TQM program and is AS9100/ISO9001 compliant at various locations. The QA department manages continuous improvement initiatives to ensure quality is designed into the product through rigid process control and a dedicated Quality Engineering staff. The company is also certified to act as a Designated Supplier Quality Representative (DSQR) for some of the world's most respected companies.

SALES & CUSTOMER SERVICE



Positronic has an extensive sales and support network all over the world with key regional offices in the USA, France, India, Singapore and China. In addition to many highly trained direct sales staff, the company also partners with electronics distributors in strategic parts of the world to better serve the customers in those areas.

OUR FOCUS

POWER ELECTRONICS

INDUSTRIAL

COMMERCIAL AEROSPACE

TELECOM / DATACOM

DEFENSE

TEST & INSTRUMENTATION

SPACEFLIGHT

TRANSPORTATION

MEDICAL

OIL & GAS



OUR STRENGTHS

SOLID MACHINED, LOW RESISTANCE CONTACTS

POWER CONNECTORS

RECTANGULAR CONNECTORS

CUSTOM CONNECTOR DEVELOPMENT

POSIBAND CONTACT TECHNOLOGY

CABLE ASSEMBLIES

E-COMMERCE

SERVICE & SUPPORT



TECH SPECS



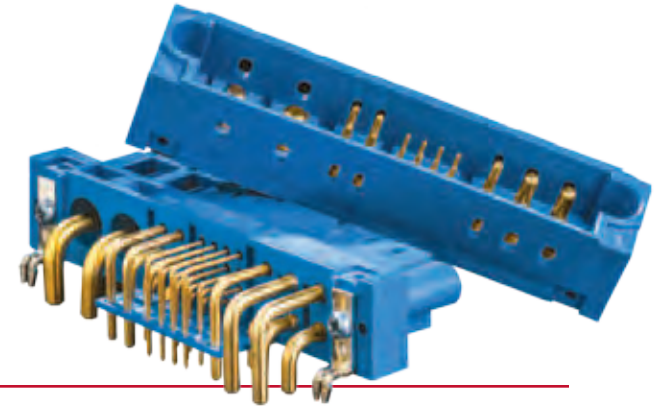
FAMILY		SCORPION	LOW-PROFILE SCORPION	POWER CONNECTION SYSTEMS	GOLDFISH	GREAT GOLDEN	COMPACT POWER CONNECTOR	DRAGONFLY	INFINITY	AUTOSHUNT	POWER INPUT CONNECTOR	SAFETY SHROUD	WONDERSUN	VITA 41 (VXS)													
PART NUMBER PREFIX		SP	LSP	PLA, PLB, PLC	GFSH	GG	PCIH, PICA, PICB, PCIC, PCIM	DF	IP, MIP, MMIP	PLZ, DFS	PLB3W3	PLS	WS	VPX													
PAGE NUMBER		8, 9, 19		10	11	12	13	14, 19	15	16	17	18	18	18													
CONTACT SIZE	CURRENT RATING (AMPS) ^{*1}	#4	100	#12	38	#8	40	#12	35	#0	175	#16	40 ^{*2}	#16	20	#8	60	#16	15	#12	40	#12	40	#8	60	#20	24
		#8	50		12		18		20		40		28 ^{*2}		7.5		40		20		5						
		#12	40		20		5		12		35		5		20		5		5								
		#16	26		22		3		20		5		16		20		20		5		20		5				
		#18	16		#20		7.5		22		3		20		5		22		3		20		5				
FEMALE CONTACT DESIGN		Open Entry PosiBand LSA		Open Entry PosiBand LSA		Open Entry LSA		Open Entry PosiBand LSA		LSA Crown		Open Entry PosiBand LSA		Open Entry LSA		Open Entry LSA		LSA		LSA		LSA		LSA		Open Entry	
CONTACT TERMINATION		Crimp Solder PCB Press-Fit PCB		Crimp Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB Press-Fit PCB		Crimp Solder PCB Press-Fit PCB		Crimp Ring Terminal Busbar		Crimp Solder PCB Press-Fit PCB		Crimp Solder PCB Press-Fit PCB		Crimp Solder PCB Press-Fit PCB		Crimp Solder PCB Screw Terminal		Crimp Solder PCB Press-Fit PCB Screw Terminal		Crimp Solder PCB		Crimp Busbar		Solder PCB Press-Fit PCB	
INSULATOR MATERIAL		Polyester		Polyester		Polyester		Nylon		Nylon		Polyester		Nylon		Polyester		Nylon Polyester		Polyester		Polyester		Nylon		Polyester	
INSULATOR COLOR		Blue		Black		Blue		Gold		Gold		Blue		Green Black		Blue		Green Blue		Blue		Blue		Black		Blue	
SHELL MATERIAL		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -	
SHELL FINISH		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -	
POLARIZATION		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Insulator		Pin Layout	
BLIND MATING		Optional		Optional		Optional		Included		Included		- -		- -		Included		- -		- -		- -		- -		- -	
CONFIGURATIONS		> 1,000,000		> 100,000		16		6		625		12		5		16		2		1		2		1		1	
LOCKING SYSTEM		Integrated Latch Jackscrews		Integrated Latch		Integrated Latch		Jackscrews		Jackscrew		- -		Integrated Latch		Jackscrew		Integrated Latch		Integrated Latch		Integrated Latch		Push/Pull		- -	
BACKSHELL		Plastic		- -		Plastic		Plastic		Metal		- -		Plastic		Plastic		Plastic		Plastic		Plastic		- -		- -	
MOUNTING		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable Panel		PCB	
TEMPERATURE RANGE (°C)		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125	
SEQUENTIAL MATING LEVELS		2		2		3		3		2		3		- -		3		- -		2		2		- -		3	
QUALIFICATIONS ^{*4}		UL		- -		CUL TÜV		UL TÜV		- -		UL CSA TÜV		UL		UL CSA		- -		- -		- -		- -		- -	

All Positronic contacts are machined from solid copper alloy and plated gold for maximum performance. Gold plating thickness options include gold flash, 30 microinches and 50 microinches. All insulators meet UL 94V-0 requirements.

^{*1} High conductivity contacts are available for most product families. On average, the current rating will be improved by 20-50%.
^{*2} 28 amp rating applies to DC output and 40 amp rating applies to AC/DC input.
^{*3} 7.5 amp rating applies to GAP/GAPL series and 13 amp rating applies to GMCT series.
^{*4} The listed qualification may not apply to all products within the family. Safety agency certifications not listed here may have been pending at the time of printing. Consult sales for current status.

ADVANCEDTCA		STANDARD DENSITY	HIGH DENSITY	COMBO-D	SPACEFLIGHT	WATERPOOF	DUAL PORT (STACKED)	OPTIK-D	STANDARD DENSITY	HIGH DENSITY	UTILITY	CIRCLE HEX	FRONT RUNNER	KING COBRA													
VPB		MD, ED, SD, MDX, ORD, RD, HDC, PCD	ODD, DD, PCDD	CBD, CBM, CBC, CBDD, CBCD, QB	SND, SDD, SCBC, SCBM, SCBCD, SCBDD	WD, WDD, EVD, WCBD	DP, MDP, XD, DDA, DDB, DDC, CBDP	CBF	GMCT, GM, GAP, GAPL	SGM, SGMC, SMPL	GF, GFPL	GH, MGH	FR	KC, BKC													
19		20		21		19, 22		23		24		25		26		27		28		29		29		30		31	
#16 #22	30 2	#20	7.5	#22	5	#8 #16 #20 #22	40 16 7.5 5	#8 #20 #22	40 7.5 5	#8 #20 #22	40 7.5 5	#16 #16 #20	13 7.5 7.5	#22	5	#20	7.5	#20 #22	7.5 5	#12 #16 #20 #22	25 13 7.5 5	#16 #20 #22	20 7.5 3				
Open Entry LSA		Open Entry PosiBand		Open Entry PosiBand		Open Entry PosiBand LSA		PosiBand LSA		Open Entry PosiBand LSA		Open Entry LSA		Open Entry PosiBand LSA		LSA		Open Entry PosiBand		Open Entry		Open Entry		Open Entry LSA		Open Entry LSA	
Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB Pre-Wired		Solder PCB		Crimp Solder Cup Solder PCB Optical Cable		Crimp Solder Cup Solder PCB Press-Fit PCB		Crimp Solder Cup Solder PCB		Solder Cup Solder PCB		Solder Cup Solder PCB		Crimp Solder PCB		Crimp Solder Cup Solder PCB Screw Terminal	
Polyester		DAP Nylon Polyester		Polyester		Polyester		DAP Polyester		DAP Nylon Polyester		Nylon Polyester		Polyester		DAP		DAP		DAP		DAP		DAP		Nylon	
Blue		Green Black Blue		Blue Black		Blue		Green Blue		Green Black		Black Green		Blue		Gray		Green Gray		Gray		Green Gray		Black		Green Black	
- -		Steel Stainless Steel		Steel Stainless Steel		Steel Stainless Steel		Brass		Steel Stainless Steel		Steel Stainless Steel		Steel Stainless Steel		Aluminum		Aluminum		- -		- -		- -		- -	
- -		Tin Zinc Cadmium		Tin Zinc Cadmium		Tin Zinc Cadmium		Gold		Tin Zinc Cadmium		Tin Zinc Cadmium		Tin Zinc Cadmium		Black Anodize Yellow Anodize Yellow Chromate		Black Anodize Yellow Anodize Yellow Chromate		- -		- -		- -		- -	
Insulator		Trapezoidal		Trapezoidal		Trapezoidal		Trapezoidal		Trapezoidal		Trapezoidal		Trapezoidal		Guide Pilots Jackscrews		Guide Pilots Jackscrews		Pin Layout		Pin Layout		Insulator		Insulator	
Included		Optional		Optional		Optional		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -	
1		5		6		29		37		30		Variable		8		16		14		2		6		16		5	
- -		Jackscrew Lock Lever		Jackscrew Lock Lever		Jackscrew Lock Lever		Jackscrew		Jackscrew		Jackscrew Locking Lever		Jackscrews		Jackscrews Lock Lever		Jackscrews Lock Lever		- -		Lock Spring		Coupling Nut		Coupling Nut	
- -		Metal Plastic		Metal Plastic		Metal Plastic		Metal		Metal Plastic		- -		Metal Plastic		Metal		Metal		- -		Metal Plastic		Plastic		Plastic	
PCB		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB		Free Cable PCB Panel		Free Cable PCB Panel		Free Cable PCB Panel	
-55 to +125		-55 to +125		-55 to +125		-55 to +125		-55 to +125		-25 to +85 -55 to +125 -40 to +125		-55 to +125		-55 to +125		-55 to +125 -65 to +150		-55 to +135		-55 to +125		-55 to +125		-55 to +125		-55 to +125	
4		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		- -		2		- -	
UL CNR		UL CSA MIL-DTL-24308 SAE AS39029		UL CSA MIL-DTL-24308 SAE AS39029		UL CSA DESC 85039 SAE AS39029		MIL-DTL-24308 GSFC S-311		IP65/67 UL CSA SAE AS39029		UL CSA		ARINC 801 SAE AS39029		UL MIL-DTL-28748 SAE AS39029		UL MIL-DTL-28748 SAE AS39029		UL		UL		- -		UL	

The most **versatile** modular power/signal connector on the market



FEATURES

Modular tool design allows for practically limitless customer-defined contact arrangements

Molding process yields a one-piece insulator

The connector width is variable up to 101.00 mm

High conductivity contacts available to maximize current density











For high voltage requirements, increase creepage and clearance distances with spacer modules

Sequential mating

Superior blind mating

Venting options for improved cooling

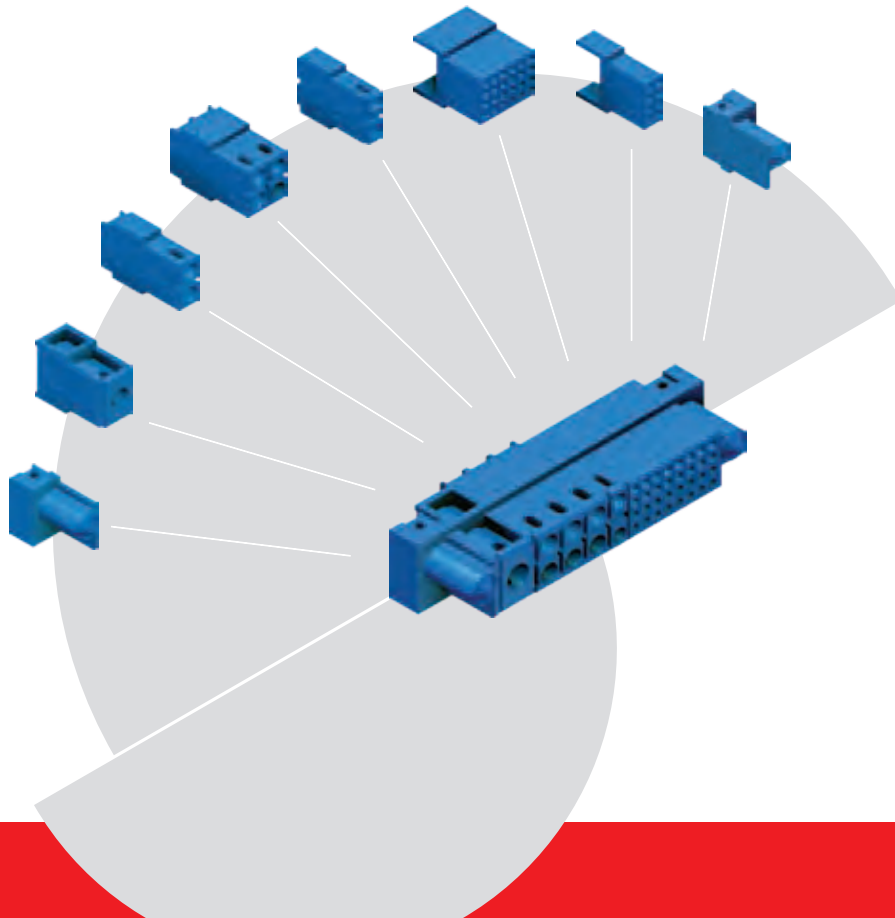
Backshell available

	PART NUMBER PREFIX		SP
CONTACTS	CONTACT SIZE ^{*1}		CURRENT RATING (AMPS) ^{*2}
	4		100
	8		50
	12		40
	16		26
	18		16
	22		3
CONNECTORS	 CONFIGURATIONS		
TERMINATIONS	  		

^{*1} Contact Sales for size 24 options.

^{*2} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

1. Define the requirements
2. Select the modules
3. Configure the part number



MODULES	Size 4	
	Size 8	
	Size 12	
	Size 16	
	Size 18	
	Size 22	
	Size 24 ^{*1}	
	Spacers	

^{*1} Contact Sales for size 24 options.

A **low-profile** (8.20mm) version of the modular Scorpion family



FEATURES

Modular tool design allows for tens of thousands of customer-defined contact arrangements

Molding process yields a one-piece insulator

Maximize power throughput and minimize space claim

The connector width is variable up to 101.00 mm

High conductivity contacts available to maximize current density

For high voltage requirements, increase creepage and clearance distances with spacer modules

Sequential mating

Integrated blind mating

Venting options for improved cooling

	PART NUMBER PREFIX		LSP
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) * ¹
	12	●	38
	20	●	12
	22	●	3
CONNECTORS	<div>>100K</div> CONFIGURATIONS		
TERMINATIONS	<div> <div>crimp wire</div> <div>solder PCB</div> <div>press-fit PCB</div> </div>		

*¹ High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

The **original blue** power connector with size 16 contacts



FEATURES

An industry-leading, high reliability power connector for more than 20 years

One, two or three contact row options

High conductivity contacts available to maximize current density








Sequential mating

Locking latch integrated into connector housing

Unique right angle press-fit available

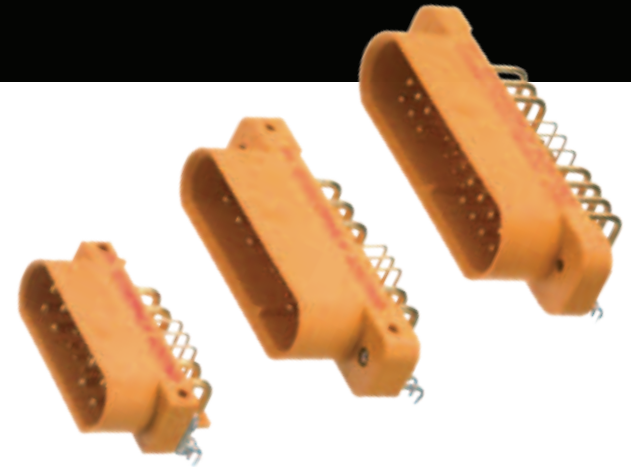
Terminate a variety of wire gauges into a single connector

Economical

	PART NUMBER PREFIX		PLA, PLC, PLC
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	8		40
	16		18
	20		7.5
CONNECTORS	14		16
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS			
			

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

A **economical**, blind mating power/signal connector with many options



FEATURES

Ideal for applications requiring robust blind mating in a compact, economical package

Mixed density (hybrid) connector offers options for AC/DC input, DC output at multiple voltages and signal control

Touch-safe recessed female contacts

High conductivity contacts available to maximize current density

Sequential mating

Excellent blind mating

Hot swap

	PART NUMBER PREFIX		GFSH
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	12	●	35
	16	●	20
	20	●	5
	22	●	3
CONNECTORS	3		6
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	crimp wire	solder PCB	press-fit PCB

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%..

Up to **400 amps** of throughput
in a robust, modular housing



FEATURES

Fixed-length modular connector for ultra-high power applications

Select one of five different modules for each of the four insert positions

Busbar options available

Superior blind mating

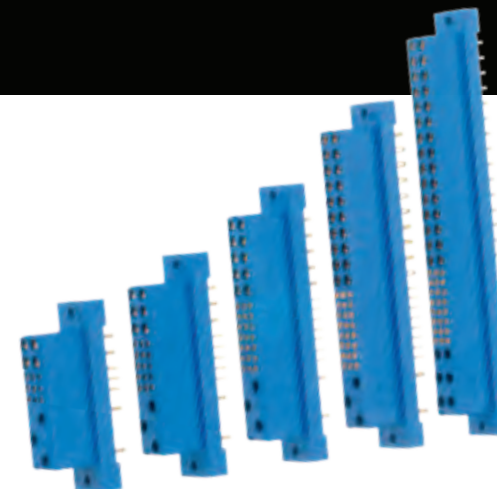
Robust housing stands up to abuse

Hot swap

	PART NUMBER PREFIX		GG
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	0		175
	8		40
	12		35
	16		20
	20		5
CONNECTORS	PACKAGE SIZE		CONFIGURATIONS
TERMINATIONS	<p>^{*1} Ring terminal and busbar options available</p>		

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

Plug-in power interface for **CompactPCI** and other platforms



FEATURES

P47 connector (PCIH47) is compliant to the PICMG 2.11 Power Connector Interface specification also known as CompactPCI

Mixed density (hybrid) connector offers options for AC/DC input, DC output at multiple voltages and signal control

Touch-safe recessed female contacts

Keying options

Sequential mating

Coplanar mounting options

	PART NUMBER PREFIX		PCIH, PICA, PICB, PCIC, PCIM
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	16	●	40 ^{*2}
	16	●	28 ^{*2}
	20	●	5
	22	●	3
CONNECTORS	5		12
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	<div> <div>crimp wire</div> <div>solder PCB</div> <div>press-fit PCB</div> </div>		

^{*1} High conductivity contacts are available for most product families. On average, the current rating will be improved by 20-50%.

^{*2} 28 amp rating applies to DC output and 40 amp rating applies to AC/DC input.

Economical and **miniature** power/signal connector



FEATURES







Power/signal connector ideal for applications requiring high power density at an economical price

Sequential mating

Integrated locking system

Maintains low contact resistance over 10,000 mating cycles

2-pole, auto-shunting version available

	PART NUMBER PREFIX		DF
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	16		20
	20		7.5
	22		3
CONNECTORS	4		5
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS			

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

Superior **blind mating**, mixed density connector with robust housing

FEATURES

Mixed density (hybrid) connector offers options for AC/DC input, DC output at multiple voltages and signal control

Touch-safe recessed female contacts

3-level sequential mating

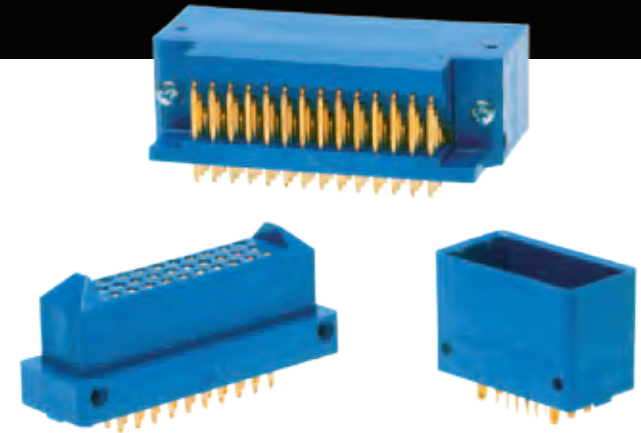
High conductivity contacts available to maximize current density

Excellent blind mating compensating for 7.62mm of misalignment

Robust housing stands up to abuse

High voltage capability

Hot swap



	PART NUMBER PREFIX		IP, MIP, MMIP
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	8		60
	12		40
	16		20
	20		5
CONNECTORS	3		16
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS			

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

An innovative alternative to CT shorting blocks

FEATURES

Quick and easy alternative to commonly used CT (current transformer) shorting blocks

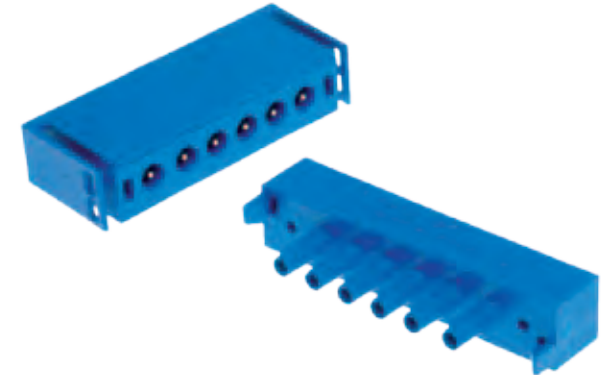
Innovative design automatically shorts male contacts (circuits) together upon decoupling







For use in six-line “Delta” configurations or four-line “Y” configurations

Two position connector is ideal for “Ground Fault Protection” configurations

Accepts 10 and 12 AWG wire

Reduces operating cost

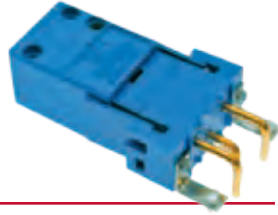


	PART NUMBER PREFIX		PLZ, DFS
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	16		15
CONNECTORS			
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	  		

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

POWER INPUT CONNECTOR

(3) size 12 contacts spaced ideally for AC/DC power input



FEATURES

Screw termination facilitates field installation

Sequential mating

Hot swap

WONDERSUN

Push-pull, single pole connector that is building-block capable



FEATURES

Modular design allows side-by-side stacking

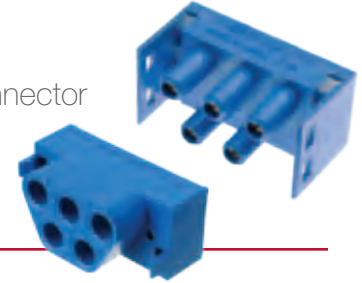
Push/pull locking feature is ideal for breakaway applications and provides auditory/tactile feedback

Ideal as a battery or busbar disconnect

Hot swap

SAFETY SHROUD

Shrouded, touch-safe power connector in 5 and 7-pin versions



FEATURES

Prevents unsafe exposure to both male and female contacts

High voltage capability

Hot swap

VITA 41 (VXS)

System power interface for VITA 41 systems



FEATURES

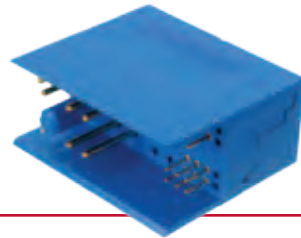
Standard power interface for VITA 41 (VXS) systems

Ultra-miniature

Three-level sequential mating

AdvancedTCA

THE PICMG 3.0 AdvancedTCA
Zone 1 connector of choice



FEATURES

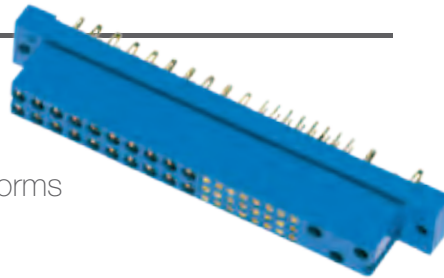
The original Zone 1 power interface for
AdvancedTCA systems – copied but never duplicated

Four-level sequential mating

Internal blind mate guide

CompactPCI

Plug-in power interface for
CompactPCI and other platforms



FEATURES

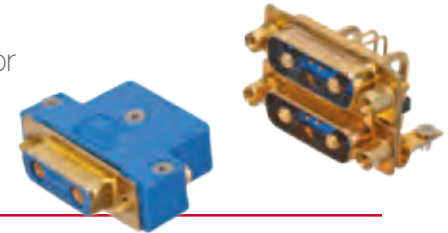
P47 connector (PCIH47) is compliant to the PICMG 2.11 Power
Connector Interface specification also known as CompactPCI

Mixed density (hybrid) connector offers options for AC/DC input,
DC output at multiple voltages and signal control

Keying options

MicroTCA

The power input connector for
MicroTCA power modules



FEATURES

The original power interface for MicroTCA systems, which are
smaller form factor than AdvancedTCA systems

Specialized mounting bracket allows the board connector to
hang off the edge of the PCB resulting in a lower profile

Multiple pin arrangements available for 12V, 24V
and 48V systems

AdvancedTCA RTM

For data and management on the rear
transition modules (RTM) in PICMG 3.0 R3.0



FEATURES

Common in instrumentation and high energy physics
applications

Integrated blind mating

Small size minimizes space claim

High reliability D-sub
with size 20 machined contacts



FEATURES

Various performance levels for best cost/performance ratio

#1 in the world for MIL-DTL-24308 connectors

Mix and match connector with accessories to suit application requirements

Stainless steel shells available for corrosion protection or near zero magnetism

Ability to provide application-specific modifications at low MOQs

Connector savers available for all sizes

Popular lock lever available

Thermocouple contact options available

Hermetic options available

	PART NUMBER PREFIX		MD, ED, SD, MDX, ORD, RD, HDC, PCD
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	20	●	7.5
CONNECTORS	5		5
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	crimp wire	solder cup wire	solder PCB press-fit PCB

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

High reliability D-sub with size 22 machined contacts



FEATURES

Maximize signal count and minimize space claim while adhering to standard D-sub shell sizes

Shell size 6 (104-pin) available

Various performance levels for best cost/performance ratio

#1 in the world for MIL-DTL-24308 connectors

Mix and match connector with accessories to suit application requirements

Stainless steel shells available for corrosion protection or near zero magnetism

Ability to provide application-specific modifications at low MOQs

Connector savers available for all sizes

Thermocouple contact options available

Hermetic options available

	PART NUMBER PREFIX		ODD, DD, PCDD
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	22	•	5
CONNECTORS	6		6
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	crimp wire	solder cup wire	solder PCB
			press-fit PCB

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

Mixed density D-sub to mix signal/power/coax/HV and fiber optic



FEATURES

High quality, mixed density D-sub to combine signal, power, coax, high voltage and fiber optic (ARINC 801) in a single package

Ideal for mixed mode I/O on slim “black boxes”

Shell size 6 (104-pin) available

Stainless steel shells available for corrosion protection or near zero magnetism

Ability to provide application-specific modifications at low MOQs

Connector savers available for all sizes

Thermocouple contact options available

Sequential mating options

MicroTCA version available

	PART NUMBER PREFIX		CBD, CBM, CBC, CBDD, CBCD, QB
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	8		40
	16		16
	20		7.5
	22		5
CONNECTORS	 PACKAGE SIZES		 CONFIGURATIONS
TERMINATIONS			

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

For **extreme** applications requiring non-outgassing and low magnetism



FEATURES

Highest reliability D-sub connectors for mission critical applications

Select products qualified to NASA Goddard Space Flight Center S-311 requirements and MIL-DTL-24308 Class M

Non-outgassing

Near zero magnetic characteristics

Standard and high density signal options

Standard and high density Combo-D options

Connector saver options

Lightweight aluminum backshells available

	PART NUMBER PREFIX		SND, SDD, SCBC, SCBM, SCBCD, SCBDD
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	8		40
	16		16
	20		7.5
	22		5
CONNECTORS	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS			

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

For applications requiring **IP65 / IP67** waterproofing characteristics



FEATURES







Water and dust ingress protection to IP65 / IP67

Standard and high density signal options

Combo-D options available

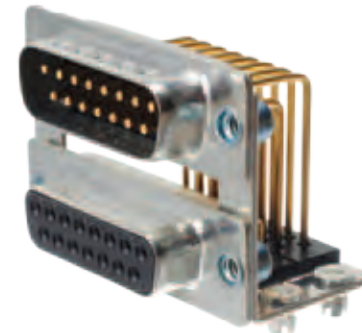
Panel mount and cable versions available

Overmolding available

	PART NUMBER PREFIX		WD, WDD, EVD, WCB
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	8		40
	20		7.5
	22		5
CONNECTORS	6		30
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS			
	^{*1} Pre-wired option available		

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

Stacked right angle D-sub
to save panel and board space







FEATURES

Two D-sub connectors, vertically stacked and assembled as one unit saving panel and board space

Assembly costs are reduced by streamlining two assembly processes into one

Available in numerous combinations of standard density, high density, and Combo-D D-sub connectors

Multiple spacings available between upper and lower connector bodies

	PART NUMBER PREFIX		DP, MDP, XD, DDA, DDB, DDC, CBDP
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	8		40
	20		7.5
	22		5
TERMINATIONS			

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

ADDITIONAL PRODUCTS

OPTIK-D

ARINC 801, multimode fiber optic terminus for use in Combo-Ds



FEATURES

Ultra low insertion loss (IL) of 0.06 dB (typical)

Return loss (RL) > 45 dB

Suitable for harsh environments

More cost effective than D38999 or ARINC 600-based systems

Hybrid connector allows for mixing modes such as optical, power, signal, high voltage and/or coax

Advantages of fiber optics include:

Safe in explosive environments

High bandwidth

EMI immune

Reduced bulk and weight in wire bundles

BACKSHELLS & ACCESSORIES

For D-sub connectors



FEATURES

Lightweight aluminum backshell with internal grounding capability

Quick disconnect locking device

Multi-gender jackscrew options

Economical plastic backshell options

Brackets, posts and spacers

Float mount options

Robust connectors for rack & panel applications



FEATURES

Rugged, durable design

Select products certified to MIL-DTL-28748 and SAE AS39029

Multiple keying (coding) options

Great option for use as a ruggedized power connector

Terminate a variety of wire gauges into a single connector

Grounding block connector available

	PART NUMBER PREFIX		GMCT, GM, GAP, GAPL
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	16	●	13 ^{*2}
	16	●	7.5 ^{*2}
	20	●	7.5
CONNECTORS	16		16
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	crimp wire	solder cup wire	solder PCB press-fit PCB

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

^{*2} 7.5 amp rating applies to GAP/GAPL output and 13 amp rating applies to GMCT series.

High density connectors for **rack & panel** applications

FEATURES

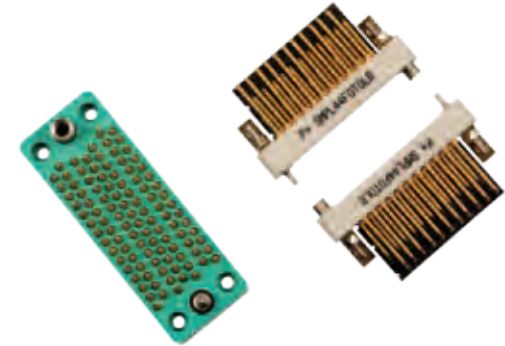
Low-profile insulator is ideal for board-to-board stacking where reliability and ruggedness are key

Select products certified to MIL-DTL-28748 and SAE AS39029

Multiple keying (coding) options

Miniature and lightweight

104-pin option available



	PART NUMBER PREFIX		SGM, SGMC, SMPL
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	22	•	5
CONNECTORS	14		14
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	crimp wire		solder PCB
	solder cup wire		

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

UTILITY

Low-profile building-block connector



FEATURES

Low-profile, wafer design

Stackable feature with countersink screw allows for modularity and flexibility

Numerous options for polarization

Miniature, lightweight and economical

CIRCLE HEX

For legacy avionics applications



FEATURES

Miniature and lightweight

Twist ring locking device

Round profile

Two sizes available – standard and miniature

Size 11 and size 19 **composite** circular



FEATURES

Lightweight, non-corrodible material

Right angle PCB mount options









Sequential mating

Environmental sealing/waterproof options to IP67

EMI/RFI shielded version, electroless nickel-plated

Thermocouple contact options

Defense quality on a budget

	PART NUMBER PREFIX		FR
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	12		25
	16		13
	20		7.5
	22		5
CONNECTORS	 PACKAGE SIZES		 CONFIGURATIONS
TERMINATIONS	 		

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

Quarter-turn **economical** circular



FEATURES

Quarter-turn locking system

Two sizes available – standard and miniature

Lightweight, non-corrodible, composite material

Economical

Environmental sealing/waterproof options to IP65

	PART NUMBER PREFIX		KC, BKC
CONTACTS	CONTACT SIZE		CURRENT RATING (AMPS) ^{*1}
	16	●	20
	20	●	7.5
	22	●	3
CONNECTORS	2		5
	PACKAGE SIZES		CONFIGURATIONS
TERMINATIONS	crimp wire	solder cup wire	solder PCB
			screw terminal

^{*1} High conductivity contacts are available for most product families.
On average, the current rating will be improved by 20-50%.

POSIBAND CONTACTS

Closed entry female contacts are often used to enhance the performance and reliability of connectors. In legacy designs, a sleeve is placed over a standard “split-tine” contact to achieve the closed entry feature. However, true closed entry contacts have an unbroken ring of solid material at the mating end of the contact. This design offers a degree of increased reliability while the split-tine approach has its inherent weaknesses. The PosiBand overcomes these weaknesses!

FEATURES

Separates mechanical and electrical functions for superior performance

Maximized surface area at the male/female contact interface

Low contact resistance improves system efficiency

Lower average insertion forces without compromising electrical performance requirements

Contact body does not require annealing of the crimp barrel eliminating unintentional heat treating of the mating barrel

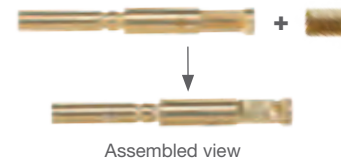
Qualified to SAE AS39029, MIL-DTL-24308 and the higher 40 gram separation requirement of the NASA GSFC S-311 specification

Used primarily on size 20 and 22 contacts

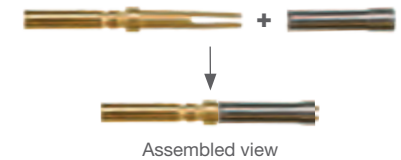
Protected by United States Patent 7,115,002



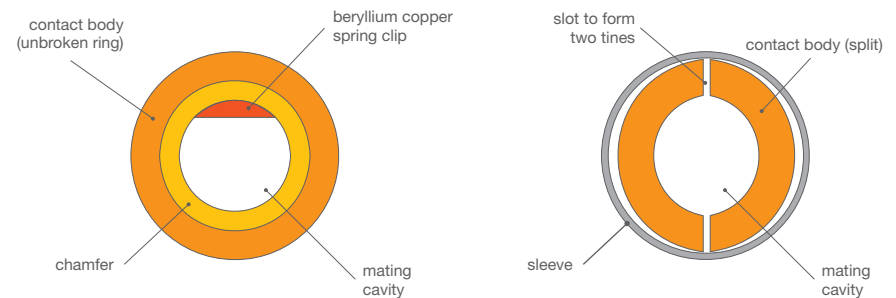
PosiBand



Legacy Closed Entry



Mating Barrel Cross Sections



LSA & PRESS-FIT CONTACTS

LARGE SURFACE AREA (LSA)



FEATURES

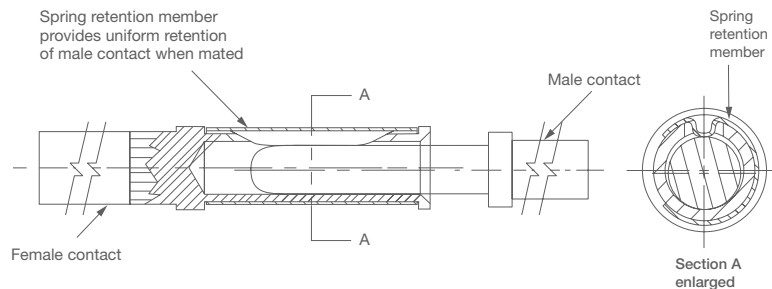
Separates mechanical and electrical functions for superior performance

Low contact resistance provides minimized voltage drop across the contact

True closed entry design prevents damage to female contacts and will not allow misaligned or bent contacts to enter

Precision machined from solid copper alloy

Stable insertion and withdrawal forces throughout repeated mating cycles



BI-SPRING PRESS-FIT



FEATURES

One-piece construction from tip to tail

Low PCB insertion forces reduce board warpage and plated-through-hole damage

Designed to meet the applicable performance requirements and hole diameters as listed in the internationally recognized specification, IEC 60352-5

Protected by United States Patent 5,255,580 and 5,329,697

CABLE ASSEMBLIES

OVERVIEW

As is evidenced by their names, wire-to-board and wire-to-wire connector systems require at least one connector to be wire (cable) terminated. End users typically handle the cabling of their connectors in one of two ways — they assemble the cables internally or they outsource the cable assembly work to an external fabricator. In these latter cases, Positronic is ready, willing and capable to bid on your cable assembly/wire harness project. Give us an opportunity to show you how we can bring even more value to your supply chain.



SUPPORT CAPABILITIES

Design, development, engineering support and documentation

Build to customer print

Assist in expansion of qualified suppliers on BOM

Certified to ISO9001 and AS9100

Adherence to IPC620 standards

Product prototyping and first article inspection (FAI)

Electrical and mechanical testing



PRODUCTS & SERVICES

Cable and wire harness assemblies

EMI/RFI shielded assemblies

Coaxial cable assemblies

Box builds

Kitting services

Inkjet & laser marking

Bar coding & serialization

Overmolding

Potting

Electrostatic controlled work areas

CUSTOM CONNECTORS

Positronic stands alone in our ability and desire to provide custom connectors at low volume. The phrase “custom connectors” covers the spectrum from basic modifications to clean-sheet designs. Although we boast a large catalog of standard products, customized solutions are common for us.



CONTACT US

Divisional Headquarters

Positronic | Americas

423 N Campbell Ave
Springfield MO 65806 USA

+1 800 641 4054
info@connectpositronic.com

Positronic | Europe

Z.I. d'Engachies
46, route d'Engachies
F-32020 Auch Cedex 9 France

+33 5 6263 4491
contact@connectpositronic.com

Positronic | Asia

3014A Ubi Rd 1 #07-01
Singapore 408703

+65 6842 1419
singapore@connectpositronic.com

Sales Offices

Positronic has local sales representation all over the world. To find the nearest sales office, please visit www.connectpositronic.com/sales

Information in this catalog is proprietary to Positronic and its subsidiaries. Positronic believes the data contained herein to be reliable. Since the technical information is given free of charge, the user employs such information at his own discretion and risk. Positronic assumes no responsibility for results obtained or damages incurred from use of such information in whole or in part.

The following trademarks are registered to Positronic Industries, Inc. in the United States and many other countries: Positronic Industries, Inc.[®], Positronic[®], Connector Excellence[®], P+ logo[®], PosiBand[®], PosiShop[™], Positronic Global Connector Solutions[®], and Global Connector Solutions[®]. The color blue as it appears on various connectors is a trademark of Positronic Industries, Inc., Registered in U.S. Patent and Trademark Office.

The following trademarks are registered to PCI Industrial Computers Manufacturers Group: CompactPCI[®], AdvancedTCA[®], MicroTCA[™] and PICMG[®].

Products described within this catalog may be protected by one or more of the following US patents:

*#4,900,261 #5,255,580 #5,329,697
#6,260,268 #6,835,079 #7,115,002

Other Patents Pending

*Patented in Canada, 1992

