HARWiN

INTERCONNECT DESIGN & MANUFACTURE

Connector Catalogue

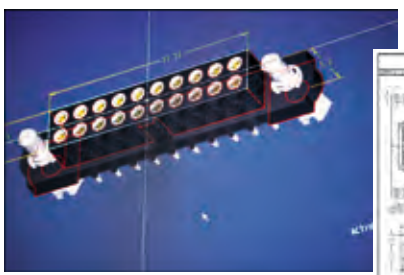
www.harwin.com

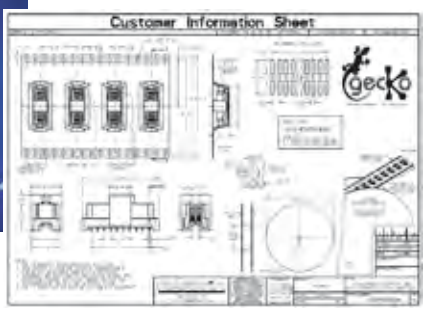
www.harwin.com

Our website is constantly being updated with new product data and is designed to provide you with best in class tools to support your design process.

Instant access to product Data

- Up-to-date drawings.
- Catalogue downloads.
- Downloadable CAD files.
- Graphical search facility.
- Test Reports, Legislation documents, Videos, Tooling Instruction Sheets.





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- Live Help technical support.
- Evaluation samples.
- Search our global network of distributors for stock.
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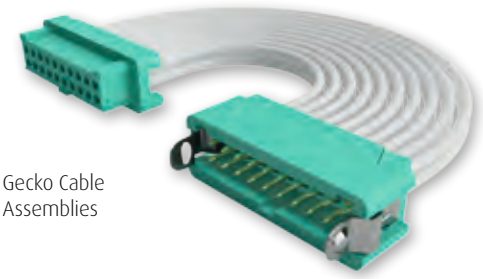
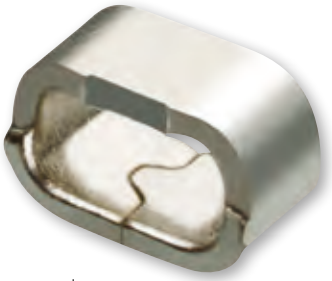
Contents



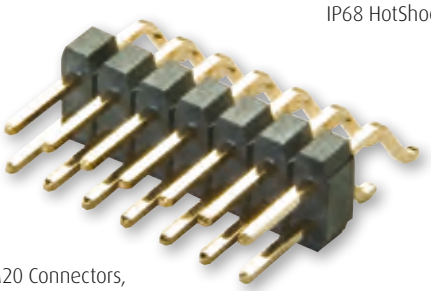
Gecko Cable Assemblies

Datamate Mix-Tek Female Crimp



EZ-Boardware, SMT Test Point

Specialist Connectors IP68 HotShoe Connector



M20 Connectors, Male Horizontal Surface Mount

Sockets, Ø1.00mm Mating pin

MIX
Paper from responsible sources
FSC

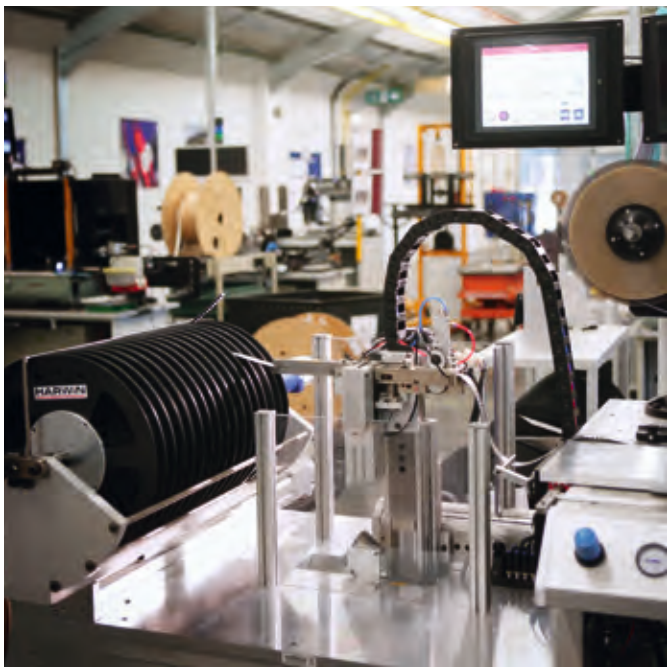
This catalogue is printed on FSC paper

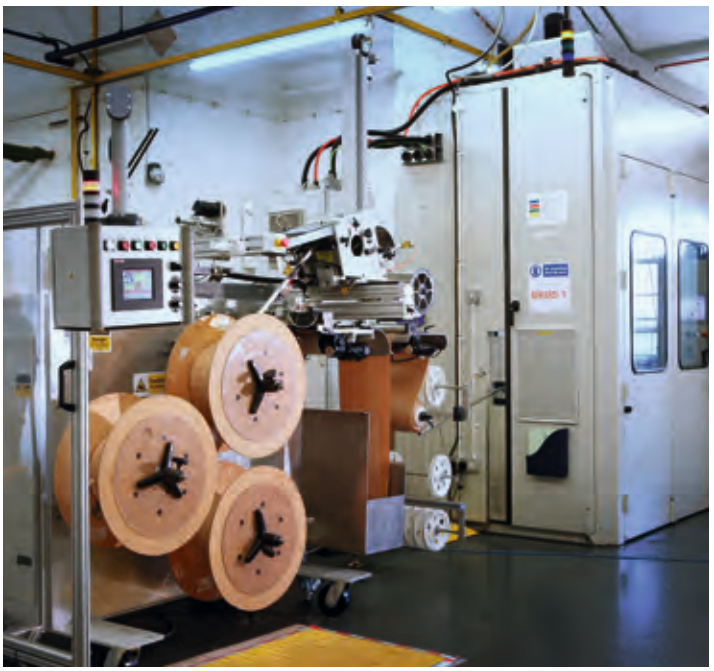
SPECIFICATIONS Harwin operates an ongoing development programme. This may result in changes to the product specifications shown in this catalogue.
All dimensions are in millimetres and are nominal unless otherwise stated.
All preferred sizes are held in stock. Check www.harwin.com for availability.

Harwin – Quality Manufacturing

Total In-House Manufacturing – providing the highest quality products since 1952 – from Research and Development to final plating, packing and dispatch, with the assistance of high technology processes in a very modern environment.

Continued investment in the latest Computer Aided Design, Quality and Engineering facilities, support a global demand for quality products. Harwin provide the highest service level to customers with our sales offices in Europe, USA and Asia, complemented by an international network of distributors.





Harwin – Vertical Integration

Technical Information

Conductor wire sizes:

The table below shows various electrical data based on plastic insulation. The diameter information in the table applies to solid wires. Stranded wires are calculated by calculating the equivalent cross sectional copper area – the gaps between strands are not counted. Using circular strands, these gaps occupy about 10% of the wire area, thus making the diameter of the resulting wire bundle about 5% thicker than equivalent solid wire.

AWG	SWG	Wire Dia (mm)	Wire Dia (inch)	Cross-Sectional Area (mm²)	Approx. Metric Stranding	Copper Resistance at 20°C (Ω/km)	Max cable current for chassis wiring (A)
32		0.20193	0.00795	0.032		538.3	0.053
	35	0.21336	0.0084	0.036	7/0.08		
31		0.22657	0.00892	0.040		426.9	0.7
	34	0.23368	0.0092	0.042	1/0.25		
	33	0.25	0.0098	0.049			
30		0.254	0.01002	0.051		338.6	0.86
	32	0.27432	0.0108	0.057	7/0.1		
29		0.28575	0.01125	0.064		268.5	1.2
	31	0.29464	0.0116	0.065			
	30	0.31496	0.0124	0.078	1/0.315		
28		0.32106	0.01264	0.081	7/0.12	212.9	1.4
	29	0.34544	0.0136	0.086	7/0.125		
27		0.36043	0.01419	0.103		168.9	1.7
	28	0.37592	0.0148	0.124	7/0.15		
26		0.40488	0.01594	0.128	19/0.1	133.9	2.2
	27	0.41656	0.0164	0.132			
25		0.45466	0.0179	0.162		106.2	2.7
	26	0.4572	0.018	0.165			
	25	0.508	0.02	0.193			
24		0.51054	0.0201	0.210	7/0.2	84.22	3.5
	24	0.5588	0.022	0.245	19/0.127		
23		0.57328	0.02257	0.259		66.79	4.7
	23	0.6096	0.024	0.295			
22		0.64364	0.02534	0.324	19/0.15, 7/0.25	52.96	7
	22	0.7112	0.028	0.410	13/0.20		
21		0.72288	0.02846	0.412		42.00	9
	21	0.78892	0.03106	0.511	19/0.2		
20		0.8128	0.032	0.520	16/0.2	33.31	11
19		0.91161	0.03589	0.636	1/0.90	26.42	14
	20	0.9144	0.036	0.660	24/0.2		
	19	1.016	0.04	0.813			
18		1.02362	0.0403	0.826	19/0.25	20.95	16
17		1.14935	0.04525	1.040	32/0.2	16.61	19
	18	1.2192	0.048	1.170			
16		1.29083	0.05082	1.340	19/0.30	13.17	22
	17	1.4224	0.056	1.630			
15		1.44932	0.05706	1.680	30/0.25	10.45	28
14	16	1.62712	0.06406	2.080		8.286	32
13		1.82753	0.07196	2.630	50/0.25	6.571	35
	15	1.8228	0.072	2.640			
	14	2.032	0.08	3.250			
12		2.05232	0.0808	3.330		5.211	41

The data in this table has been accumulated from various sources, and is supplied here as a guide only. Harwin recommend that customers obtain exact data from their cable manufacturer before using this data in their final design.

Technical Information

Plating thicknesses:

Metric (microns, µm, 10^{-6} metres)	Imperial (microinch, µ", 10^{-6} inch)
0.15	6
0.25	10
0.30	12
0.50	20
0.76	30
1.00	40
1.27	50
2.50	100
3.50	140
4.00	160
5.00	200

Decimal prefixes:

Multiplying factor	Prefix	Symbol
10^{12}	tera-	T
10^{9}	giga-	G
10^{6}	mega-	M
10^{3}	kilo-	k
10^{2}	hecto-	h
10^{1}	deca-	da
10^{-1}	deci-	d
10^{-2}	centi-	c
10^{-3}	milli-	m
10^{-6}	micro-	µ
10^{-9}	nano-	n
10^{-12}	pico-	p

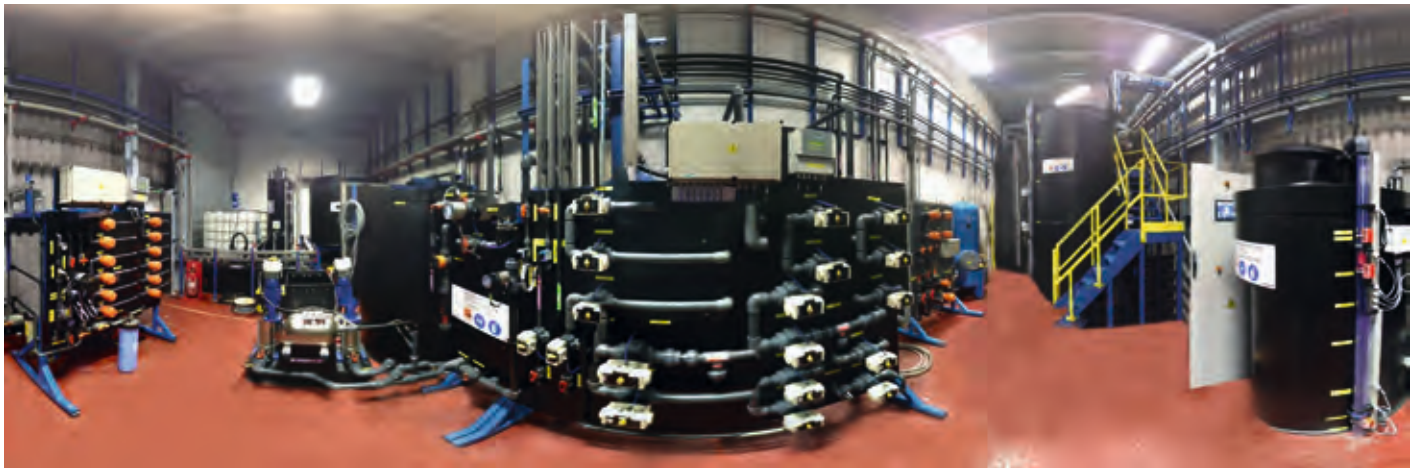
Conversion factors:

Inches (in; ")	x 25.4	= Millimetres (mm)	x 0.03937	= Inches
Cubic inches (cu in; in^3)	x 16.387	= Cubic centimetres (cc; cm^3)	x 0.061	= Cubic inches
Ounces (oz)	x 28.35	= Grams (g)	x 0.035	= Ounces
Pounds (lb)	x 0.454	= Kilograms (kg)	x 2.205	= Pounds
Newtons (N)	x 0.1	= Kilograms-force (kgf; kg)	x 9.81	= Newtons
Ounces-force (ozf; oz)	x 0.278	= Newtons (N)	x 3.6	= Ounces-force
Pounds-force (lbf; lb)	x 4.448	= Newtons (N)	x 0.225	= Pounds-force
Pounds per cubic inch (lb/cu.in)	x 27.7	= Grams per cubic centimetre (g/cm^3)	x 0.0361	= Pounds per cubic inch
Pounds-force per square inch (psi; lbf/in^2; lb/in^2)	x 0.070	= Kilograms-force per square centimetre (kgf/cm^2; kg/cm^2)	x 14.223	= Pounds-force per square inch
Pascals (Pa, N/m^2)	x 0.01	= Kilograms-force per square centimetre (kgf/cm^2; kg/cm^2)	x 98.1	= Pascals
Bars	x 0.1	= MegaPascals (MPa; 10^6Pa)	x 10	= Bars
Atmospheres (atm)	x 0.101	= MegaPascals (MPa; 10^6Pa)	x 9.87	= Atmospheres
Pounds-force inches (lbf.in; lb.in)	x 1.152	= Kilograms-force centimetre (kgf.cm; kg.cm)	x 0.868	= Pounds-force inches
Newton metres (Nm)	x 10.2	= Kilograms-force centimetre (kgf.cm; kg.cm)	x 0.0981	= Newton metres
Miles per hour (mph)	x 0.447	= Metres per second (m/s)	x 2.24	= Miles per hour
Miles per hour (mph)	x 1.609	= Kilometres per hour (kph)	x 0.622	= Miles per hour
Radians (rad)	x 57.3	= Degrees (°)	x 0.0175	= Radians
Parts per million (ppm)	x 0.0001	= Percentage (%)	x 10,000	= Parts per million

Fahrenheit (°F) = (Celcius (°C) x 1.8) + 32 | Celcius (°C) = (Fahrenheit (°F) – 32) ÷ 1.8 | Centigrade (°C) = Celcius (°C) | Kelvin (K) = Celcius (°C) – 273.15

Environment

New Water Treatment Plant at Harwin



Harwin has invested in a new water treatment plant at the UK manufacturing facility, improving the quality of finish of its plated parts and reducing the environmental impact.

Utilising previous technology and due to the company's strong growth, the company was using 7,000 litres of water per hour; that same amount of water is now used in two weeks. All rinse water is cleaned and recycled back into the plating area, reclaiming the Gold and Tin – the Tin reclamation is an industry first.

Comments CEO, Andrew McQuilken: "We should also see an improvement in the water quality used in the plating line, which will help maintain a high quality of plating finish on our products. Standard tap water conductivity is typically 400–600 microsiemens – recycled water after treatment will be below 5 microsiemens." For further information, contact **leadfree@harwin.co.uk**.

RoHS (Restriction of Hazardous Substances, Directive 2002/95/EC)

Products available from Harwin are available in RoHS compliant format, and also in Non-RoHS (typically tin/lead plating) format on certain ranges. The following symbols are utilised in the catalogue:

- RoHS compliant (but may contain lead in copper alloys up to 4%, which is covered by exemption 6c);
- Lead-free solder process compatible (if the product is designed for soldering, high-temperature plastic is utilised).

- Tin solder tails may feature Tin/Lead plating for Non-RoHS applications;
- Plastics used may only be suitable for leaded soldering processes;
- Product will not contain any of the other five substances covered by RoHS.

At the time of the compilation of this catalogue Harwin are still investigating the implications of RoHS 2 on the component level such as products supplied by Harwin – please e-mail for updates.

WEEE (Waste Electrical and Electronic Equipment, Directive 2002/96/EC)

Harwin does not manufacture any electric or electronic equipment ourselves, so we have no direct responsibilities. However, we recognise that many of our customers will need to consider their responsibilities under this directive. We are happy to supply full material declarations for all our products.

REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals, EC 1907/2006)

For the REACH Regulation we can state that none of our standard products contain any of the Substances of Very High Concern, as published June 2012.

RoHS statements, REACH statements and Material Composition statements are available on the website at http://**www.harwin.com/technical_resource/legislation.html** – or on request, contact **leadfree@harwin.co.uk.**

Gecko

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Gecko Connectors Introduction

Harwin has an exceptional track record of manufacturing high-reliability connectors for safety-critical applications, with decades of experience in the field. With millions of products in operation, including those from Harwin's High-Reliability Datamate product, Harwin has amassed a wealth of interconnect knowledge and is pleased to announce the latest addition to its high-reliability product portfolio – the Gecko range.

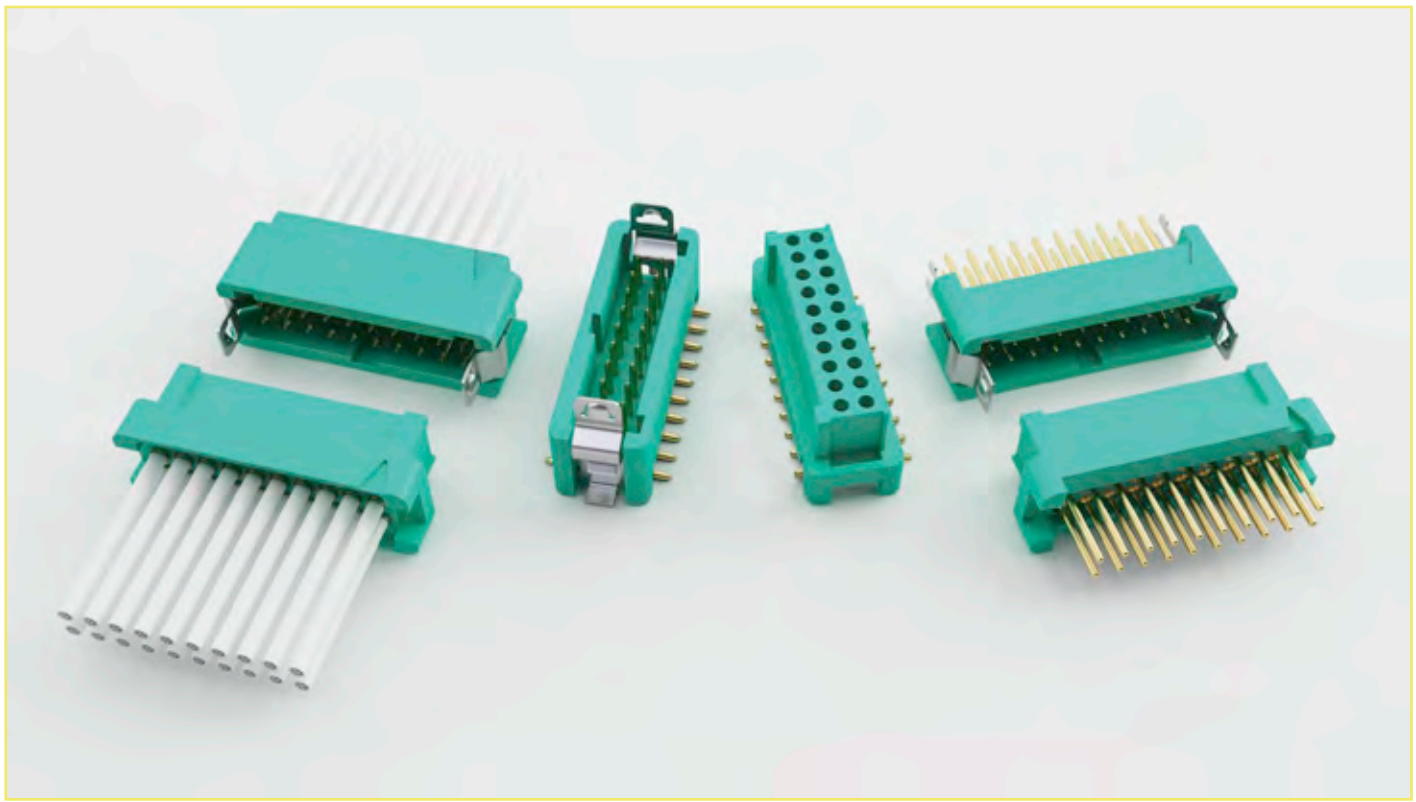
Harwin's Gecko (G125 series) connectors provide a low profile, dual row cable-to-board and board-to-board interconnect solution, ideally suited for stacking and cable mating in areas where PCB real estate is at a premium.

With space and weight a consideration for many high-reliability applications, G125 connectors are designed to offer high performance in a miniature package. Pin spacing of 1.25mm and up to 50 contacts per connector, offers dense pin counts in a small package. This design means that G125 connectors achieve a 35% space saving over other high-performance connectors such as Micro-D. The connectors also accommodate 2A per contact.

Tested and proven to allow high performance in extreme conditions, the G125 family can operate within a wide temperature range (-65°C/+150°C) and under extreme vibration (Z axis 100g 6ms). This high performance is made possible by Harwin's four-finger patented (pending*) Copper Alloy contact.

The connectors are manufactured to withstand high numbers of mating cycles but also featuring low insertion and extraction forces. Housings are manufactured from Halogen & Red Phosphorus free, glass-filled thermoplastic, an environmentally friendly material that has eliminated harmful chemicals before they have been added to restricted substances lists. The housings also feature positive keying that prevent mis-mating and are available with or without latches fitted for extra security of connection.

High Reliability just got smaller.



Patent Pending – UK 1205109.0

Gecko Connectors Product Features

Keyway Polarisation Points

3 polarising points on each component prevent mis-mating.

Four Finger Beryllium Copper Contact

Unique patent pending high-reliability contact design ensures signal integrity under extremes of bump, vibration and shock.

Packaged in Tape & Reel

Packed in industry standard tape & reel packaging for automated assembly and also available as cut strips of 10 pieces.

Pre-assembled Cable Configurations

Cable connectors available in a variety of layouts featuring male and female single and double ended in a variety of standard lengths.

Combined Latching & PCB retention system

Optional latches allow simple and fast de-latching and require no special tooling. Solder tabs for SMT and barbs for PC Tail versions ensuring retention to the PCB.

No. 1 Position identified

Housings are clearly marked with identifier for fast visual inspection.

Potting Wall

Cable connectors feature a rear potting wall adding an extra level of strain relief.

Environmentally Friendly Materials

Mouldings are manufactured from Halogen & Red Phosphorus free, glass-filled thermoplastic, an environmentally friendly material. All G125 connectors are RoHS compliant.

Patent Pending – UK 1205109.0

Gecko Connectors Specifications

Materials

Mouldings:	Glass-filled thermoplastic UL94V-0
Female Contacts:	Copper Alloy
Male Contacts:	PCT/SMT: Phosphor Bronze Crimp: Brass
Finish:	Gold

Electrical

Current (individual contacts in isolation):	At 25°C 2.8A max
All contacts simultaneously:	At 25°C 2.0A max
Working voltage (at sea level 1006 mbar):	450V DC or AC peak
(at altitude 44 mbar):	250V DC or AC peak
Proof voltage (at sea level 1013 mbar):	600V DC or AC peak
Contact resistance (initial):	20 mΩ max
Contact resistance (after conditioning):	25 mΩ max
Insulation resistance (initial):	10 GΩ min at 500V DC
Insulation resistance (after conditioning):	>1 GΩ min at 500V DC

Mechanical

Durability:	1000 operations
Mating forces (per contact pair):	
Insertion force:	2.8N max
Withdrawal force:	0.2N min
Contact retention in moulding:	6N min

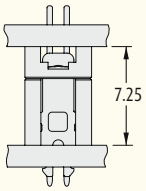
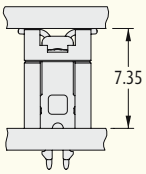
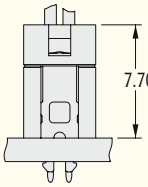
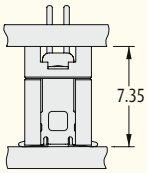
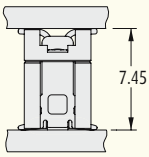
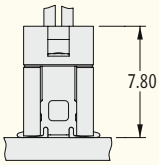
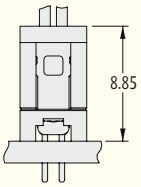
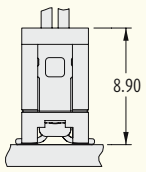
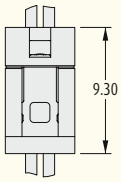
Environmental

Environmental classification:	65/150/96 hours at 95% RH
Operational temperature:	-65°C to +150°C
*Vibration sensitivity:	10Hz to 2000Hz, 1.5mm, 198m/s² (20G) duration 2 hours
*Bump severity:	390m/s² (40G), 4000 ±10 bumps
*Shock severity:	981m/s² (100G) for 6ms
*Acceleration severity:	490m/s² (50G)

* Tested with latched connectors.

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

FEMALE / MALE	VERTICAL PC TAIL	VERTICAL SMT	CABLE
VERTICAL PC TAIL			
VERTICAL SMT			
CABLE			

All dimensions in mm.

Patent Pending – UK 1205109.0

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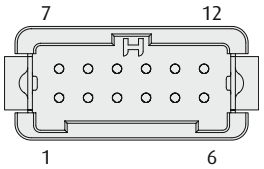
Gecko Connectors Advanced Specifications

Materials

Contact Finish:	0.2 – 0.3µm (8 – 12µ") Gold, over 1.5 – 2.0µm (60 – 80µ") Nickel

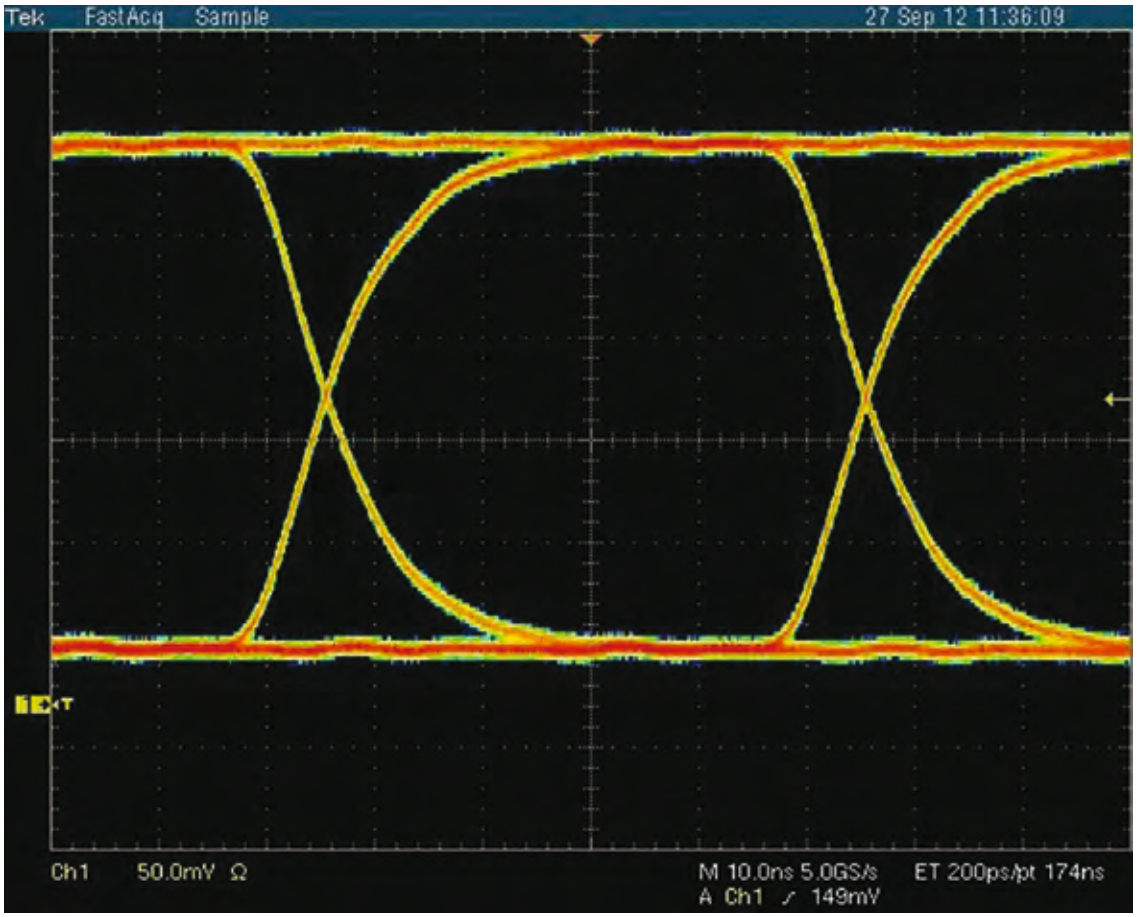
Pin Numbering



Contact numbering is shown looking onto mating face of male connector.

Electromagnetic Compatibility Testing

EYE Diagram of the Gecko Connector at 15 ns rise time:



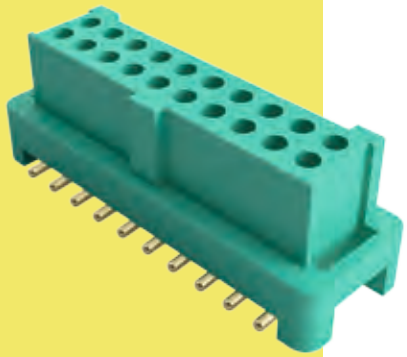
Typical EYE diagram obtained during testing at 20MHz, 15ns rise time, 50Ω, 2V pp, Pseudo-random.
Product tested: 12-way Male and Female board-mounted and cable-mounted.
Conditions at time of test: Temperature = 21°C (70°F) / Humidity = 50% / Pressure = 993 mB

Patent Pending – UK 1205109.0

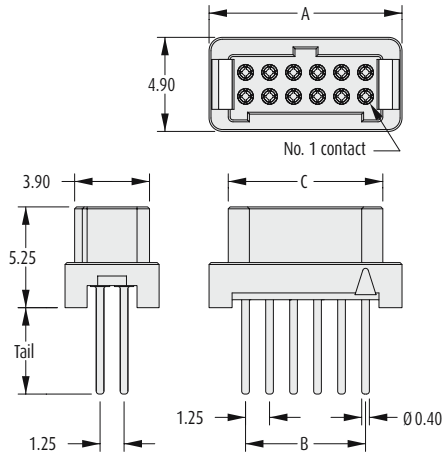
Gecko Connectors

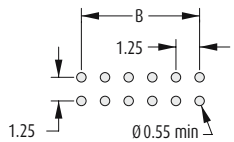
Female PC Tail & Surface Mount

- 4-finger Beryllium Copper contact.
- Positive keyway polarisation features.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.



PC TAIL

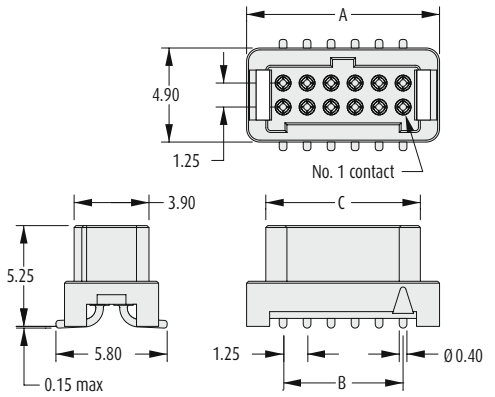


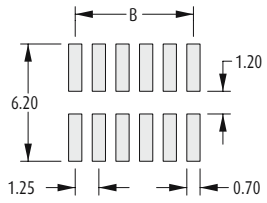


Recommended PC Board Pattern

CALCULATION	
A	B + 3.8
B	0.625 x (Total no. of contacts - 2)
C	B + 1.8

SURFACE MOUNT





Recommended PC Board Pattern

HOW TO ORDER

G125 - F XX XX 05 L0 X

SERIES CODE

TYPE	
V1	3mm PC Tail
V2	4.5mm PC Tail
S1	Surface Mount

PACKAGING	
R	Tape & Reeled
P	Loose

FINISH	
05	Gold

TOTAL NO. OF CONTACTS

06, 10, 12, 16, 20, 26, 34, 50

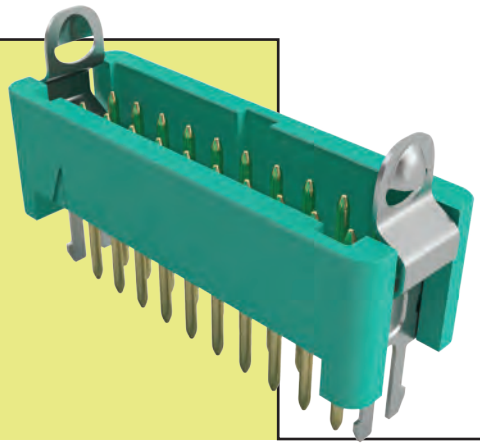
All dimensions in mm.

Patent Pending – UK 1205109.0

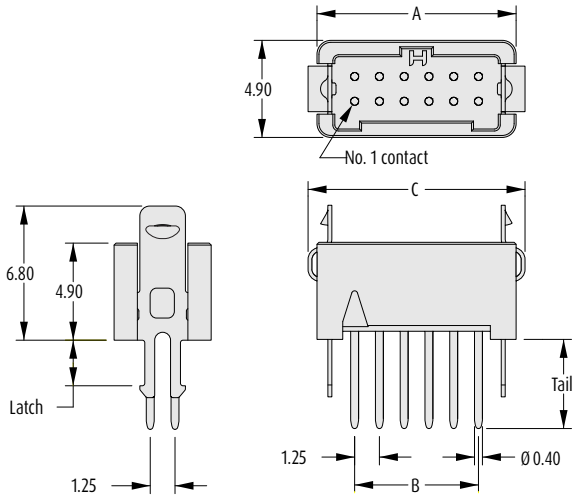
Gecko Connectors

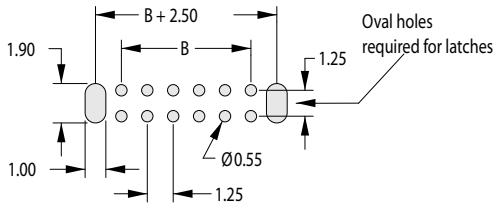
Male PC Tail

- Secure fixing to the PCB via retention barbs for through hole.
- Easy-to-release latches require no tooling.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.



PC TAIL





Recommended PC Board Pattern

CALCULATION	
A	B + 3.8
B	0.625 x (Total No. of Contacts - 2)
C	B + 5.2

HOW TO ORDER

G125 - M XX XX 05 LX X

SERIES CODE

TYPE

V1	3mm PC Tail
V2	4.5mm PC Tail

TOTAL NO. OF CONTACTS

06, 10, 12, 16, 20, 26, 34, 50

PACKAGING

R	Tape & Reeled
P	Loose

LATCH

L0	No Latch
L1	Latch for 1.6mm PCB
L2	Latch for 2.4 mm PCB

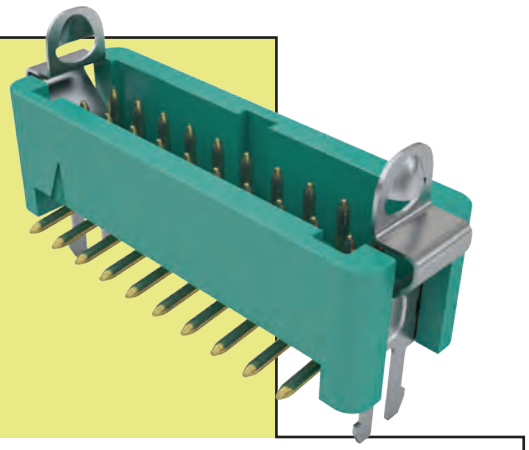
FINISH

05	Gold

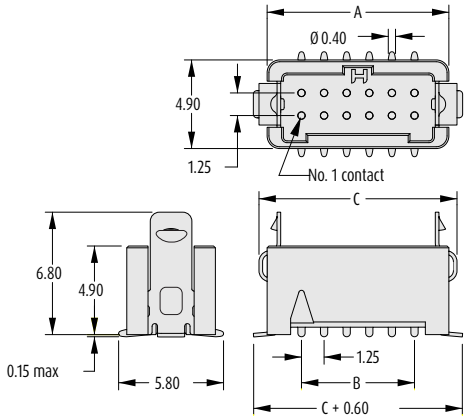
Gecko Connectors

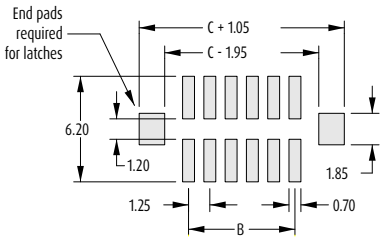
Male Surface Mount

- Secure fixing to the PCB via hold-down tabs (SMT).
- Easy-to-release latches require no tooling.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.



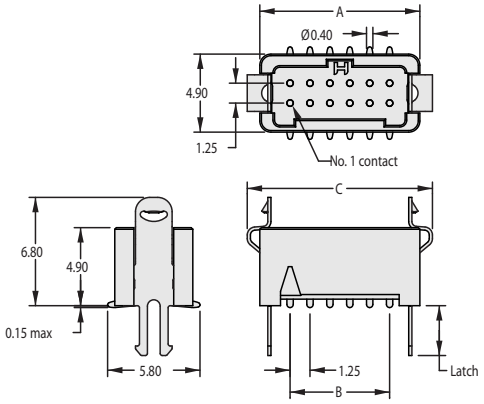
SURFACE MOUNT LATCH

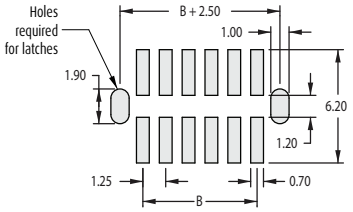




Recommended PC Board Pattern

PC TAIL LATCH





Recommended PC Board Pattern

CALCULATION	
A	B + 3.8
B	0.625 x (Total No. of Contacts - 2)
C	B + 5.2

HOW TO ORDER

G125 – M XX XX 05 LX X

SERIES CODE

TYPE

S1	Surface Mount

TOTAL NO. OF CONTACTS

06, 10, 12, 16, 20, 26, 34, 50

PACKAGING

R	Tape & Reeled
P	Loose

LATCH

L0	No Latch
L1	Latch for 1.6mm PCB
L2	Latch for 2.4 mm PCB
L3	Surface Mount Latch

FINISH

05	Gold

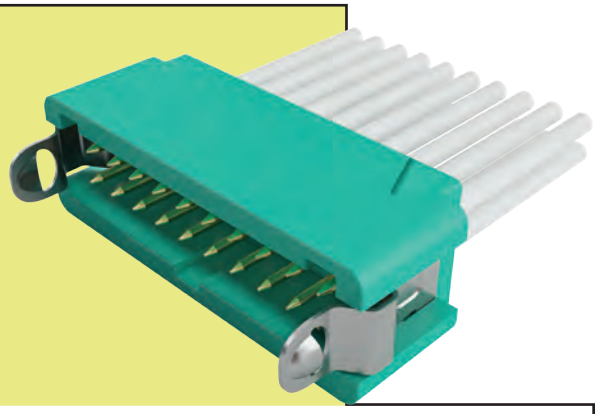
All dimensions in mm

Patent Published

HARWiN

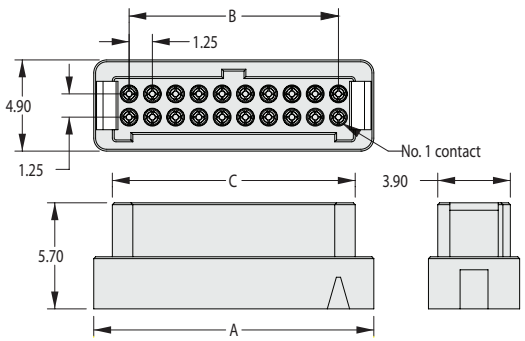
Gecko Connectors
Crimp Housings

- Features potting wall for extra security.
- No. 1 position identified on moulding.
- Withstands extremes of temperature: -65˚C to +150˚C.
- 3 polarising points on each housing prevent mis-mating.
- Easy to release latches require no tooling.



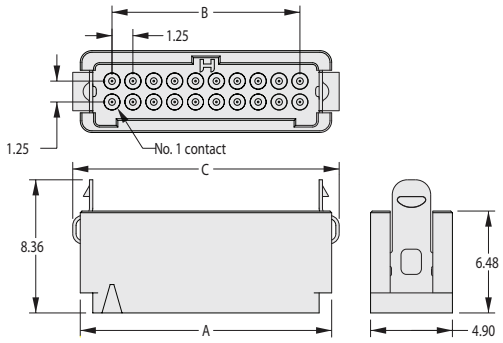
FEMALE

CALCULATION	
A	B + 3.8
B	0.625 x (Total No. of Contacts - 2)
C	B + 1.8



MALE

CALCULATION	
A	B + 3.8
B	0.625 x (Total No. of Contacts - 2)
C	B + 5.2



TOOLS

Recommended Crimp Tool – Z125-900
Positioner – Z125-901

Contact Insertion/Removal Tool – Z125-902
See page 12

- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

G125 – XXX XX 96 XX

SERIES CODE

TYPE	
204	Female Housing
304	Male Housing

LATCHES	
L0	No Latches
L4	Latches (Male Only)

FINISH	
96	Housing (Pb)

TOTAL NO. OF CONTACTS	
06, 10, 12, 16, 20, 26, 34, 50	Housing

All dimensions in mm

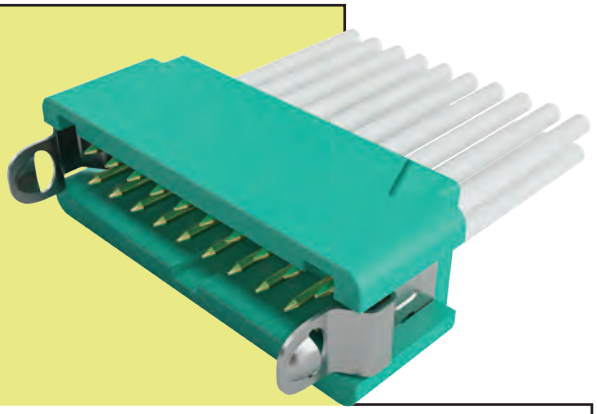
Patent Published

HARWiN

Gecko Connectors

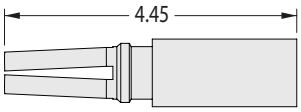
Crimp Contacts

- 4-finger Beryllium Copper contact on a female connector.
- Crimp barrel meets all crimp guidelines and standards.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.
- Instruction video online at www.harwin.com/harwintv.

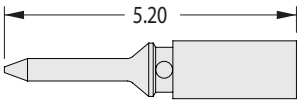


CONTACTS

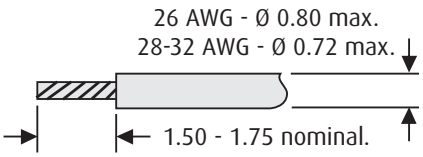
Female



Male



WIRE STRIPPING DETAILS



TOOLS

Recommended Crimp Tool – Z125-900
Positioner – Z125-901

Contact Insertion/Removal Tool – Z125-902
See page 12

- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

G125 - XXX 00 05

SERIES CODE

TYPE	
001	Female 26 AWG crimp contact
002	Female 28-32 AWG crimp contact
101	Male 26 AWG crimp contact
102	Male 28-32 AWG crimp contact

FINISH	
05	Gold (Pd)

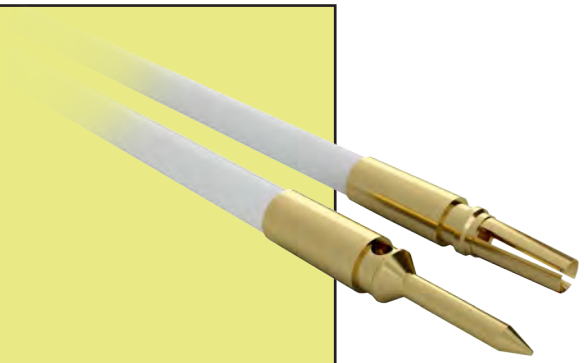
All dimensions in mm

Patent Published

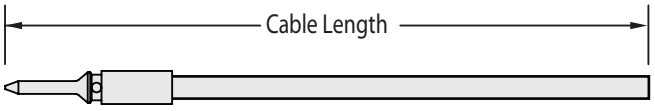
Gecko Connectors

Cable Connectors - Pre-Crimped Wires

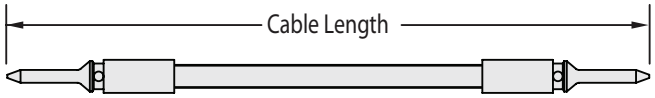
- Ready for assembling to housings on page 8.
- Crimp barrel meets all crimp guidelines and standards.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.



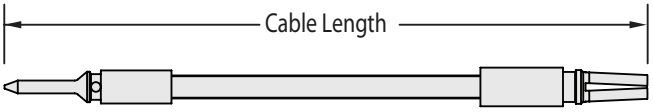
MALE SINGLE ENDED



MALE - MALE



MALE - FEMALE



TOOLS

Contact Insertion/Removal Tool – Z125-902

See page 12

- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

G125 – M WX XXXX X 94

SERIES CODE

GENDER - FIRST END	
M	Male

CABLE SIZE	
W1	26 AWG
W2	28 AWG
W3	30 AWG
W4	32 AWG

CABLE COLOUR	
94	White

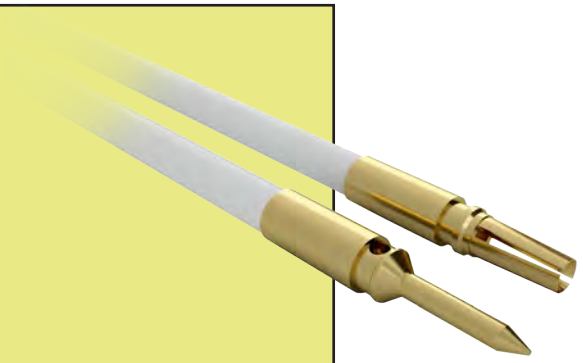
TERMINATION - SECOND END	
L	Loose cut end
F	Female
M	Male

CABLE LENGTH	
0150	150mm
0300	300mm (double-ended)
0450	450mm (single-ended)
XXXX	Special Order (length mm)

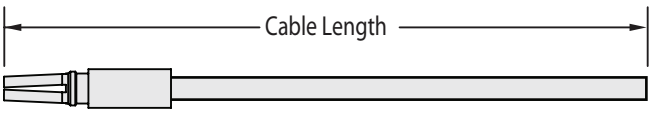
Gecko Connectors

Cable Connectors - Pre-Crimped Wires

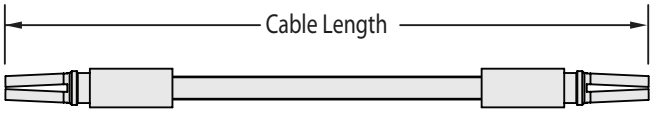
- 4-finger Beryllium Copper contact on a female connector.
- Ready for assembling to housings on page 8.
- Crimp barrel meets all crimp guidelines and standards.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.



FEMALE SINGLE ENDED



FEMALE - FEMALE



TOOLS

Contact Insertion/Removal Tool – Z125-902

See page 12

- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

G125 – F WX XXXX X 94

SERIES CODE

GENDER - FIRST END	
F	Female

CABLE SIZE	
W1	26 AWG
W2	28 AWG
W3	30 AWG
W4	32 AWG

CABLE COLOUR	
94	White

TERMINATION - SECOND END	
L	Loose cut end
F	Female

CABLE LENGTH	
0150	150mm
0300	300mm (double-ended)
0450	450mm (single-ended)
XXXX	Special Order (length mm)

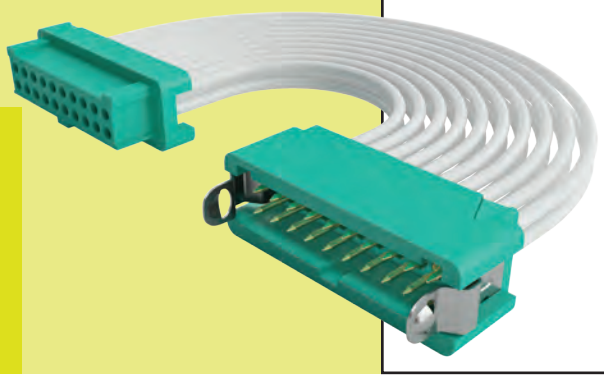
All dimensions in mm

Patent Published

HARWiN

Gecko Connectors
Cable Assemblies

- 4-finger Beryllium Copper contact on the female connector.
- No. 1 position identified on moulding.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.
- Back potted for added strain relief.



PART NUMBERING SYSTEM

G125 – M C X XX 05 LX - XXXX X

SERIES CODE

GENDER - FIRST END	
M	Male

CABLE SIZE	
1	26 AWG
2	28 AWG
3	30 AWG
4	32 AWG

TOTAL NO. OF CONTACTS
06, 10, 12, 16, 20, 26, 34, 50

TERMINATION - SECOND END	
L	Loose cut end
F	Female connector
M	Male connector

CABLE LENGTH	
0150	150 mm
0300	300 mm (double-ended)
0450	450 mm (single-ended)
XXXX	Special order (length in mm)

LATCHES	
L0	No Latches
L4	Latches (male only)

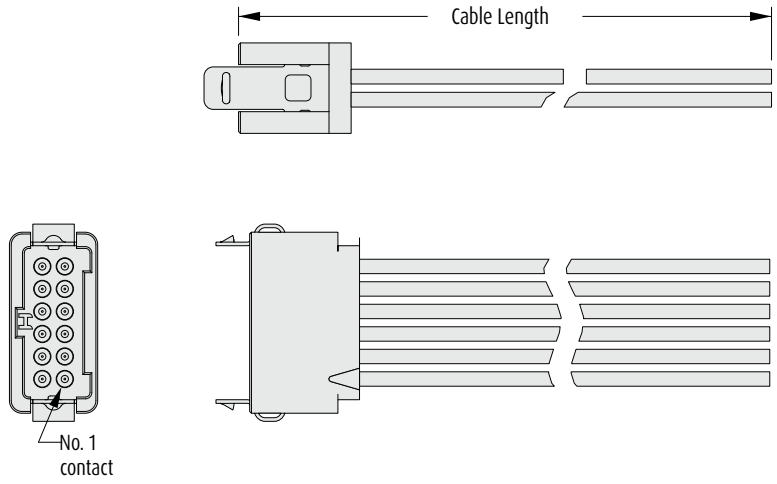
FINISH	
05	Gold

Gecko Connectors

CABLE ASSEMBLIES

See page 10 for cable length table.

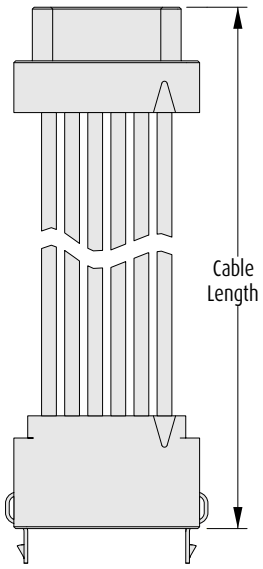
MALE SINGLE ENDED



HOW TO ORDER

G125-MCXXX05LX-XXXXL

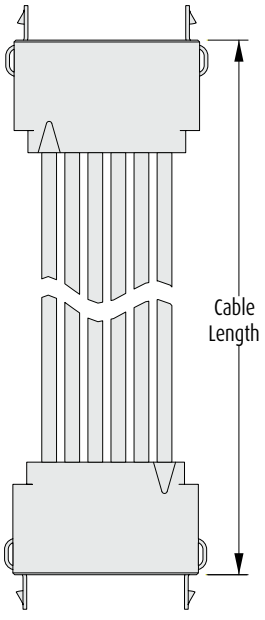
MALE – FEMALE



HOW TO ORDER

G125-MCXXX05LX-XXXXF

MALE – MALE



HOW TO ORDER

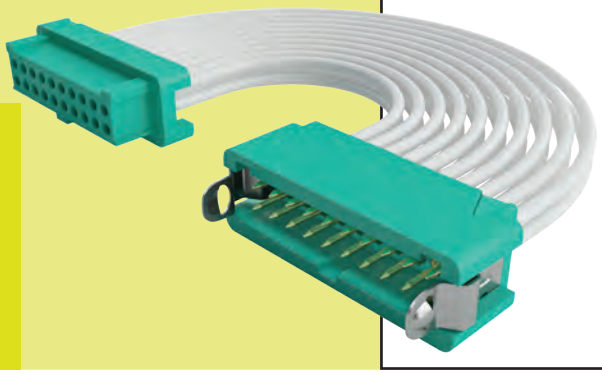
G125-MCXXX05LX-XXXXM

All dimensions in mm

Patent Published

HARWiN

Gecko Connectors
Cable Assemblies



- 4-finger Beryllium Copper contact on the female connector.
- No. 1 position identified on moulding.
- 2A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65˚C to +150˚C.
- Back potted for added strain relief.

PART NUMBERING SYSTEM

G125 – F C X XX 05 LX - XXXX X

SERIES CODE

GENDER - FIRST END	
F	Female

CABLE SIZE	
1	26 AWG
2	28 AWG
3	30 AWG
4	32 AWG

TOTAL NO. OF CONTACTS
06, 10, 12, 16, 20, 26, 34, 50

TERMINATION - SECOND END	
L	Loose cut end
F	Female connector

CABLE LENGTH	
0150	150 mm
0300	300 mm (double-ended)
0450	450 mm (single-ended)
XXXX	Special order (length in mm)

LATCHES	
L0	No Latches
L4	Latches (male only)

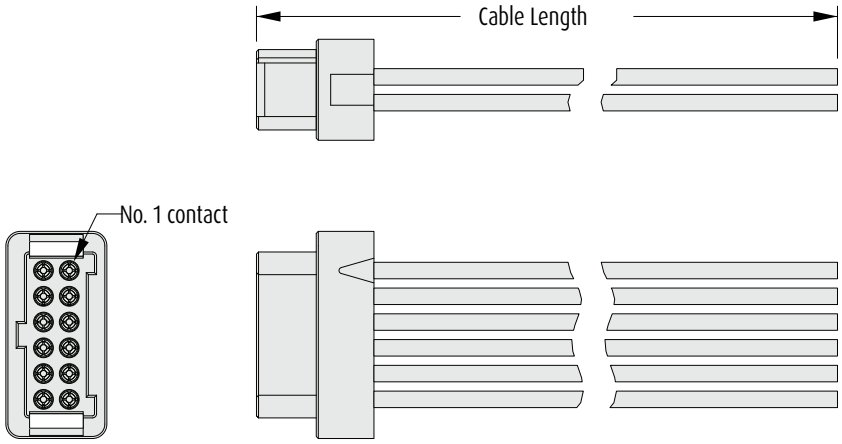
FINISH	
05	Gold

Gecko Connectors

CABLE ASSEMBLIES

See page 11 for cable length table.

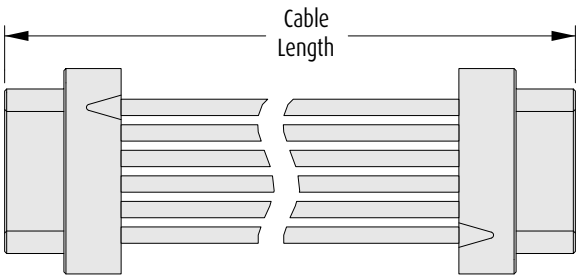
FEMALE SINGLE ENDED



HOW TO ORDER

G125-FCXXX05L0-XXXXL

FEMALE – FEMALE



HOW TO ORDER

G125-FCXXX05L0-XXXXF

- Instruction sheets can be accessed at www.harwin.com/instructions and instruction videos at www.harwin.com/harwintv.

POSITIONER

- Must be used with hand crimp tool.

ORDER CODE
Z125-901

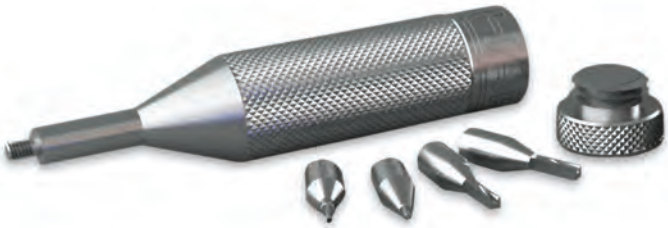
HAND CRIMP TOOL

- Precision tool with ratchet mechanism and 8-indent form.
- Must be used with positioner.
- Instruction sheet available.

ORDER CODE
Z125-900

INSERTION/REMOVAL TOOL

- For inserting and removing crimped contacts into the rear of mouldings.
- Instruction sheet available.



ORDER CODE
Z125-902

DE-LATCH TOOL

- Easy de-latch tool for confined spaces.

ORDER CODE
Z125-926xx00

Replace xx with No. of Contacts:
06, 10, 12, 16, 20, 26, 34 or 50

M300

CONTENTS

M300 Connectors Introduction

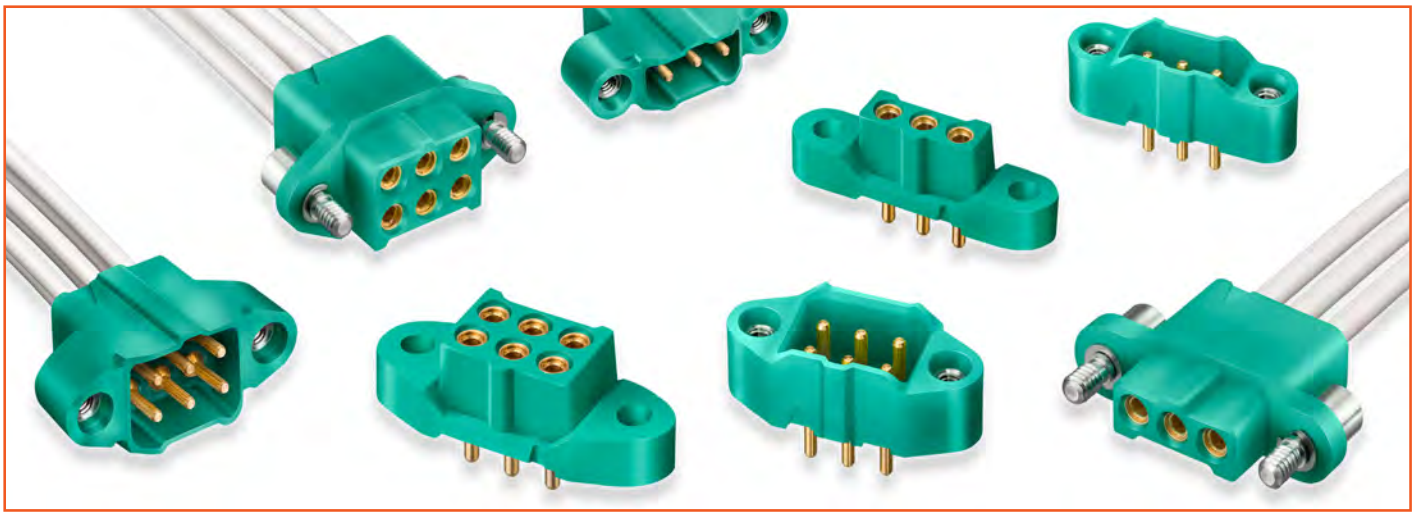
Harwin M300 - 5 & 10A Power Connectors

High Reliabilty Connectors for Power Applications

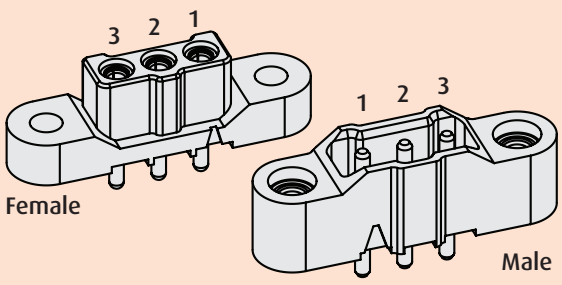
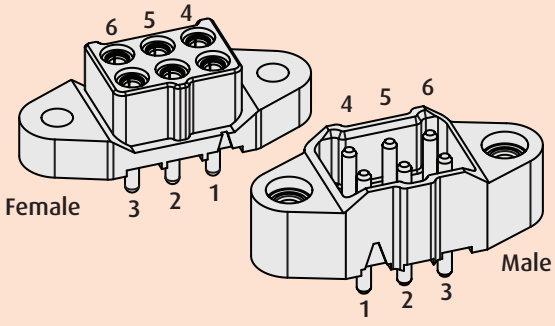
Harwin's M300 series is a 3.00mm pitch, high reliability / high performance connector system suited to aerospace, defense, industrial and other harsh environments. M300 provides a dual and single row cable-to-board and board-to-board solution for applications requiring up to 10A of power in a small space envelope. Featuring an extended rear potting wall for additional strain relief, the housings are clearly marked with a "position 1" identifier. Moldings are manufactured from Halogen and Red Phosphorus-free glass-filled thermoplastic and all M300 connector assemblies are RoHS compliant.

Features

- Small PCB Footprint
- Up to 5 and up to 10 Amp versions
- Up to 1,000 operations
- Jackscrew security system
- Keyway Polarising position points prevent mis-mating
- Extremes of temperature -65 to +175°C
- Four finger contact ensures connectivity in high vibration environments
- Prevents damage to contacts in blind mating conditions
- Manufactured from environmentally friendly materials
- 3mm pin spacing
- Scoop-proof Female contacts



Pin Numbering

SINGLE ROW	DOUBLE ROW
	

M300 Connectors Specifications

Materials

Housings:	Glass Filled Thermoplastic UL94V-0
Female Contacts:	Beryllium Copper Contact Clip, Brass Shell
Male Contacts:	Brass
Contact Finish:	Gold
Jackscrew Hardware:	Stainless Steel

Electrical

Current	
All contacts simultaneously with 18AWG wire:	10A max (30°C temp. rise)
All contacts simultaneously with 22AWG wire:	5A max (30°C temp. rise)
Working Voltage	
(at sea level, 913/1050mb):	1800V max DC or AC peak
(at altitude 21,336m/ 70,000ft, 44mb):	450V max DC or AC peak
Withstanding Voltage	
(at sea level, 913/1050mb):	600V min DC or AC peak
(at altitude 21,336m/ 70,000ft, 44mb):	150V min DC or AC peak
Contact Resistance:	6mΩ max
Insulation Resistance:	100MΩ min at 100V DC

Mechanical

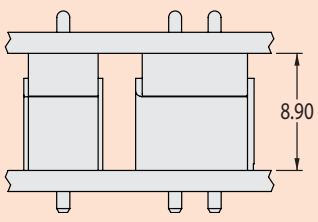
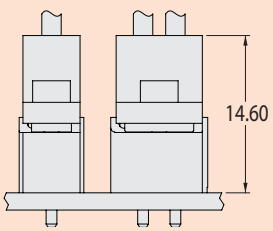
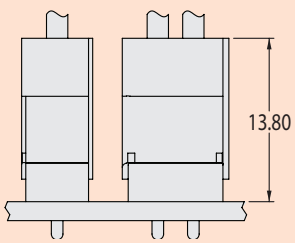
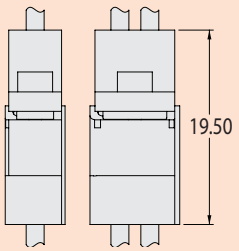
Durability:	1000 operations
Mating Forces (per contact pair)	
Insertion force:	9N max
Withdrawal force:	1N min
Contact Retention in housing	
Cable contact:	15N min
PC-Tail contact:	5N min
Signal crimp accommodation:	18AWG to 22AWG BS 3G 210 Type A, MIL-16878E Type E

Environmental

Environmental Classification:	65/175/56 days at 90%RH
Operating Temperature:	-65°C to +175°C
Vibration sensitivity:	10Hz to 500Hz, 1.52mm, 98.1m/s^2 (10G), 9 hours
Bump severity:	390m/s^2 (40G), 4000 bumps
Shock severity:	981m/s^2 (100G), 6ms
Acceleration severity:	490m/s^2 (50G)

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

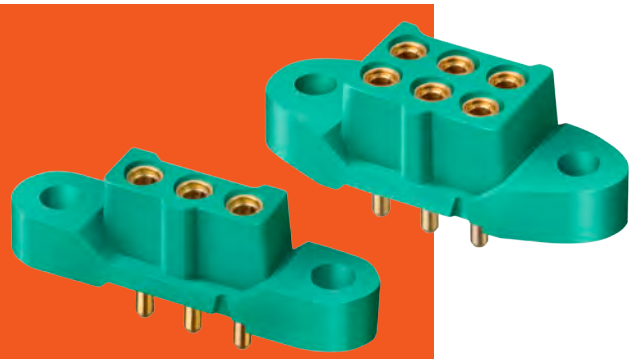
Mating Profiles

FEMALE / MALE	VERTICAL PC TAIL	CABLE
VERTICAL PC TAIL		
CABLE		

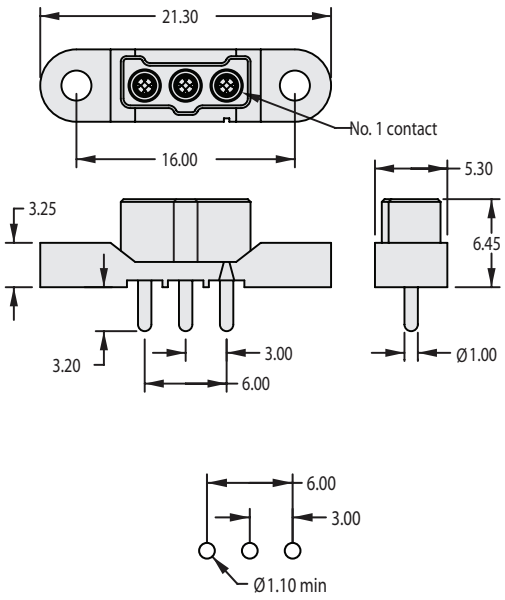
M300 Connectors

Female PC Tail

- 4-finger Beryllium Copper contact.
- Positive keyway polarisation features.
- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.
- Scoop-proof contacts.
- No. 1 position ident on housing.

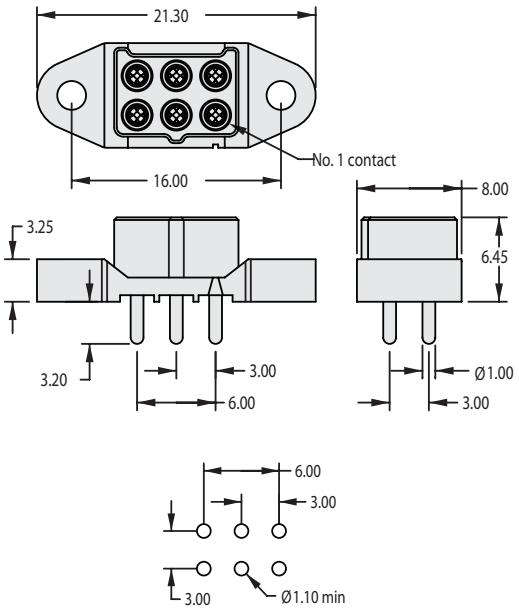


SINGLE ROW



Recommended PC Board Pattern

DOUBLE ROW



Recommended PC Board Pattern

HOW TO ORDER

M300 - F VX XX 45 00

SERIES CODE

GENDER

F	Female

TYPE

V1	Single Row
V3	Double Row

TOTAL NO. OF CONTACTS

03	Single Row
06	Double Row

FINISH

45	Gold

TYPE

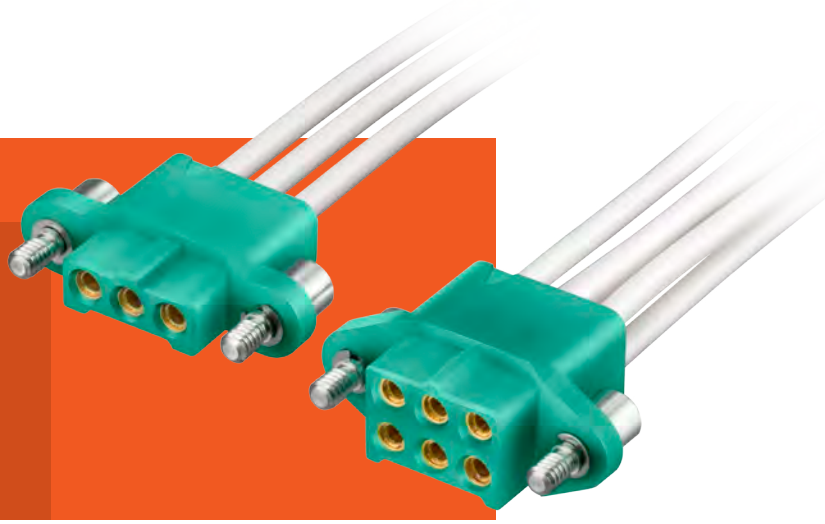
00	No Jackscrew

All dimensions in mm.

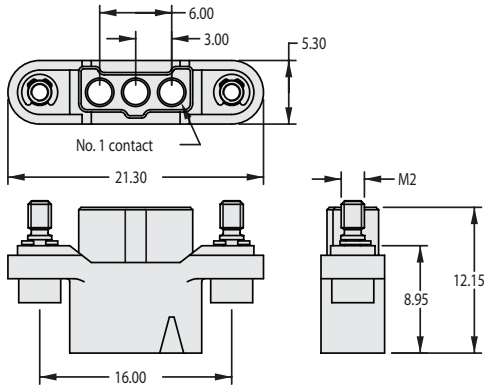
M300 Connectors

Female Cable Connector Housings

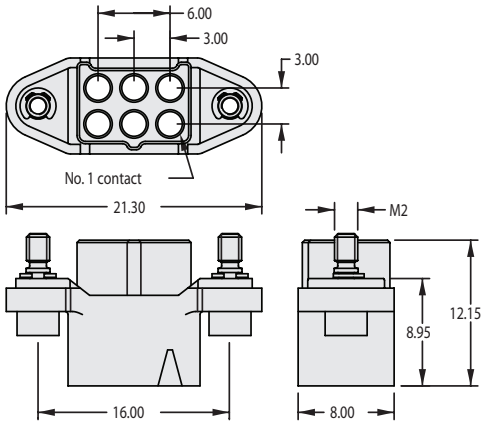
- 3 polarising points on each housing to prevent mis-mating.
- Features potting wall for extra security.
- No. 1 position identified on moulding.
- Scoop-proof contacts.
- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.



SINGLE ROW



DOUBLE ROW



TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-058

Contact Insertion/Removal Tool – Z300-902
See page 12j
- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

M300 - 22X XX 96 F2

SERIES CODE

TYPE

224	Double Row
225	Single Row

TOTAL NO. OF CONTACTS

03	Single Row
06	Double Row

FIXING

F2	Hex Socket Jackscrew

FINISH

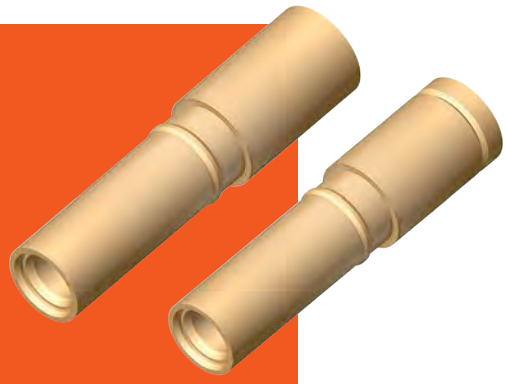
96	Housing (Pb)

All dimensions in mm.

M300 Connectors

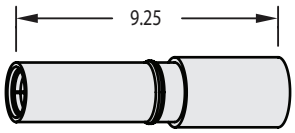
Female Cable Connector Contacts

- 4-finger Beryllium Copper contact.
- Crimp barrel meets all crimp guidelines and standards.
- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.

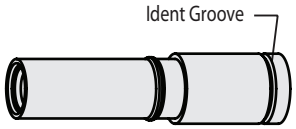


CONTACTS

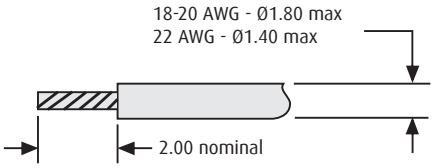
18-20 AWG



22 AWG



WIRE STRIPPING DETAILS



TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-058

Contact Insertion/Removal Tool – Z300-902
See page 12j

- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

M300 - 00X 00 45

SERIES CODE

TYPE	
001	18-20 AWG crimp contact
002	22 AWG crimp contact

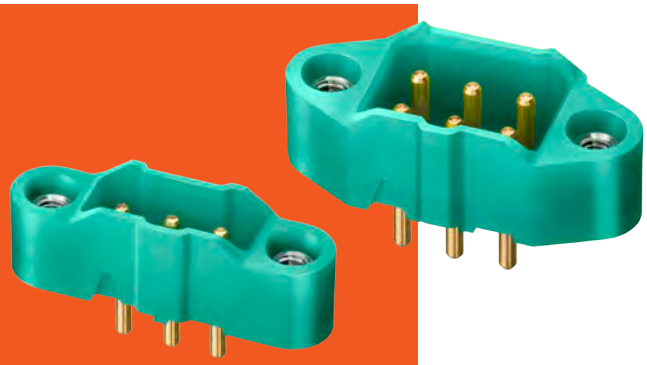
FINISH		
45	Gold	Pd

All dimensions in mm.

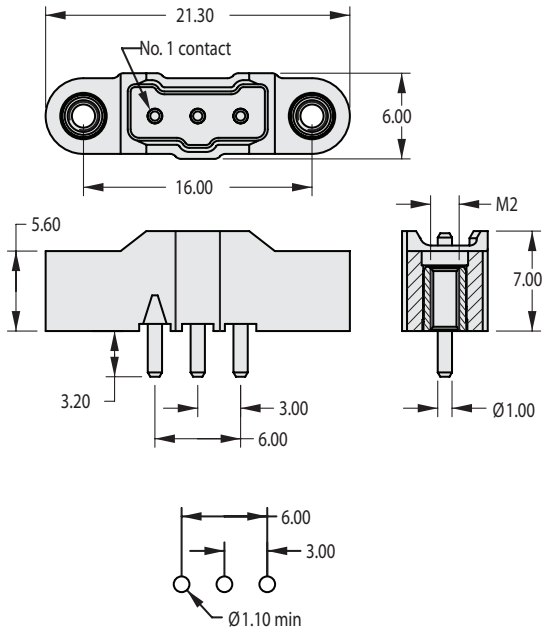
M300 Connectors

Male PC Tail

- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.

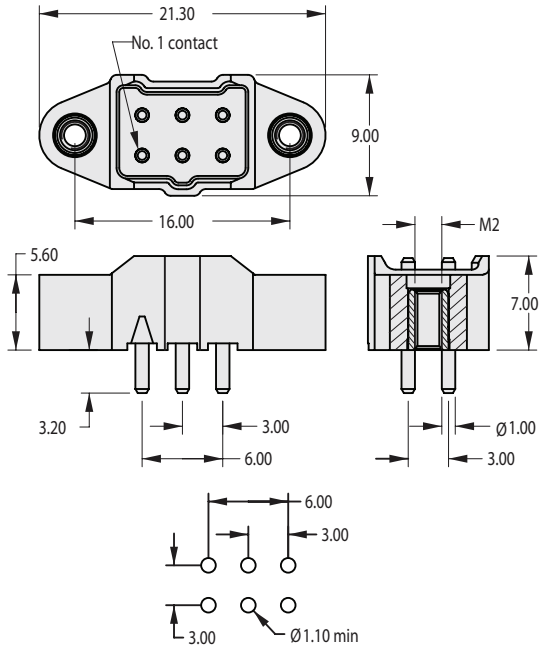


SINGLE ROW



Recommended PC Board Pattern

DOUBLE ROW



Recommended PC Board Pattern

HOW TO ORDER

M300 - M VX XX 45 M1

SERIES CODE

GENDER

M	Male

TYPE

V1	Single Row
V3	Double Row

TYPE

M1	Jackscrew

FINISH

45	Gold

TOTAL NO. OF CONTACTS

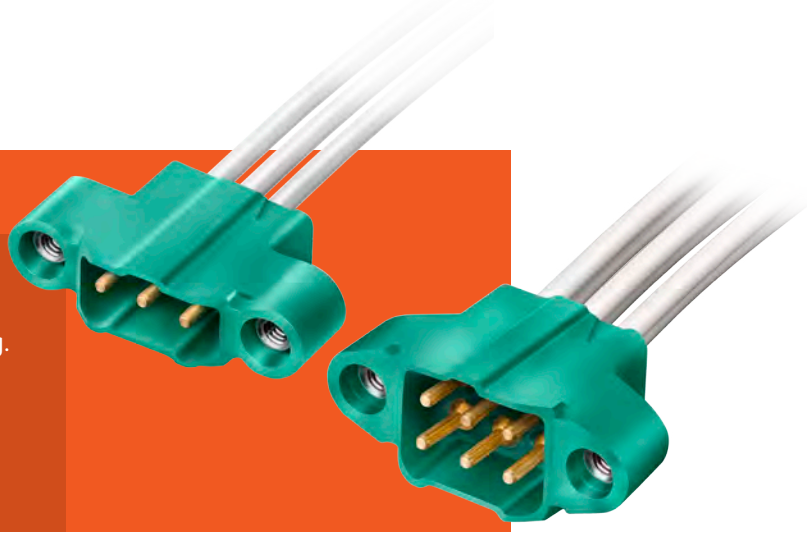
03	Single Row
06	Double Row

All dimensions in mm.

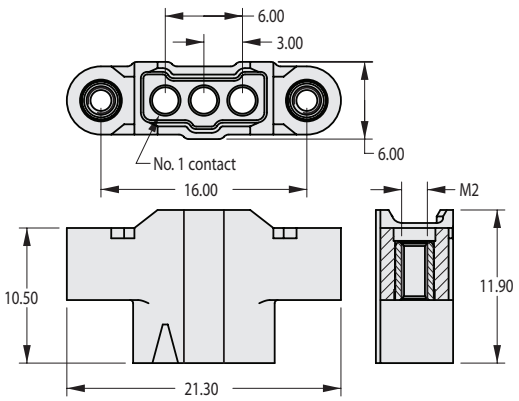
M300 Connectors

Male Cable Connector Housings

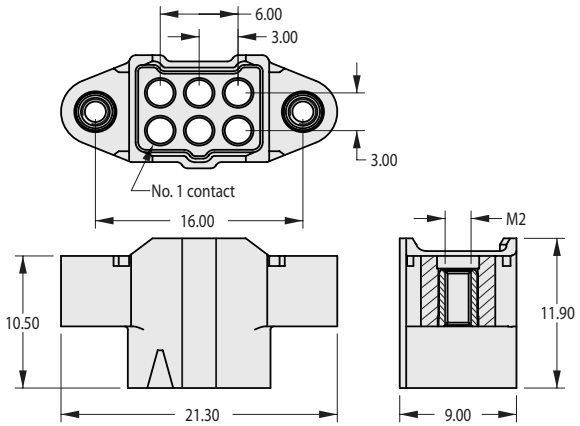
- Features potting wall for extra security.
- No. 1 position identified on moulding.
- 3 polarising points on each housing to prevent mis-mating.
- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.



SINGLE ROW



DOUBLE ROW



TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-058

Contact Insertion/Removal Tool – Z300-902
See page 12j
- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

M300 - 32X XX 96 M1

SERIES CODE

TYPE	
324	Double Row
325	Single Row

TOTAL NO. OF CONTACTS	
03	Single Row
06	Double Row

FIXING	
M1	Jackscrew (Housing)

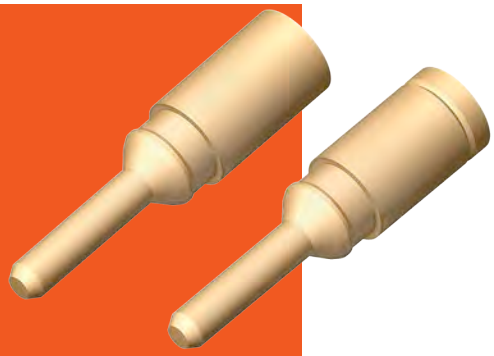
FINISH	
96	Housing Pd

All dimensions in mm.

M300 Connectors

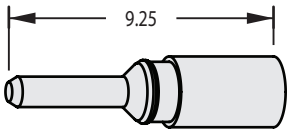
Male Cable Connector Contacts

- Crimp barrel meets all crimp guidelines and standards.
- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.

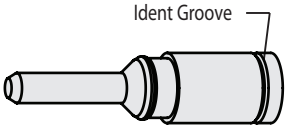


CONTACTS

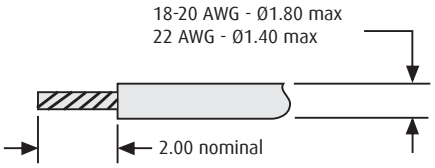
18-20 AWG



22 AWG



WIRE STRIPPING DETAILS



TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-058

Contact Insertion/Removal Tool – Z300-902
See page 12j

- **Instruction sheets available at www.harwin.com/instructions**

HOW TO ORDER

M300 - 10X 00 45

SERIES CODE

TYPE	
101	18-20 AWG crimp contact
102	22 AWG crimp contact

FINISH		
45	Gold	Pd

All dimensions in mm.

M300 Connectors Tooling

POSITIONER

- Must be used with hand crimp tool.

ORDER CODE
Z80-058

HAND CRIMP TOOL

- Standard circular crimp tool BS5210-3A-300 and MIL specification M22520/2-01.
- Precision tool with ratchet mechanism and 8-indent form.
- Must be used with positioner.
- Instruction sheet available.

ORDER CODE
M22520/2-01

INSERTION/REMOVAL TOOL

- For inserting and removing crimped contacts into the rear of housings.
- Instruction sheet available.

ORDER CODE
Z300-902

All dimensions in mm.

Datamate

CONTENTS

HARWiN

Datamate Introduction

Performance without compromise

Datamate is a 2mm pitch, 3A per contact, high reliability, high performance connector system which is approved to British Standard 9525-F0033 and has a proven track record under the most extreme conditions.

This approval is made possible by Harwin's high reliability, low frequency four finger Beryllium Copper contact technology (3A max).

The contact features a four finger Beryllium Copper clip to ensure integrity of connection under the most severe conditions and makes Datamate ideally suited to applications that are subject to high loads of vibration and shock. Secure termination is achieved by latches (L-Tek), Jackscrews (J-Tek) or the new 101Lok fast mate hardware, which speeds and simplifies the mating process.

The range further benefits from mixed layout options (Mix-Tek) that afford the engineer complete flexibility of design. Contact options include high frequency (6GHz max) and high power (20A max).

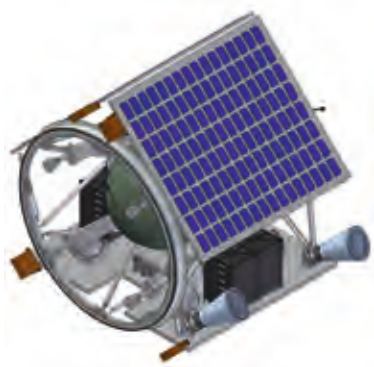
Additional flexibility is available with: automated crimping versions (Trio-Tek) which reduces installed costs; fully shielded Datamate (S-Tek) for complete EMI/RFI screening; and Datamate BS with 100% in-process testing for peace of mind in safety-critical applications.

High reliability
4-Finger Beryllium
Copper contact

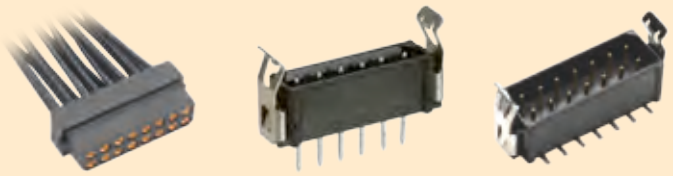
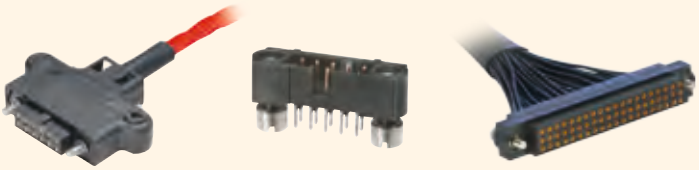
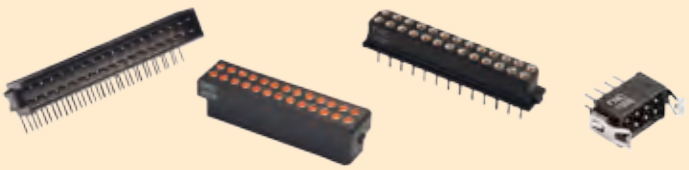
Features & benefits

- Miniature connector system with high performance contact reduce space and weight.
- Four finger Beryllium Copper contact ensures integrity of signal connection.
- Professional connector system at commercial prices.
- Rugged connectors for use in harsh environments & safety critical applications when failure is not an option.
- Proven history in: aerospace, industrial, military, oil & gas etc.
- Suited for use in harsh environments where high vibration, shock and extremes of temperature are a consideration.
- Global distribution network – stocked in depth.
- Approved to BS9525-F0033.
- Complies with CECC 75101-008.
- Live Help, 3D CAD models and evaluation samples at www.harwin.com/datamate.

Harwin operates an ongoing product development programme, visit www.harwin.com for the latest additions to the Datamate range.



Datamate Introduction – Product Families

Datamate L-Tek Datamate low frequency connectors with 3 flexible mating options: friction latch, locking latch and no latch.		Pages 17 – 34
Datamate J-Tek Datamate low frequency connectors with a variety of optional Jackscrews for increased security of connection. Includes 2-row and 3-row configurations.		2-Row: Pages 35 – 65 3-Row: Pages 66 – 70
Datamate S-Tek Datamate J-Tek with metal shells; shielded connectors for cable-to-panel and PCB applications where EMI and RFI screening is required. 360° braid attachment, tested to MIL-STD-1377.		Pages 71 – 74
Datamate Mix-Tek 3 connector styles in one. Includes low frequency signal, power (20A) and coax (6Ghz) options. Includes a stocked range of signal/power or power-only connectors, ideal for COTS requirements.		Pages 75 – 86
Datamate 101 Lok 101Lok hardware reduces assembly time by simplifying the mating process. The fast mate hardware requires 101-degree turn to securely mate and requires no special tooling.		Pages 39, 42, 47, 53, 55, 57, 59, 61
Datamate Trio-Tek Performing to the same high-reliability standards as conventional Datamate, the Trio-Tek open barrel crimp contact automates the crimp process to significantly save on assembly time and reduce process costs.		Pages 24 – 25, 50 – 51
Datamate BS Manufactured to British Standard 9525-F0033 for safety-critical applications. Datamate BS assures total security in the knowledge that the product is of the highest calibre.		Pages 18 – 19
Datamate -Plus Datamate with 100% in-process (A & B) testing. Similar to Datamate BS in nature but applicable to the whole range of Datamate.		Pages 18 – 19

Datamate Specification

Materials

Mouldings:	Glass-filled thermoplastic UL94V-0
Female contacts:	Brass shell, with Beryllium Copper inner contact
Male contacts:	Copper alloy
Finish:	See individual pages

Electrical

Current (individual contacts in isolation):	3.3A max (at 25°C) 2.6A max (at 85°C)
All contacts simultaneously:	3.0A max (at 25°C) 2.2A max (at 85°C)
Working Voltage (at sea level 1013 mbar):	800V DC or ACrms
Voltage Proof (at sea level 1013 mbar):	1,200V DC or ACrms
Contact resistance (initial):	20 mΩ max
Contact resistance (after conditioning):	25 mΩ max
Insulation resistance (initial):	1,000 MΩ min
Insulation resistance (after conditioning):	100 MΩ min

Mechanical

Durability:	500 operations 400 operations (Trio-Tek)
Insertion force (max):	2.8N
Withdrawal force (min):	0.2N
Signal crimp accommodation:	22 AWG to 32 AWG BS 3G 210 Type A, MIL-W-16878

Environmental

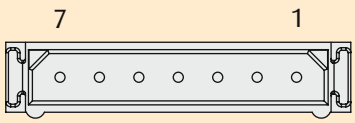
Environmental classification:	55/125/56 days at 95% RH
Operational temperature:	-55ºC to +125ºC
*Vibration sensitivity:	10Hz to 2000Hz, 0.75mm, 98m/s² (10G), duration 6h
*Bump severity:	390m/s² (40G), 4000 ±10 bumps
*Shock severity:	981m/s² (100G) for 6ms
*Acceleration severity:	490m/s² (50G)

* Tested with latched connectors.

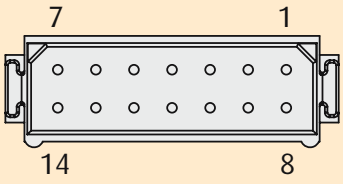
All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Pin Numbering

Single Row



Double Row



Contact numbering is shown looking onto mating face of male connector.

British Standard 9525-F0033

Designed for performance critical applications where operation and safety are paramount, BS Datamate delivers the highest level of quality.

All BS Datamate parts are subject to in-process testing and individual inspection by qualified personnel. In addition, independent third-party test programmes are completed annually and all processes are audited by the British Standard Institute.

BS Datamate assures total security in the knowledge that the product is of the highest calibre.

Certificate No.: 1243/M

PART NUMBERING SYSTEM

B5XXX - X XX - X - X - X

STYLE NUMBER	
B5740	Female Connector Types C and D (Crimp)
B5741	Female Connector Types N and T (PC Tail)
B5743	Male Connector Types L and T (PC Tail)

NUMBER OF ROWS	
1	Single Row
2	Double Row

TOTAL NUMBER OF CONTACTS	
02 to 07, 17	Single Row
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34	Double Row

GENDER	
F	Female (Socket)
M	Male (Plug)

TERMINATION STYLE	
C	Crimp 24-28 AWG (Small Bore) – Female only
D	Crimp 22 AWG (Large Bore) – Female only
L	Throughboard Solder 90° (PC Tail Horizontal) – Male only
N	Throughboard Solder Straight Short (PC Tail Vertical) – Female only
T	Throughboard Solder Straight (PC Tail Vertical)

VARIANT	
0	Unlatched connector, tin finish PC Tail (Male) or outer shell (Female)
1	Latched connector, tin finish PC Tail – Male only
2	Unlatched connector, gold finish PC Tail (Male) or outer shell (Female)
3	Latched connector, gold finish PC Tail – Male only
x	Variant

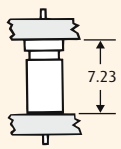
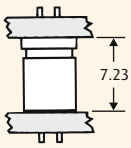
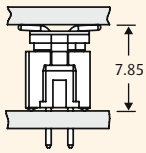
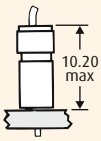
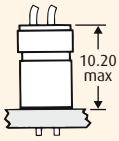
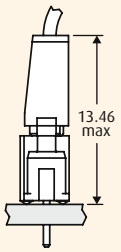
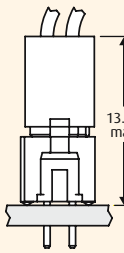
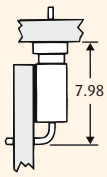
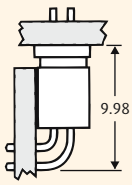
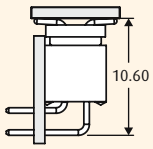
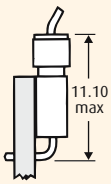
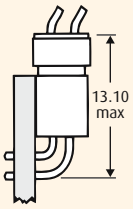
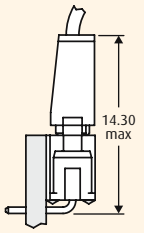
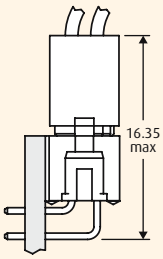
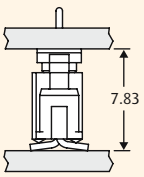
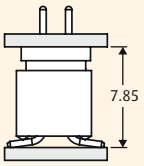
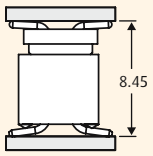
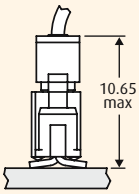
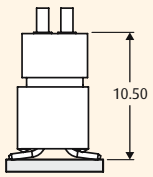
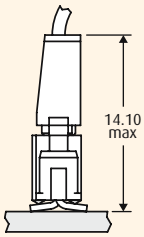
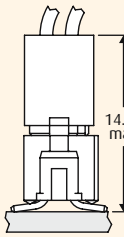
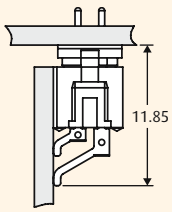
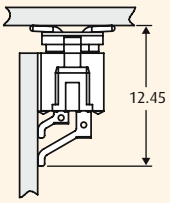
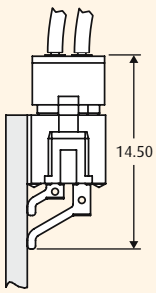
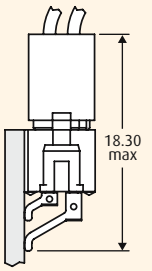
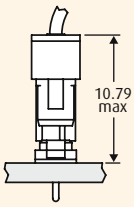
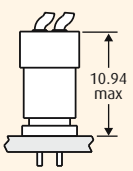
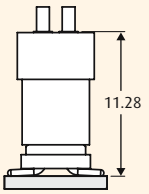
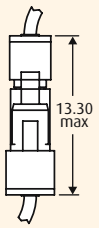
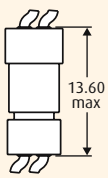
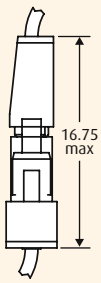
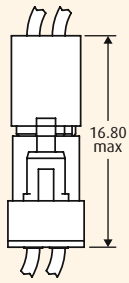
Note: all connectors are gold finish on the contact area.

EXAMPLE REFERENCE NO: **B5740-216-F-C-2**

British Standard 9525-F0033

Datamate BS	Datamate BS CONTAINS Pb	Datamate -Plus	Datamate	Datamate CONTAINS Pb
B5740-1XX-F-C-0	n/a	n/a	M80-898XX01	n/a
B5740-1XX-F-C-2	n/a	n/a	M80-898XX05	n/a
B5740-1XX-F-D-0	n/a	n/a	M80-899XX01	n/a
B5740-1XX-F-D-2	n/a	n/a	M80-899XX05	n/a
B5740-2XX-F-C-0	n/a	n/a	M80-888XX01	n/a
B5740-2XX-F-C-2	n/a	n/a	M80-888XX05	n/a
B5740-2XX-F-D-0	n/a	n/a	M80-889XX01	n/a
B5740-2XX-F-D-2	n/a	n/a	M80-889XX05	n/a
n/a	B5741-1XX-F-N-0	B5741-614XX42	M80-614XX42	M80-894XX01
n/a	B5741-1XX-F-N-2	B5741-614XX45	M80-614XX45	M80-894XX05
n/a	B5741-1XX-F-T-0	B5741-840XX42	M80-840XX42	M80-897XX01
n/a	B5741-1XX-F-T-2	B5741-840XX45	M80-840XX45	M80-897XX05
n/a	B5741-2XX-F-N-0	B5741-615XX42	M80-615XX42	M80-891XX01
n/a	B5741-2XX-F-N-2	B5741-615XX45	M80-615XX45	M80-891XX05
n/a	B5741-2XX-F-T-0	B5741-850XX42	M80-850XX42	M80-887XX01
n/a	B5741-2XX-F-T-2	B5741-850XX45	M80-850XX45	M80-887XX05
n/a	B5743-1XX-M-L-0	B5743-843XX42	M80-843XX42	M80-878XX22
n/a	B5743-1XX-M-L-1	B5743-842XX42	M80-842XX42	M80-876XX22
n/a	B5743-1XX-M-L-2	B5743-843XX45	M80-843XX45	M80-878XX05
n/a	B5743-1XX-M-L-3	B5743-842XX45	M80-842XX45	M80-876XX05
n/a	B5743-1XX-M-T-0	B5743-852XX42	M80-852XX42	M80-879XX22
n/a	B5743-1XX-M-T-1	B5743-882XX42	M80-882XX42	M80-877XX22
n/a	B5743-1XX-M-T-2	B5743-852XX45	M80-852XX45	M80-879XX05
n/a	B5743-1XX-M-T-3	B5743-882XX45	M80-882XX45	M80-877XX05
n/a	B5743-2XX-M-L-0	B5743-841XX42	M80-841XX42	M80-868XX22
n/a	B5743-2XX-M-L-1	B5743-851XX42	M80-851XX42	M80-866XX22
n/a	B5743-2XX-M-L-2	B5743-841XX45	M80-841XX45	M80-868XX05
n/a	B5743-2XX-M-L-3	B5743-851XX45	M80-851XX45	M80-866XX05
n/a	B5743-2XX-M-T-0	B5743-854XX42	M80-854XX42	M80-869XX22
n/a	B5743-2XX-M-T-1	B5743-853XX42	M80-853XX42	M80-867XX22
n/a	B5743-2XX-M-T-2	B5743-854XX45	M80-854XX45	M80-869XX05
n/a	B5743-2XX-M-T-3	B5743-853XX45	M80-853XX45	M80-867XX05

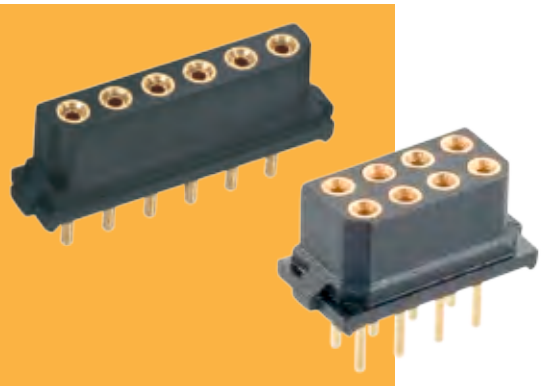
Mating Profiles

MALE \ FEMALE	VERTICAL PC TAIL		VERTICAL SMT	CRIMP		CRIMP (Trio-Tek)	
	SIL	DIL	DIL	SIL	DIL	SIL	DIL
VERTICAL PC TAIL							
HORIZONTAL PC TAIL							
VERTICAL SMT							
HORIZONTAL SMT							
CRIMP							

All dimensions in mm.

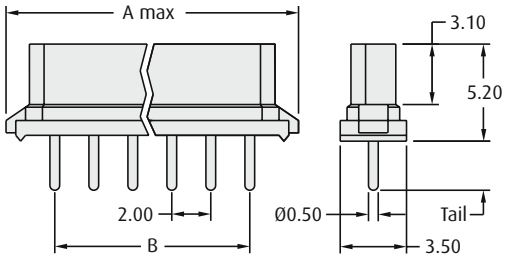
Female Vertical PC Tail

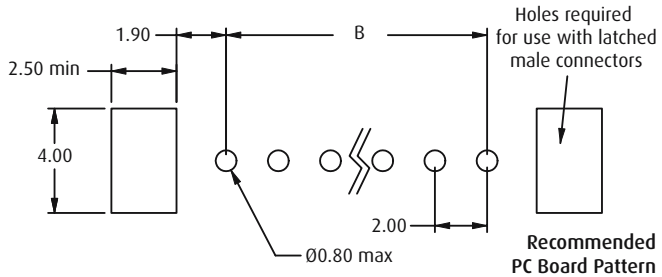
- Polarised mouldings.
- For British Standard versions see pages 18 to 19.
- Dummy contacts for additional polarisation use **order code M80-023.**
- Mates with male connectors on pages 27 to 33.



SINGLE ROW

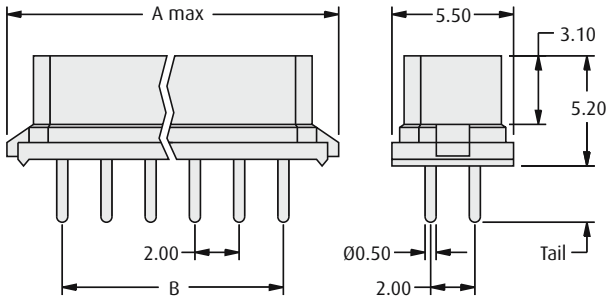
CALCULATION	
A	B + 5.15
B	(Total no. of contacts - 1) x 2

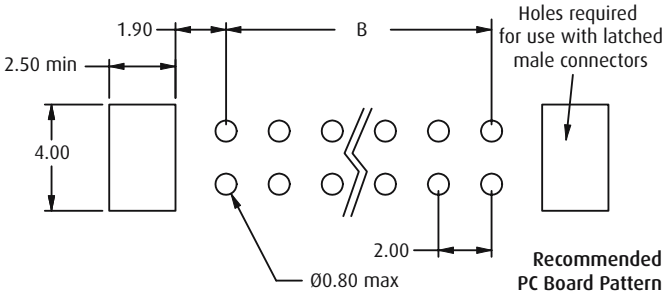




DOUBLE ROW

CALCULATION	
A	B + 5.15
B	Total no. of contacts - 2





HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

RoHS	Non-RoHS	
840	897	Single Row (3mm tail)
850	887	Double Row (3mm tail)
790	790	Single Row (4.5mm tail)
770	770	Double Row (4.5mm tail)

FINISH		
01	Gold + Tin/Lead	Pb
05	Gold	Pb
42	Gold + Tin	Pb
45	Gold	Pb

TOTAL NO. OF CONTACTS	
02 to 07, 17, 22	Single Row
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44	Double Row

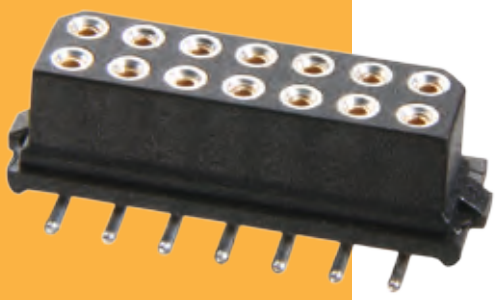
All dimensions in mm.

Datamate Connectors

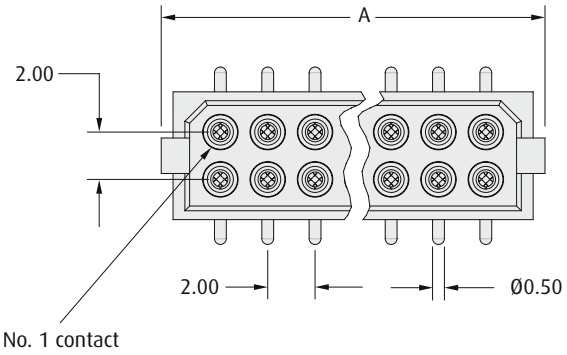
Datamate L-Tek

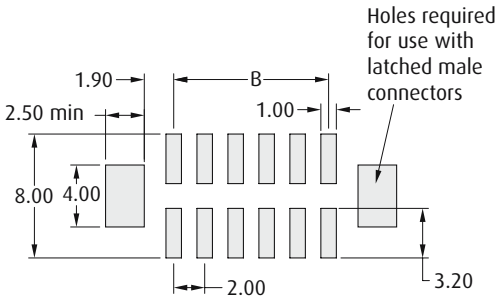
Female Vertical Surface Mount

- Optional pick and place pad.
- Contact **datamate@harwin.com** for tape & reel options.
- Mates with male connectors on pages 27 to 33.
- Gull wing SMT tails simplify inspection process.

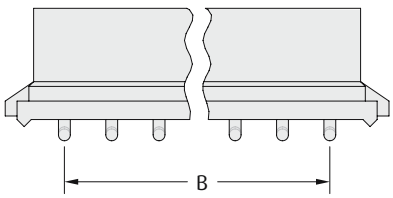


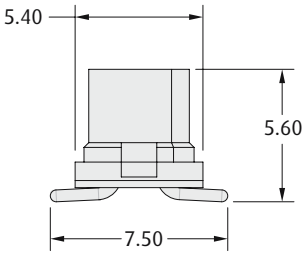
DOUBLE ROW





Recommended PC Board Pattern





CALCULATION	
A	B + 5.15
B	Total no. of contacts - 2

HOW TO ORDER

M80 - 681 XX XX P

SERIES CODE

TOTAL NO. OF CONTACTS

04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44

PICK AND PLACE CAP	
BLANK	No cap
P	Pick and place cap

FINISH		
01	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb
45	Gold	Pb

All dimensions in mm.

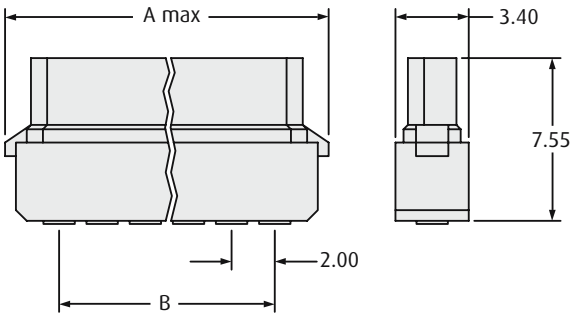
Datamate Connectors

Female Crimp

- Part numbers are for housings and the equivalent number of contacts.
- Contacts are rear insertable.
- For British Standard versions see pages 18 to 19.
- Mates with male connectors on pages 27 to 33.
- Spare contacts are available – see page 25.

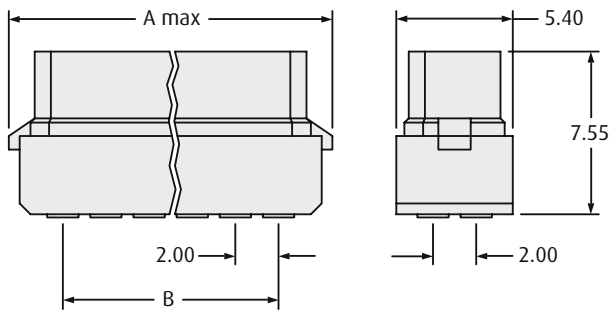
SINGLE ROW

CALCULATION	
A	B + 5.15
B	(Total no. of contacts - 1) x 2



DOUBLE ROW

CALCULATION	
A	B + 5.15
B	Total no. of contacts - 2



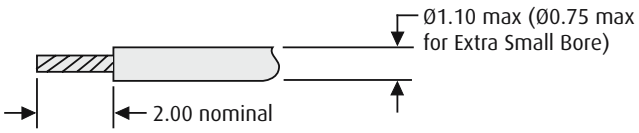
TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280

See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

TYPE

SINGLE	DOUBLE	
798	788	Extra Small Bore (28-32 AWG), Hi-Temp Plastic
845	844	Small Bore (24-28 AWG), Hi-Temp Plastic
611	613	Large Bore (22 AWG), Hi-Temp Plastic
898	888	Small Bore (24-28 AWG)
899	889	Large Bore (22 AWG)

FINISH

01	Gold + Tin (M80-788/789/888/889/898/899)
05	Gold (M80-788/789/888/889/898/899)
42	Gold + Tin (M80-611/613/844/845)
45	Gold (M80-611/613/844/845)

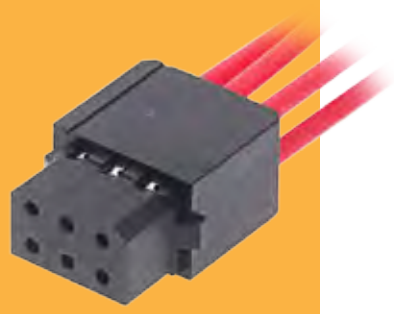
TOTAL NO. OF CONTACTS

02 to 07, 17	Single Row
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34	Double Row

All dimensions in mm.

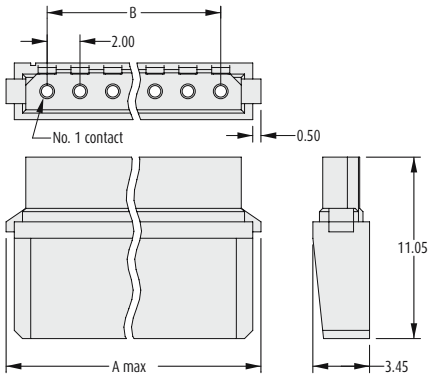
Female Crimp Trio-Tek

- Part numbers are for housings only, see page 25 for Trio-Tek contacts.
- Contacts are rear-insertable.
- Crimp inspection window in housing.
- Mates with male connectors on pages 27 to 33.
- Ideal for volume applications.



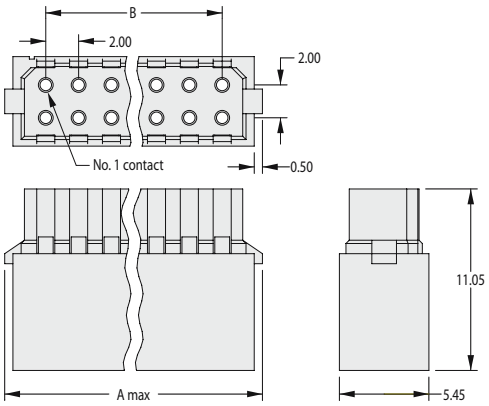
SINGLE ROW

CALCULATION	
A	B + 5.15
B	(Total no. of contacts - 1) x 2



DOUBLE ROW

CALCULATION	
A	B + 5.15
B	Total no. of contacts - 2



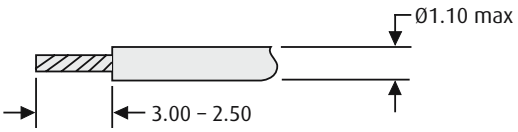
TOOLS

Recommended Hand Crimp Tool – Z80-255

See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 69 X XX 98

SERIES CODE

TYPE	
0	Single Row
1	Double Row

TOTAL NO. OF CONTACTS	
02 to 07, 17	Single Row
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44	Double Row

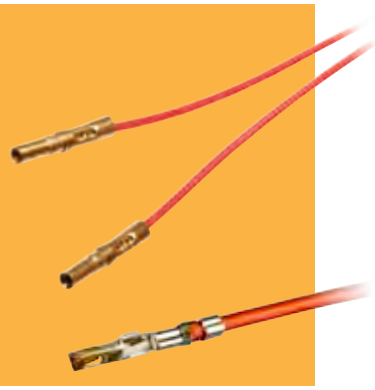
FINISH	
98	Housing (Pb)

All dimensions in mm.

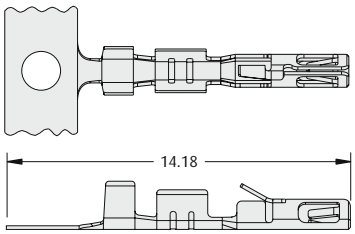
Datamate Connectors

Female Crimp Contacts

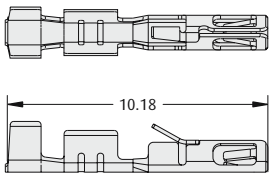
- Trio-Tek contacts must be ordered separately, see page 24 for applicable housings.
- Barrel Crimp contacts are supplied with the connectors (page 23) – use the order codes below for extra crimps.
- For crimp and insertion tools, see pages 87 to 89.



TRIO-TEK



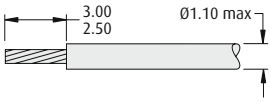
Reeled



Loose

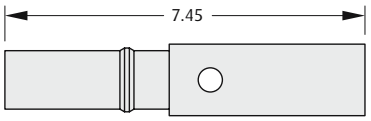
Datamate Trio-Tek

Wire Stripping Details

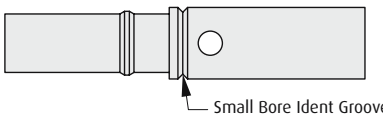


BARREL CRIMP

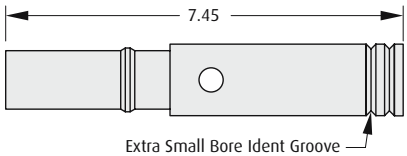
Large Bore (22 AWG):



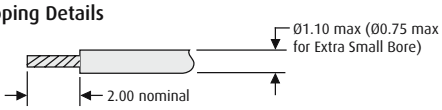
Small Bore (24 – 28 AWG):



Extra Small Bore (28 – 32 AWG):



Wire Stripping Details



HOW TO ORDER

M80 - XXX 00 XX

SERIES CODE

TYPE			
011	Barrel Crimp, Large Bore (22 AWG)	**253**	Trio-Tek Crimp 22-24 AWG, Reeled
013	Barrel Crimp, Small Bore (24-28 AWG)	**254**	Trio-Tek Crimp 26-28 AWG, Reeled
019	Barrel Crimp, Extra Small Bore (28-32 AWG)	**283**	Trio-Tek Crimp 22-24 AWG, Loose
		284	Trio-Tek Crimp 26-28 AWG, Loose

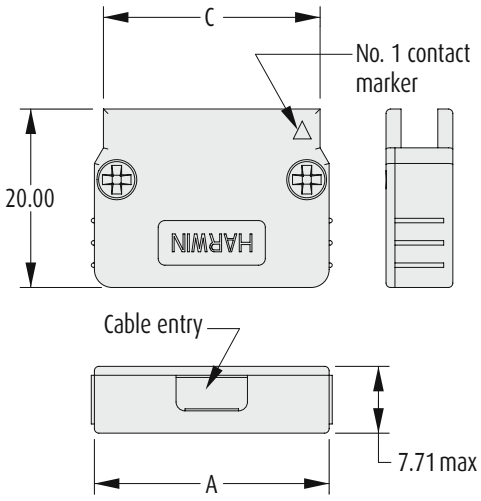
FINISH	
01	Gold + Tin (M80-01x)
05	Gold (M80-01x)
42	Gold + Tin (M80-2xx)
45	Gold (M80-2xx)

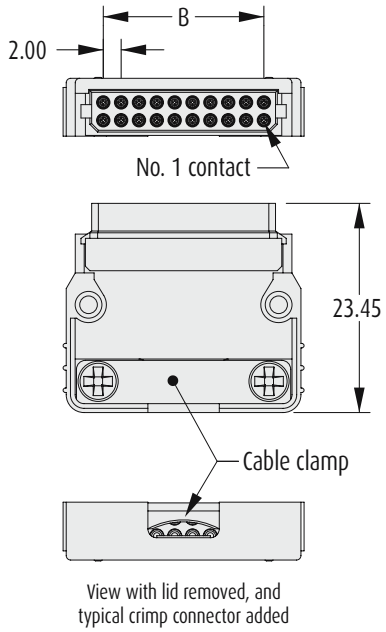
All dimensions in mm.

Female Crimp Hood

- Supplied as a kit of parts, including body, lid, cable clamp and 4 screws.
- For use with double row female crimp connectors shown on page 23.
- Mates with unlatched or friction latch male connectors.

HOOD





View with lid removed, and typical crimp connector added

CALCULATION	
A	B + 8.30
B	Total no. of contacts - 2
C	B + 6.30

HOW TO ORDER

M80 - 880 XX 98

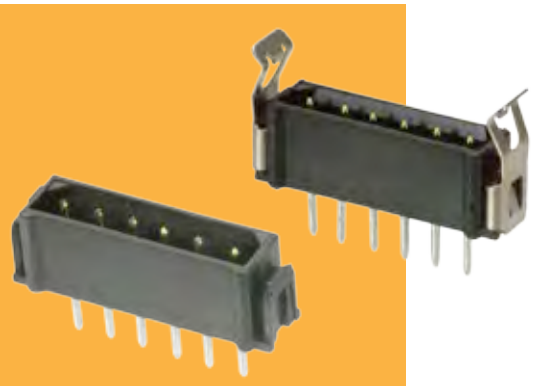
SERIES CODE

TOTAL NO. OF CONTACTS
10, 12, 14, 16, 18, 20, 26, 34

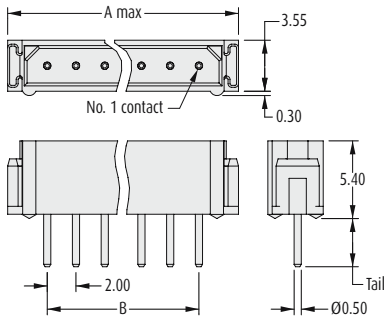
All dimensions in mm.

Male Single Row Vertical PC Tail

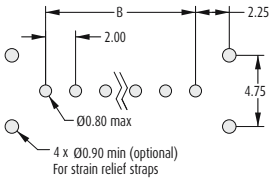
- Polarised mouldings.
- Fully shrouded contacts.
- Mates with female connectors shown on pages 21 to 24.
- For British Standard versions see pages 18 to 19.
- Can be used with Strain Relief straps: **order code M80-0030006**.



UNLATCHED

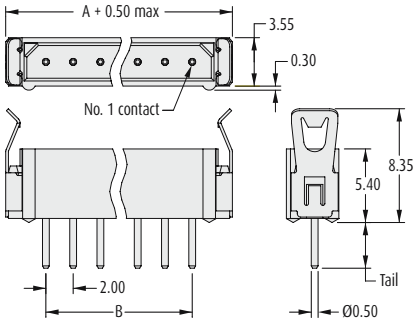


CALCULATION	
A	B + 5.60
B	(Total no. of contacts - 1) x 2

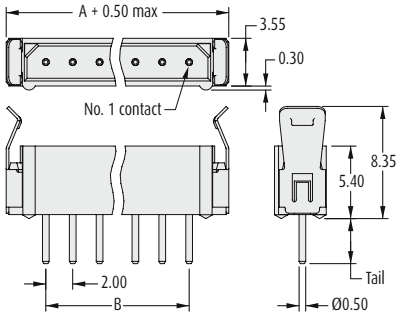


Recommended PC Board Pattern

LOCKING LATCH



FRICTION LATCH



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

RoHS	Non-RoHS	
852	**879**	Unlatched (3mm tail)
882	**877**	Locking Latch (3mm tail)
881	**805**	Friction Latch (3mm tail)
752	**752**	Unlatched (4.5mm tail)
782	**782**	Locking Latch (4.5mm tail)
781	**781**	Friction Latch (4.5mm tail)

FINISH	
05	Gold
22	Gold + Tin/Lead
42	Gold + Tin
45	Gold

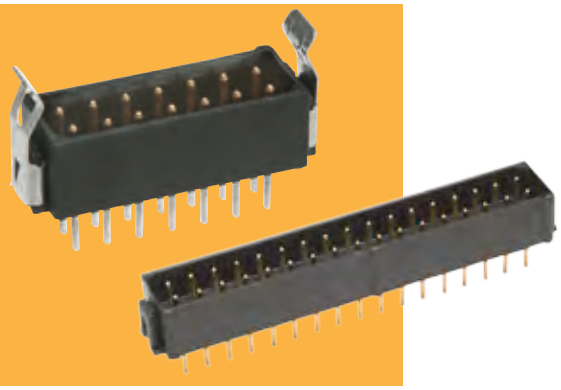
TOTAL NO. OF CONTACTS
02 to 07, 17, 22

All dimensions in mm.

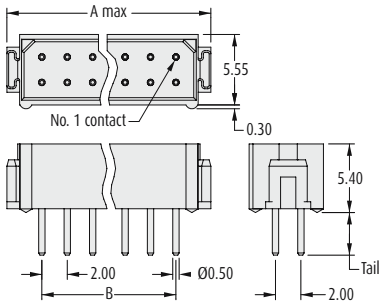
Datamate Connectors

Male Double Row Vertical PC Tail

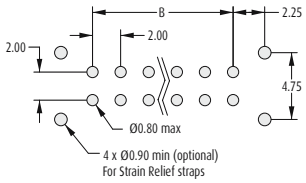
- Polarised mouldings.
- Fully shrouded contacts.
- Mates with female connectors shown on pages 21 to 24.
- For British Standard versions see pages 18 to 19.
- Can be used with Strain Relief straps: **order code M80-0030006**.



UNLATCHED

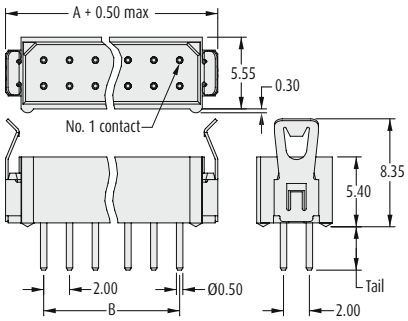


CALCULATION	
A	B + 5.60
B	Total no. of contacts - 2

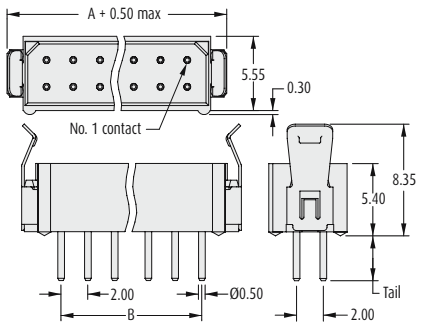


Recommended PC Board Pattern

LOCKING LATCH



FRICTION LATCH



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

RoHS	Non-RoHS	
854	869	Unlatched (3mm tail)
853	867	Locking Latch (3mm tail)
863	815	Friction Latch (3mm tail)
754	754	Unlatched (4.5mm tail)
753	753	Locking Latch (4.5mm tail)
763	763	Friction Latch (4.5mm tail)

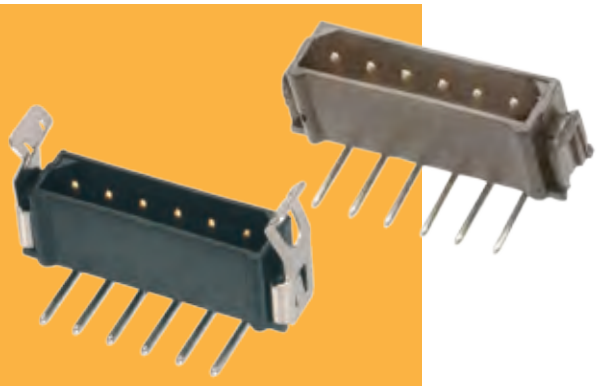
FINISH	
05	Gold
22	Gold + Tin/Lead
42	Gold + Tin
45	Gold

TOTAL NO. OF CONTACTS
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44

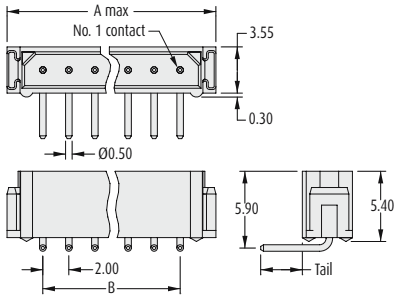
All dimensions in mm.

Male Single Row Horizontal PC Tail

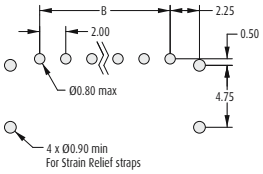
- Mates with female connectors on pages 21 to 24.
- For British Standard versions see pages 18 to 19.
- Supplied with Strain Relief straps:
  Order code M80-0030006.



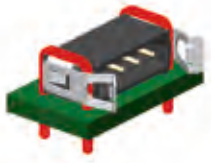
UNLATCHED



CALCULATION	
A	B + 5.60
B	(Total no. of contacts - 1) x 2

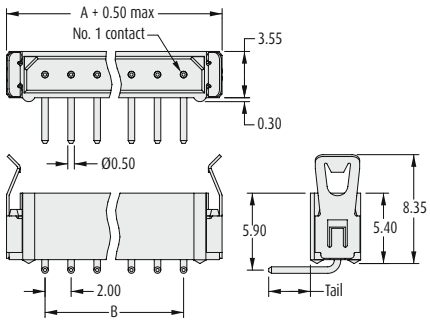


Recommended PC Board Pattern

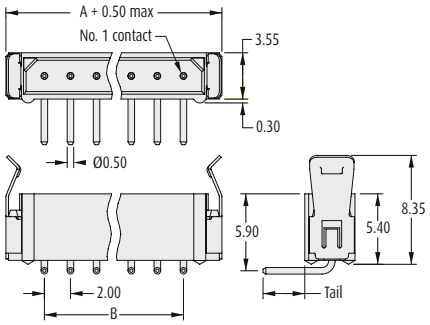


View of Strain Relief strap in place

LOCKING LATCH



FRICTION LATCH



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

RoHS	Non-RoHS	
843	878	Unlatched (3mm tail)
842	876	Locking Latch (3mm tail)
846	804	Friction Latch (3mm tail)
793	793	Unlatched (4.5mm tail)
792	792	Locking Latch (4.5mm tail)
796	796	Friction Latch (4.5mm tail)

FINISH		
05	Gold	Pb
22	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb
45	Gold	Pb

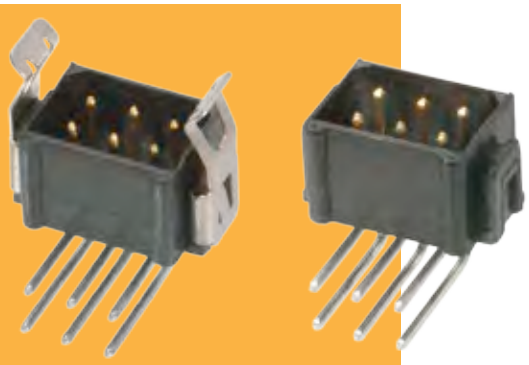
TOTAL NO. OF CONTACTS
02 to 07, 17, 22

All dimensions in mm.

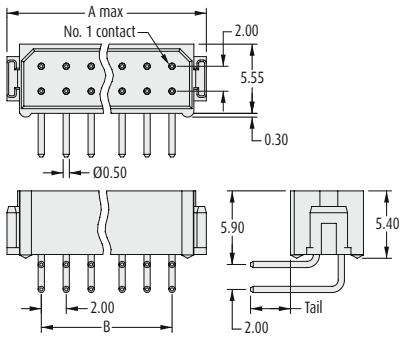
Datamate Connectors

Male Double Row Horizontal PC Tail

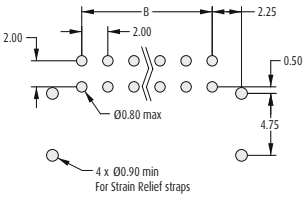
- Mates with female connectors on pages 21 to 24.
- For British Standard versions see pages 18 to 19.
- Supplied with Strain Relief straps:
  Order code M80-0030006.



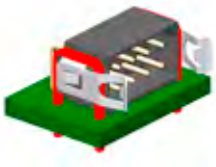
UNLATCHED



CALCULATION	
A	B + 5.60
B	Total no. of contacts - 2

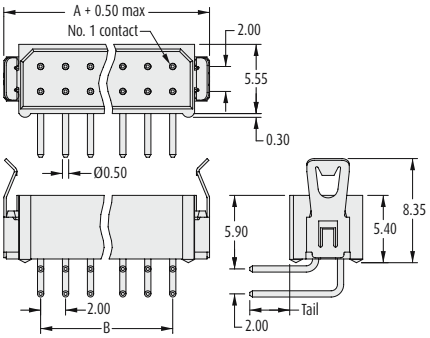


Recommended PC Board Pattern

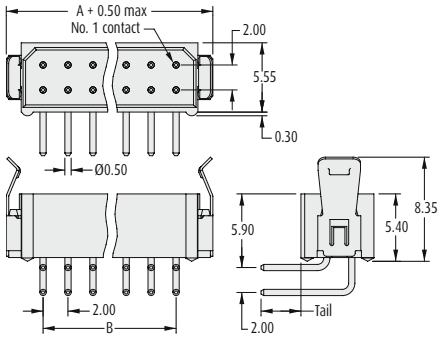


View of Strain Relief strap in place

LOCKING LATCH



FRICTION LATCH



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

RoHS	Non-RoHS	
841	868	Unlatched (3mm tail)
851	866	Locking Latch (3mm tail)
839	814	Friction Latch (3mm tail)
791	791	Unlatched (4.5mm tail)
771	771	Locking Latch (4.5mm tail)
789	789	Friction Latch (4.5mm tail)

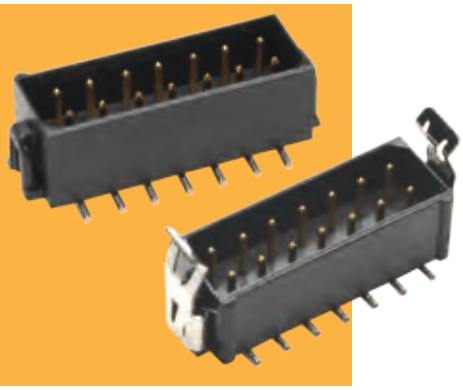
FINISH		
05	Gold	Pb
22	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb
45	Gold	Pb

TOTAL NO. OF CONTACTS
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44

All dimensions in mm.

Male Vertical Surface Mount

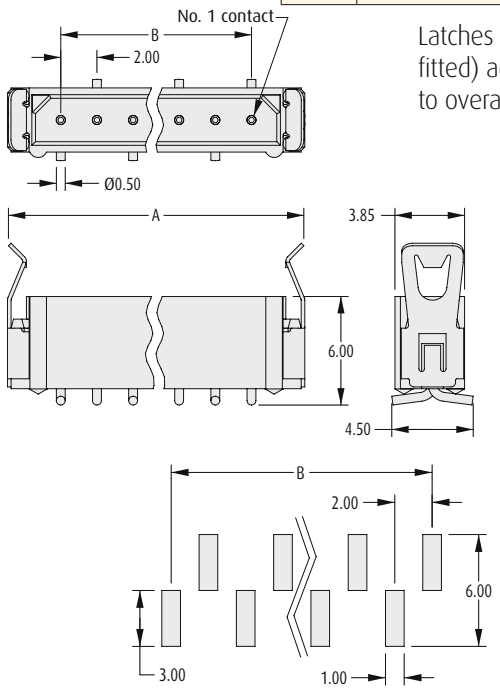
- Contact **datamate@harwin.com** for tape & reel options.
- Optional pick and place cap.
- Mates with female connectors on pages 21 to 24.
- Gull wing SMT tails simplify inspection process.



SINGLE ROW

CALCULATION	
A	B + 5.60
B	(Total no. of contacts - 1) x 2

Latches (when fitted) add 0.5mm to overall length 'A'

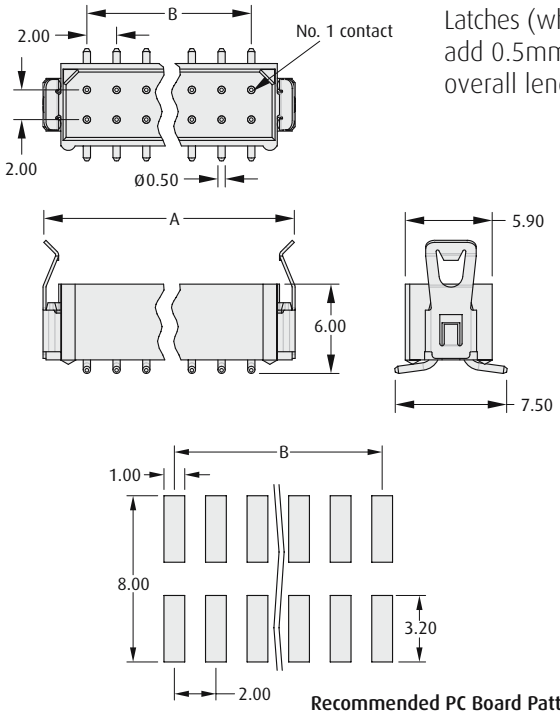


Recommended PC Board Pattern

DOUBLE ROW

CALCULATION	
A	B + 5.60
B	Total no. of contacts - 2

Latches (when fitted) add 0.5mm to overall length 'A'



Recommended PC Board Pattern

HOW TO ORDER

M80 - X 2 X XX XX P

SERIES CODE

ROWS

9	Single Row
8	Double Row

TYPE

6	Unlatched
7	Friction Latch
8	Locking Latch

TOTAL NO. OF CONTACTS

02 to 07, 17, 22	Single Row
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44	Double Row

FINISH

22	Gold + Tin/Lead
42	Gold + Tin
45	Gold

PICK AND PLACE CAP

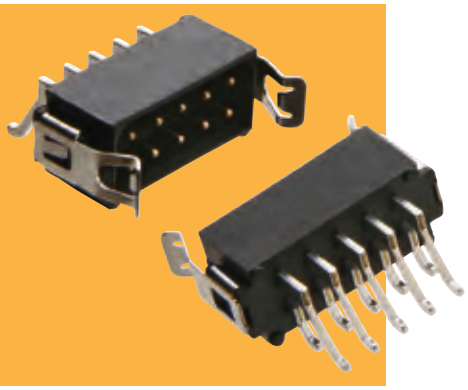
BLANK	No cap
P	Pick and place cap

All dimensions in mm.

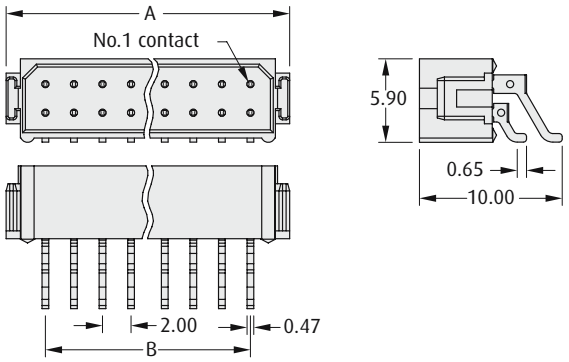
Datamate Connectors

Male Horizontal Surface Mount

- Contact **datamate@harwin.com** for tape & reel options.
- Strain Relief straps M80-0030006 supplied with these connectors.
- Mates with female connectors shown on pages 21 to 24.
- Stamped contact ensures co-planarity.

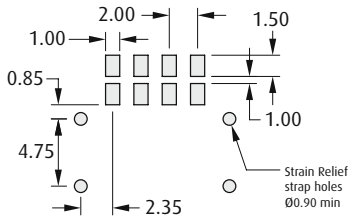


UNLATCHED



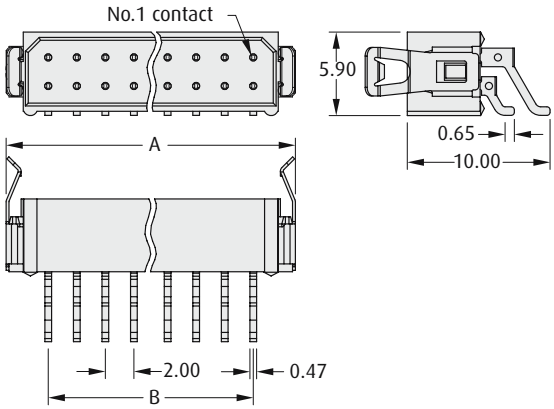
CALCULATION	
A	B + 5.60
B	Total no. of contacts - 2

Latches (when fitted) add 0.5mm to overall length 'A'

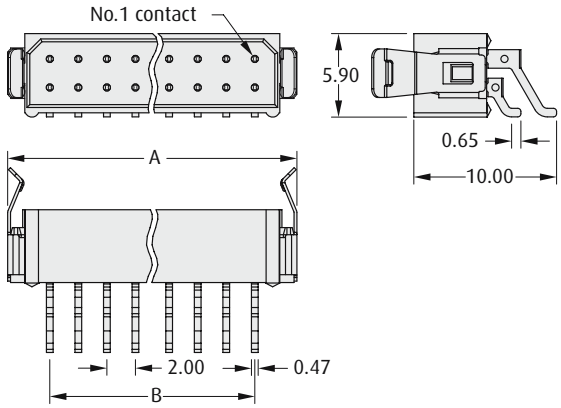


Recommended PC Board Pattern

LOCKING LATCH



FRICTION LATCH



HOW TO ORDER

M80 - 66 X XX XX

SERIES CODE

TYPE	
5	Unlatched
6	Locking Latch
7	Friction Latch

TOTAL NO. OF CONTACTS
04, 06, 08, 10, 12, 14, 16, 18, 20, 26, 34, 44

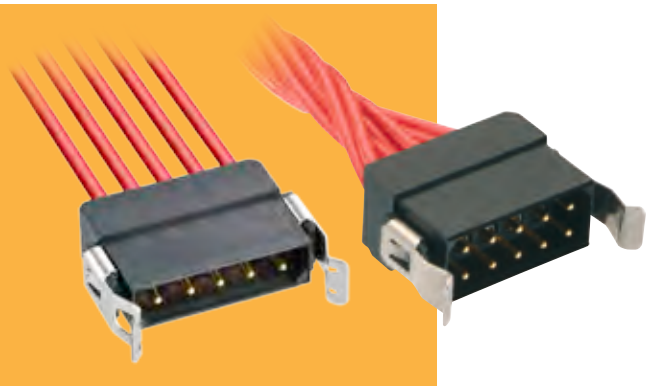
FINISH	
22	Gold + Tin/Lead (Pb)
42	Gold + Tin (Pb)

Strain Relief straps are supplied with all horizontal connectors. There is no need to order separately. Straps locate at the end of each connector (see page 30).

All dimensions in mm.

Male Crimp

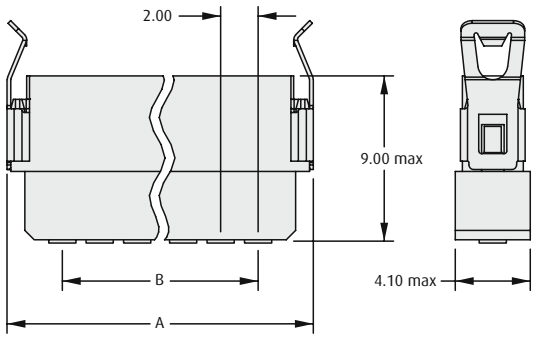
- Mates with female connectors shown on pages 21 to 24.
- Contacts are rear insertable.
- Part numbers are for housings and the equivalent number of contacts.
- Back potting & cable assembly service available, contact **datamate@harwin.com**.
- Spare contacts available, see page 34.



SINGLE ROW

Latches (when fitted) add 0.5mm to overall length 'A'

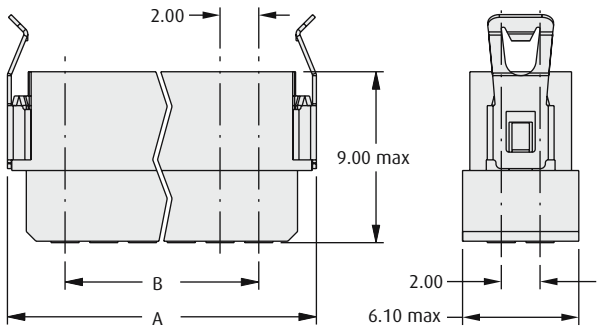
CALCULATION	
A	B + 5.60
B	(Total no. of contacts - 1) x 2



DOUBLE ROW

Latches (when fitted) add 0.5mm to overall length 'A'

CALCULATION	
A	B + 5.60
B	Total no. of contacts - 2

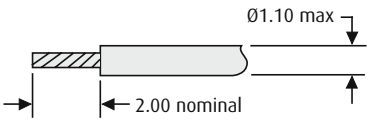


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

TYPE		
Single	Double	
806	**810**	Small Bore, Unlatched
807	**811**	Large Bore, Unlatched
808	**812**	Small Bore, Locking Latch
809	**813**	Large Bore, Locking Latch
883	**816**	Small Bore, Friction Latch
884	**817**	Large Bore, Friction Latch

FINISH	
05	Gold (Pb)

TOTAL NO. OF CONTACTS	
02, 03, 04, 05, 06, 07	Single Row
04, 06, 08, 10, 12	Double Row

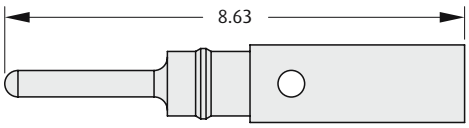
All dimensions in mm.

Male Crimp Contacts

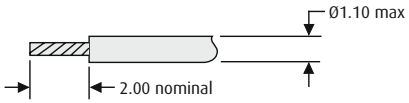
- Crimp contacts are supplied with the connectors (page 30) – use the order codes below for extra crimp contacts.
- For crimp and insertion tools, see pages 87 to 89.

SPARE CRIMP CONTACT

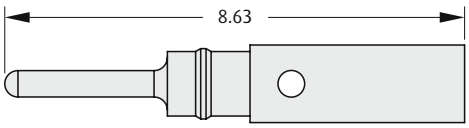
Large Bore (22 AWG):



Wire Stripping Details



Small Bore (24 – 28 AWG):



HOW TO ORDER

M80 - 04 X 00 05

SERIES CODE

TYPE	
0	Large Bore
1	Small Bore

FINISH	
05	Gold

All dimensions in mm.

Datamate Specification

Materials

Mouldings:	Glass-filled thermoplastic UL94V-0
Female contacts:	Brass shell, with Beryllium Copper inner contact
Male contacts:	Copper alloy
Finish:	See individual pages

Electrical

Current (individual contacts in isolation):	3.3A max (at 25°C) 2.6A max (at 85°C)
All contacts simultaneously:	3.0A max (at 25°C) 2.2A max (at 85°C)
Working Voltage (at sea level 1013 mbar):	800V DC or ACrms
Voltage Proof (at sea level 1013 mbar):	1,200V DC or ACrms
Contact resistance (initial):	20 mΩ max
Contact resistance (after conditioning):	25 mΩ max
Insulation resistance (initial):	1,000 MΩ min
Insulation resistance (after conditioning):	100 MΩ min

Mechanical

Durability:	500 operations 400 operations (Trio-Tek)
Insertion force (max):	2.8N
Withdrawal force (min):	0.2N
Signal crimp accommodation:	22 AWG to 32 AWG BS 3G 210 Type A, MIL-W-16878

Environmental

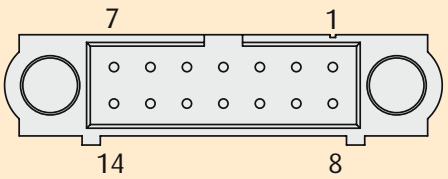
Environmental classification:	55/125/56 days at 95% RH
Operational temperature:	-55ºC to +125ºC
*Vibration sensitivity:	10Hz to 2000Hz, 0.75mm, 98m/s² (10G), duration 6h
*Bump severity:	390m/s² (40G), 4000 ±10 bumps
*Shock severity:	981m/s² (100G) for 6ms
*Acceleration severity:	490m/s² (50G)

* Tested with connectors with Jackscrews.

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

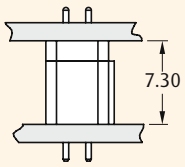
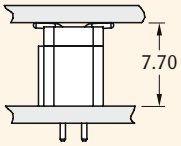
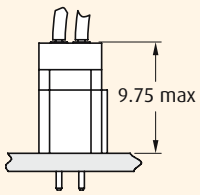
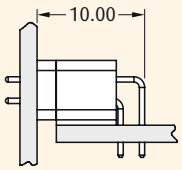
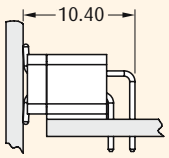
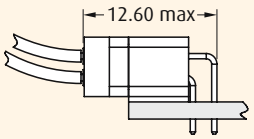
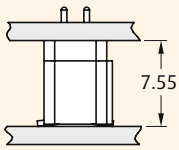
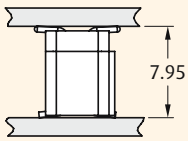
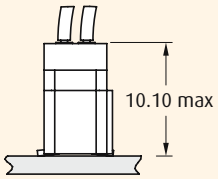
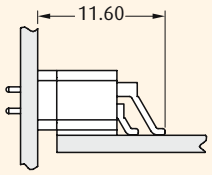
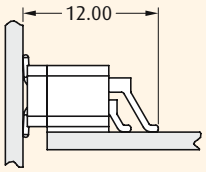
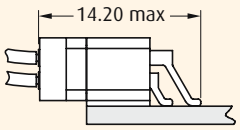
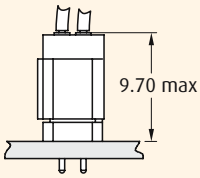
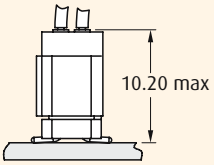
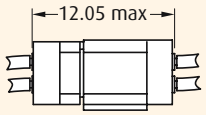
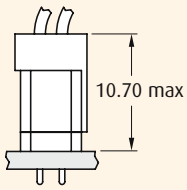
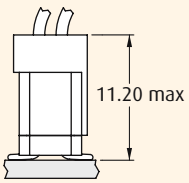
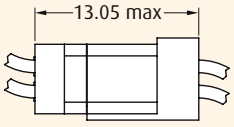
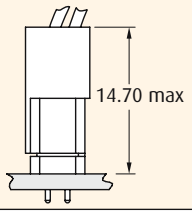
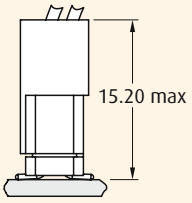
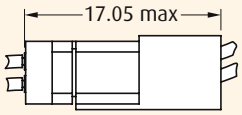
Pin Numbering

Double Row



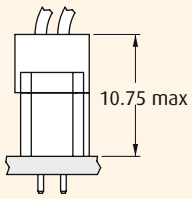
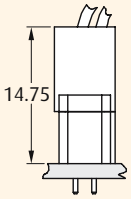
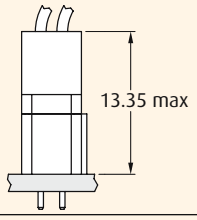
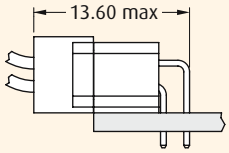
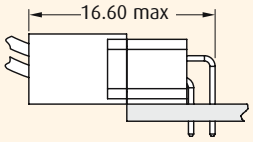
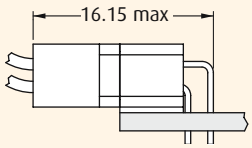
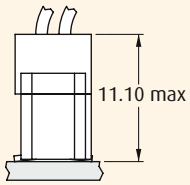
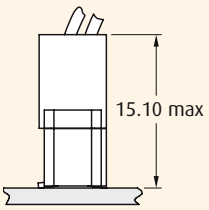
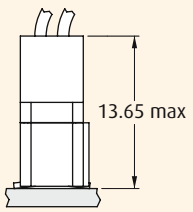
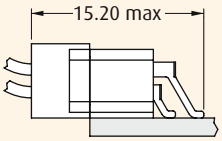
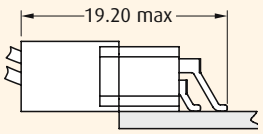
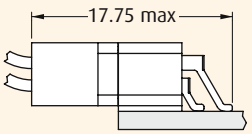
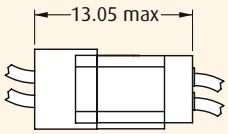
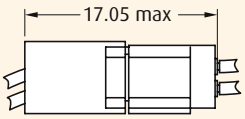
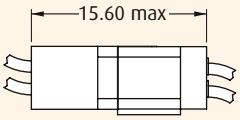
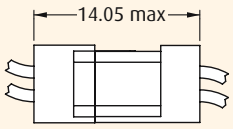
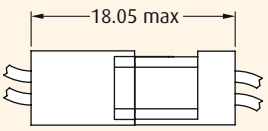
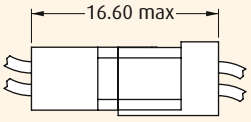
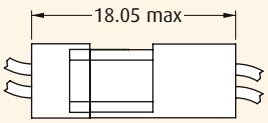
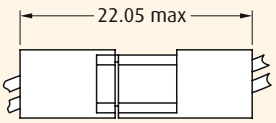
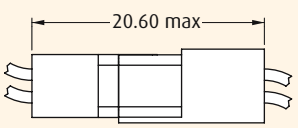
Contact numbering is shown looking onto mating face of male connector.

Mating Profiles

FEMALE / MALE	VERTICAL PC TAIL	VERTICAL SMT	CRIMP
VERTICAL PC TAIL			
HORIZONTAL PC TAIL			
VERTICAL SMT			
HORIZONTAL SMT			
CRIMP			
CRIMP 1mm EXTENDED WALL			
CRIMP 5mm EXTENDED WALL			

All dimensions in mm.

Mating Profiles

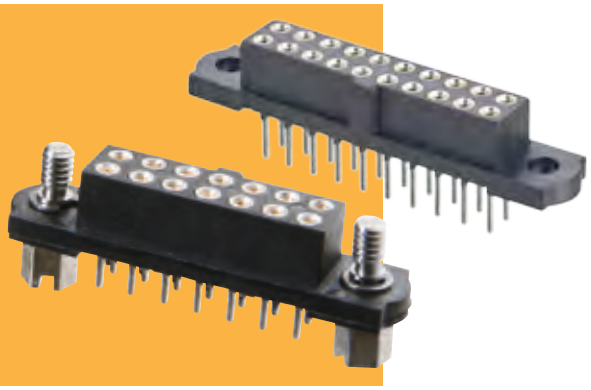
FEMALE / MALE	CRIMP 1mm EXTENDED WALL	CRIMP 5mm EXTENDED WALL	CRIMP TRIO-TEK
VERTICAL PC TAIL			
HORIZONTAL PC TAIL			
VERTICAL SMT			
HORIZONTAL SMT			
CRIMP			
CRIMP 1mm EXTENDED WALL			
CRIMP 5mm EXTENDED WALL			

All dimensions in mm.

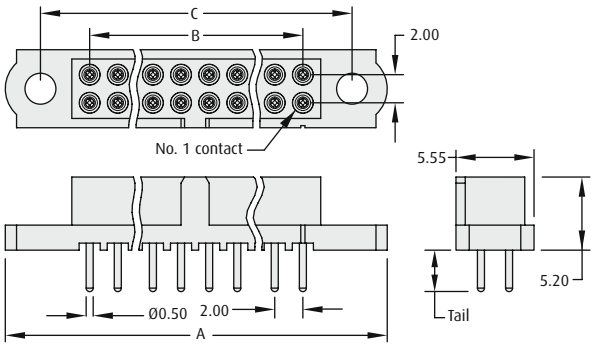
Datamate Connectors

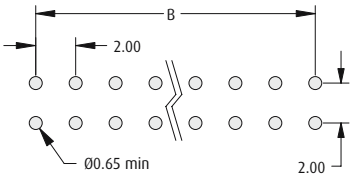
Female Vertical PC Tail

- Fully shrouded contacts.
- Polarised mouldings.
- Mates with male connectors shown on pages 52, 54, 56, 58, 60, 63 and 64.



WITHOUT JACKSCREWS

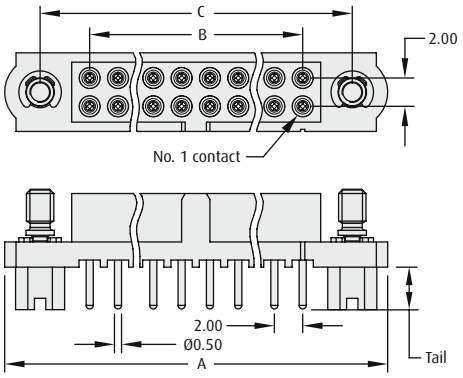


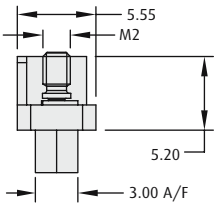


Recommended PC Board Pattern

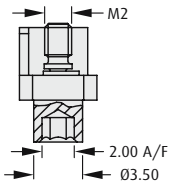
CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

WITH JACKSCREWS

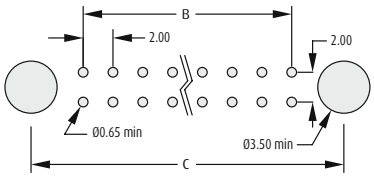




M80-40X



M80-42X



Recommended PC Board Pattern

HOW TO ORDER

M80 - 4 X X XX XX

SERIES CODE	
0	With Hex Slotted Jackscrews
1	Without Jackscrews
2	With Hex Socket Jackscrews

0	3mm Tails
1	4.5mm Tails

FINISH		
01	Gold + Tin/Lead	Pb
05	Gold	Pb
42	Gold + Tin	Pb

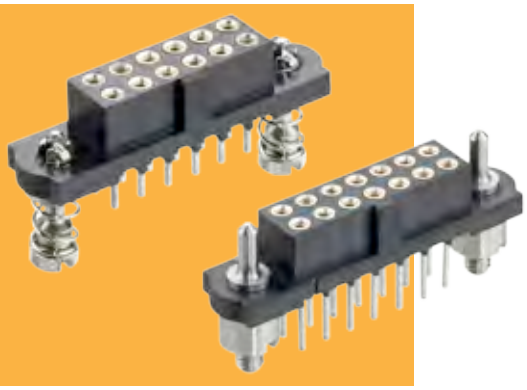
TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

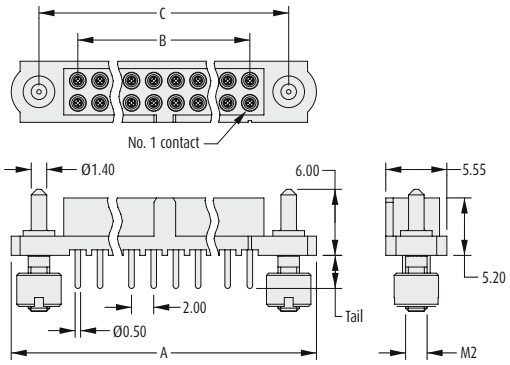
All dimensions in mm.

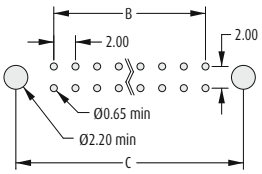
Female Vertical PC Tail Guide Pin, 101Lok

- 101Lok fixing gives secure, fast and simple mating; no special tooling required. Just a simple 101-degree turn is required to fix the connectors together.
- 101Lok style mates with male connectors shown on pages 53, 55, 57, 59 and 61.
- Guide pin style includes board mount fixing, and mates with male connectors with Jackscrews, shown on pages 52, 54, 56, 58, 60, 63 and 64.



GUIDE PIN JACKSCREWS

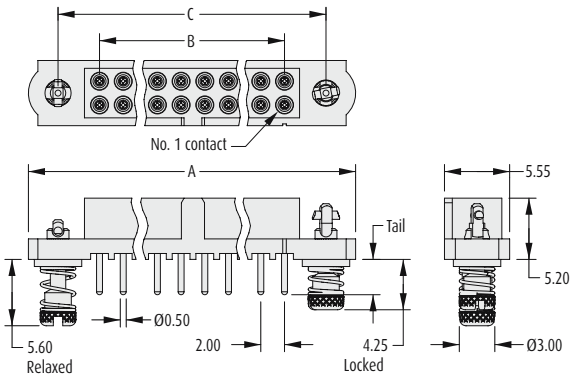




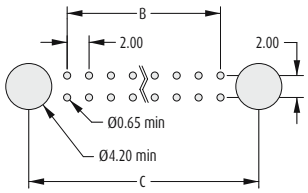
Recommended PC Board Pattern

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

101LOK



101 Lok



Recommended PC Board Pattern

HOW TO ORDER

M80 - 4 TX XX XX FX

SERIES CODE

TYPE	
T1	3mm Tails
T2	4.5mm Tails

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
F3	Guide Pin
FC	101Lok

FINISH	
01	Gold + Tin/Lead (Pb)
05	Gold (Pb)
42	Gold + Tin (Pb)

All dimensions in mm.

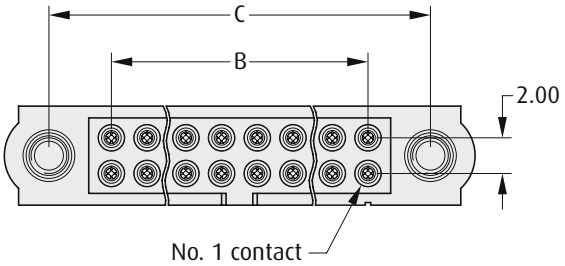
Datamate Connectors

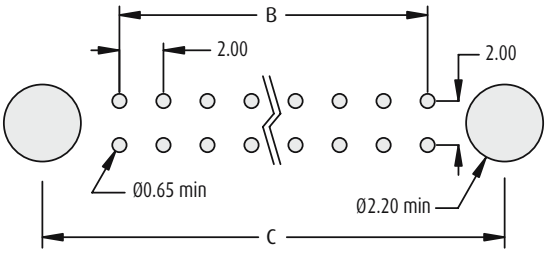
Female Vertical PC Tail Reverse Fix

- Fully shrouded contacts.
- Polarised mouldings.
- Includes board mount fixing, and mates with male connectors shown on page 62.

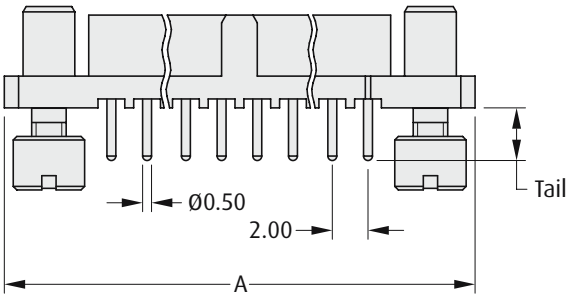
REVERSE FIX

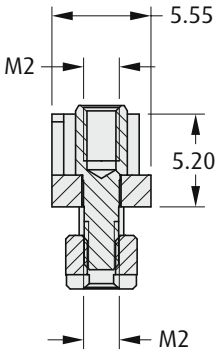
CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7





Recommended PC Board Pattern





HOW TO ORDER

M80 - 40 X XX XX

SERIES CODE

TYPE

5	3mm Tails
6	4.5mm Tails

FINISH

01	Gold + Tin/Lead	Pb
05	Gold	Pb
42	Gold + Tin	Pb

TOTAL NO. OF CONTACTS

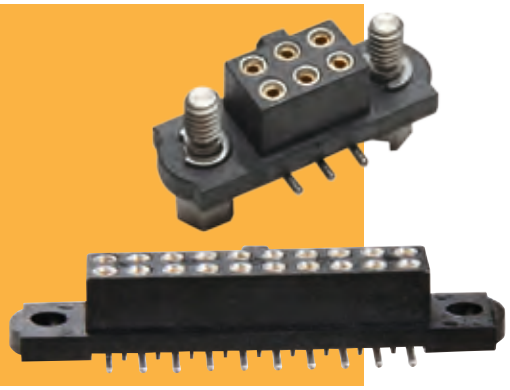
04 to 50

Even numbers only

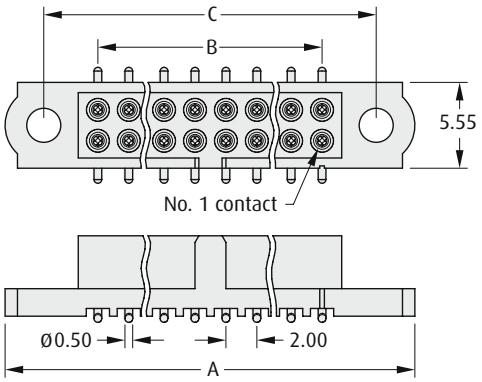
All dimensions in mm.

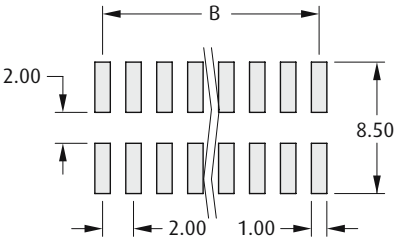
Female Vertical Surface Mount

- Optional pick and place cap.
- Contact **datamate@harwin.com** for tape and reel options.
- Gull wing SMT tails simplify inspection process.
- Mates with male connectors shown on pages 52, 54, 56, 58, 60, 63 and 64.



WITHOUT JACKSCREWS

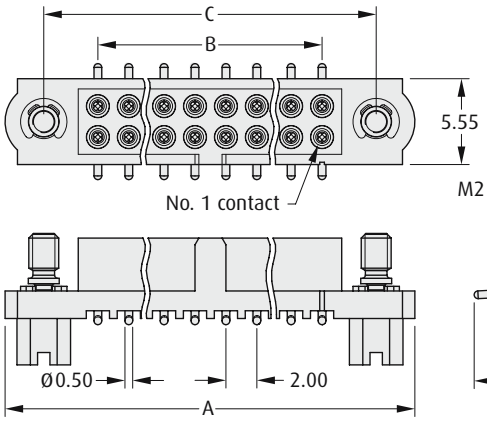


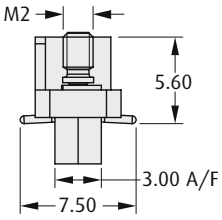


Recommended PC Board Pattern

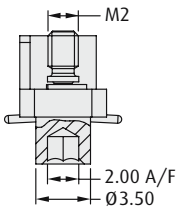
CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

WITH JACKSCREWS

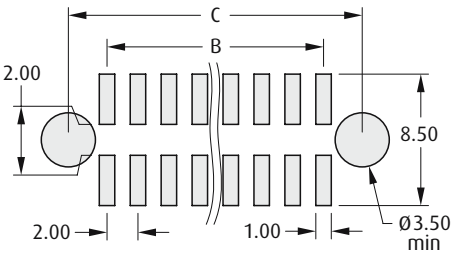




M80-402



M80-422



Recommended PC Board Pattern

HOW TO ORDER

M80 - 4 X 2 XX XX P

SERIES CODE

TYPE	
0	With Hex Slotted Jackscrews
1	Without Jackscrews
2	With Hex Socket Jackscrews

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

FINISH		
01	Gold + Tin/Lead	Pb
05	Gold	Pb
42	Gold + Tin	Pb

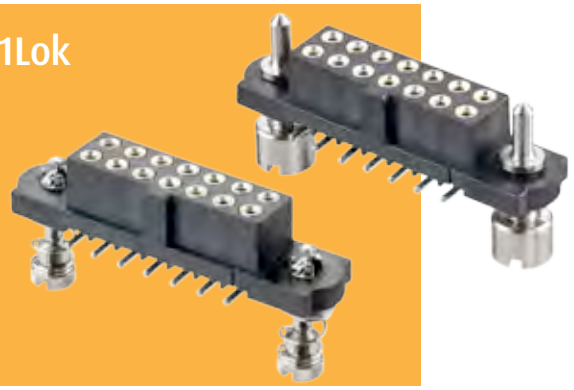
PICK AND PLACE CAP	
BLANK	No cap
P	Pick and place cap

All dimensions in mm.

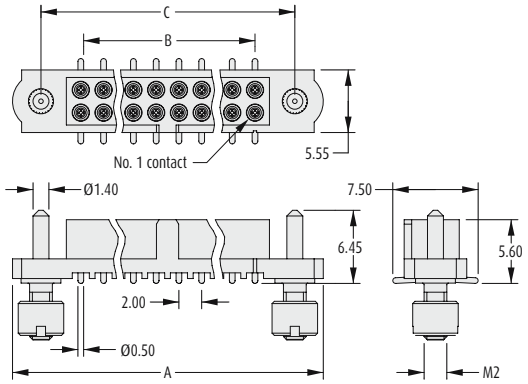
Datamate Connectors

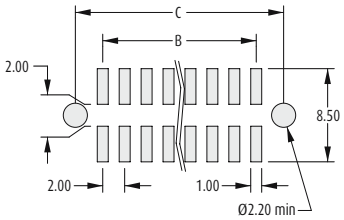
Female Vertical Surface Mount Guide Pin, 101Lok

- 101Lok fixing gives secure, fast and simple mating; no special tooling required. Just a simple 101-degree turn is required to fix the connectors together.
- 101Lok style mates with male connectors shown on pages 53, 55, 57, 59 and 61.
- Guide pin style includes Board Mount fixing, and mates with male connectors with Jackscrews, shown on pages 52, 54, 56, 58, 60, 63 and 64.



GUIDE PIN JACKSCREWS

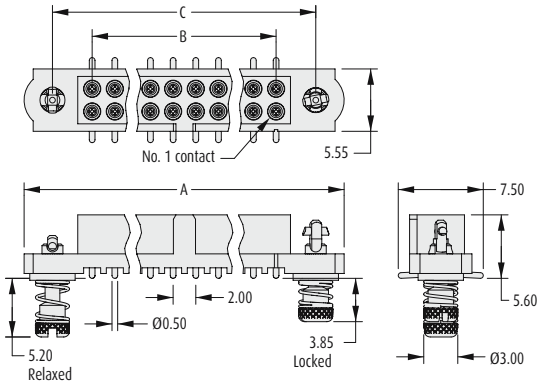




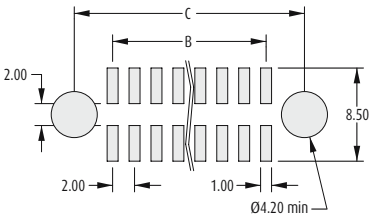
Recommended PC Board Pattern

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

101LOK



101 Lok



Recommended PC Board Pattern

HOW TO ORDER

M80 - 4S1 XX XX FX

TYPE	
F3	Guide Pin
FC	101Lok

SERIES CODE

TOTAL NO. OF CONTACTS

04 to 50

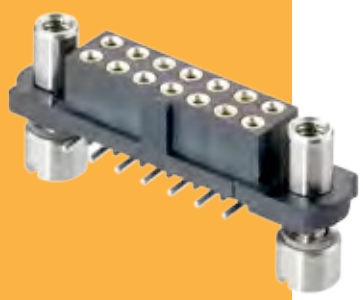
Even numbers only

FINISH		
01	Gold + Tin/Lead	Pb
05	Gold	Pb
42	Gold + Tin	Pb

All dimensions in mm.

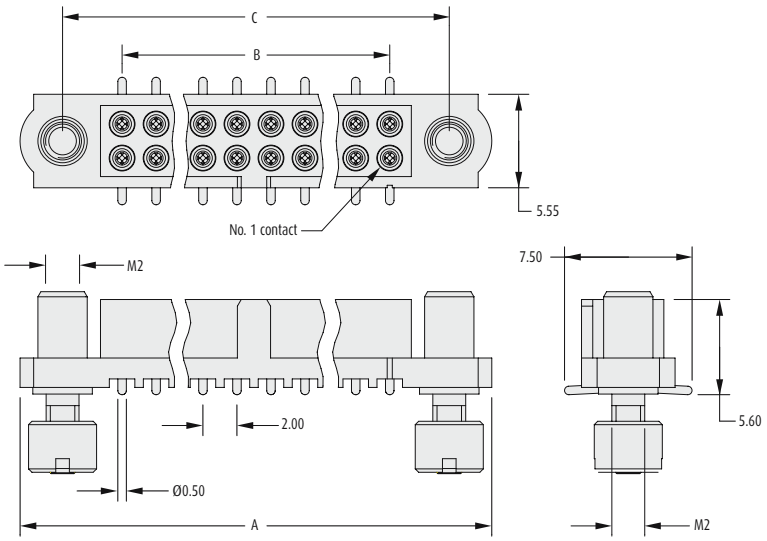
Female Vertical Surface Mount Reverse Fix

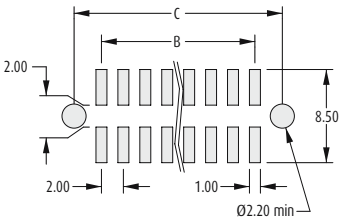
- Fully shrouded contacts.
- Polarised mouldings.
- Includes Board Mount fixing, and mates with male connectors shown on page 62.



REVERSE FIX

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7





Recommended PC Board Pattern

HOW TO ORDER

M80 - 4S1 XX XX FX

SERIES CODE

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

TYPE	
F8	3.5mm Board Mount Jackscrew
F9	5mm Board Mount Jackscrew

FINISH		
01	Gold + Tin/Lead	Pb
05	Gold	Pb
42	Gold + Tin	Pb

All dimensions in mm.

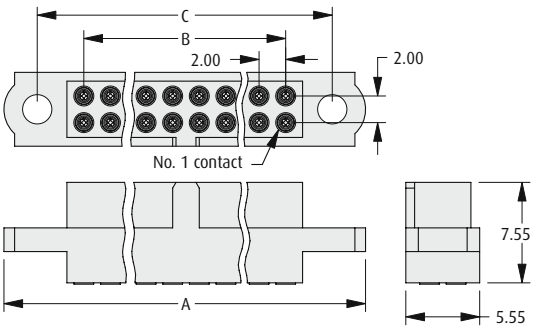
Datamate Connectors

Datamate J-Tek

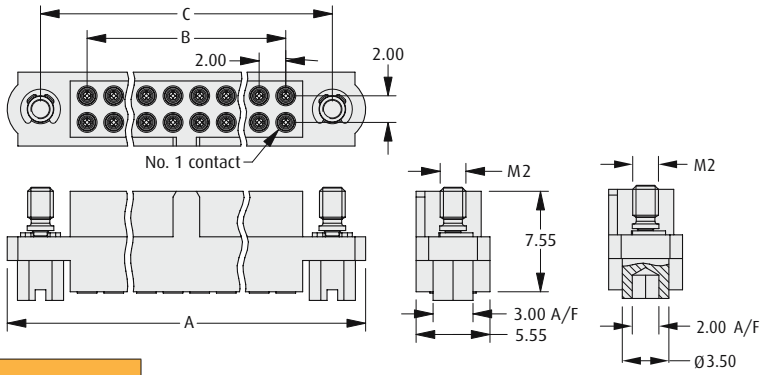
Female Crimp

- Large bore 22 AWG, small bore 24 – 28 AWG.
- Jackscrews are assembled where specified.
- Crimp contacts are rear insertable.
- Mates with male connectors shown on pages 52, 54, 56, 58, 60, 63 and 64.
- Part numbers are for housings and the equivalent number of contacts.
- Spare contacts available, see page 51.
- Version also available for 28 – 32 AWG cable – see page 46.

WITHOUT JACKSCREWS



WITH JACKSCREWS



M80-460
M80-461

M80-480
M80-481

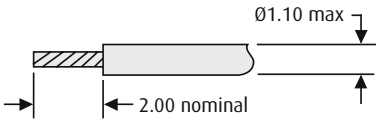
CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

TYPE			
460	Large Bore, with Jackscrews*	**471**	Small Bore, without Jackscrews
461	Small Bore, with Jackscrews*	**480**	Large Bore, with Hex Jackscrews
470	Large Bore, without Jackscrews	**481**	Small Bore, with Hex Jackscrews

*Slotted

FINISH		
05	Gold	Pb
42	Gold + Tin	Pb

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

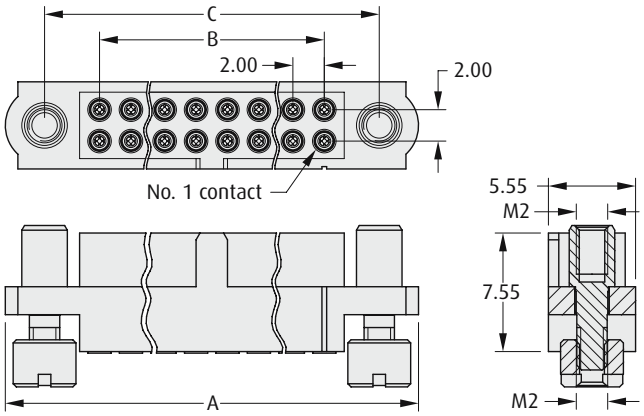
All dimensions in mm.

Female Crimp Reverse Fix

- Mates with male connectors shown on page 62.
- Allows for further flexibility in system design.
- Crimp contacts supplied loose and are inserted from rear.
- Large bore 22 AWG, small bore 24 – 28 AWG.
- Part numbers are for housings and the equivalent number of contacts.
- Spare contacts are available – see page 51.
- Version also available for 28 – 32 AWG cable – see page 47.

WITH JACKSCREWS

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

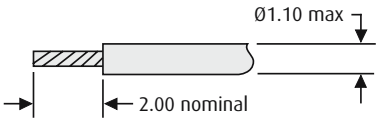


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

TYPE	
462	Large Bore Connector
463	Small Bore Connector

FINISH		
05	Gold	Pb
42	Gold + Tin	Pb

TOTAL NO. OF CONTACTS
04 to 50

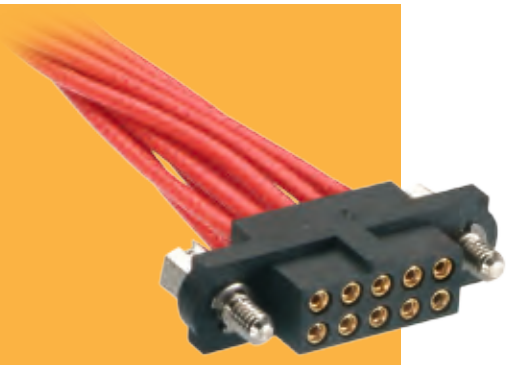
Even numbers only

All dimensions in mm.

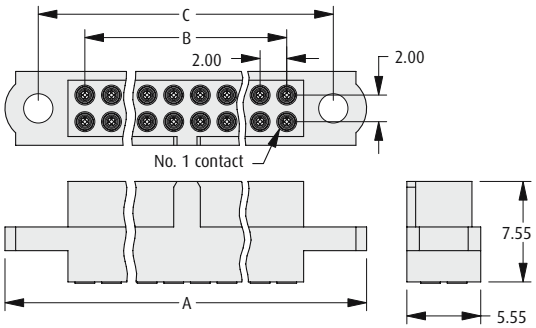
Datamate Connectors

Female Crimp Extra Small Bore

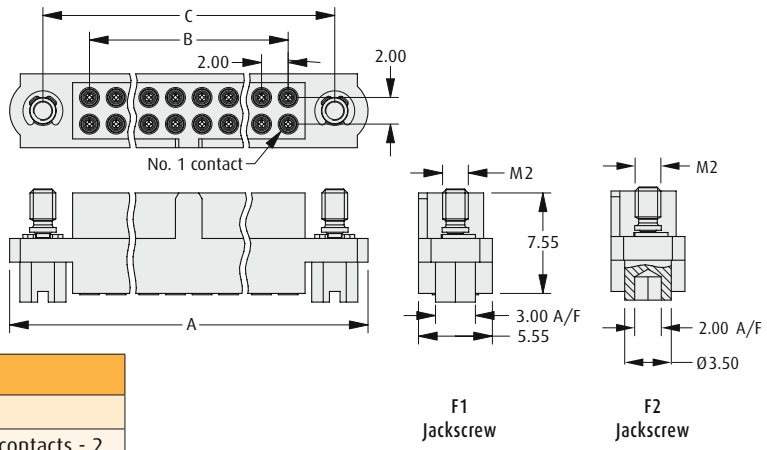
- Extra small bore for 28 – 32 AWG.
- Crimp contacts are rear insertable.
- Mates with male connectors shown on pages 52, 54, 56, 58, 60, 63 and 64.
- Part numbers are for a housing and the equivalent number of contacts.
- Spare contacts available, see page 51.
- Versions also available for 22 – 28 AWG cable – see page 44.



WITHOUT JACKSCREWS



WITH JACKSCREWS



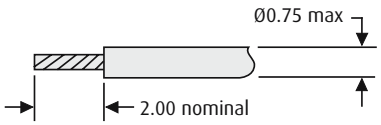
CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 4 E1 XX XX FX

SERIES CODE

TYPE	
E1	Extra Small Bore 28-32AWG

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
00	Without Jackscrews
F1	With Hexagonal Slotted Jackscrews
F2	With Hex Socket Jackscrews

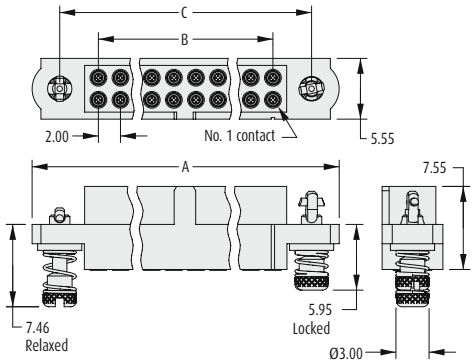
FINISH		
05	Gold	Pb
42	Gold + Tin	Pb

All dimensions in mm.

Female Crimp 101Lok, Guide Pin, Reverse Fix

- Extra Small Bore for 28 – 32 AWG.
- 101Lok fixing gives secure, fast and simple mating; no special tooling required. Just a simple 101-degree turn to fix the connectors together.
- 101Lok style mates with male connectors shown on pages 53, 55, 57, 59 and 61.
- Reverse fix includes board mount fixing, and mates with male connectors shown on page 62.
- Guide pin style includes Board Mount fixing, and mates with male connectors with Jackscrews, shown on pages 52, 54, 56, 58, 60, 63 and 64.

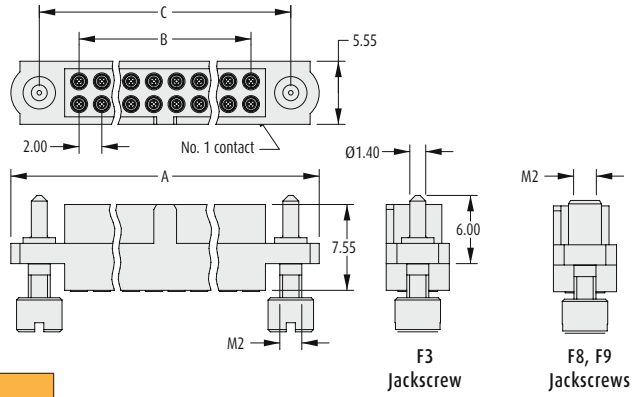
101LOK



101 Lok

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

GUIDE PIN, REVERSE FIX

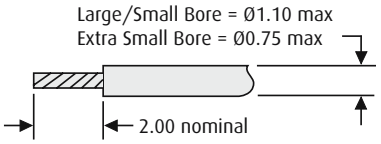


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 4 X1 XX XX FX

SERIES CODE

TYPE	
C1	Small Bore 24-28AWG
D1	Large Bore 22AWG
E1	Extra Small Bore 28-32AWG

TOTAL NO. OF CONTACTS

04 to 50

Even numbers only

JACKSCREW	
F3	Guide Pin
F8	Reverse Fix (3.5mm Board Mount)
F9	Reverse Fix (5mm Board Mount)
FC	101Lok

FINISH		
05	Gold	Pb
42	Gold + Tin	Pb

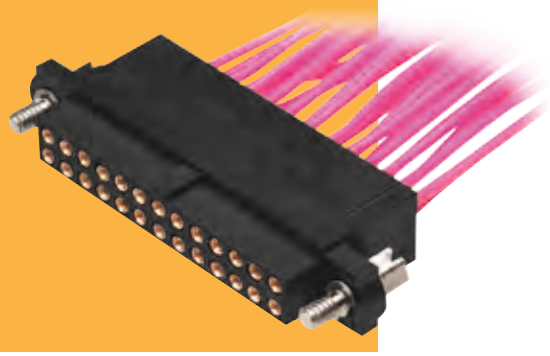
All dimensions in mm.

Datamate Connectors

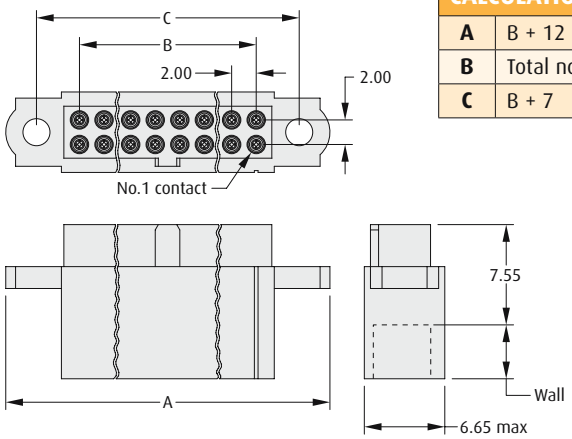
Datamate J-Tek

Female Crimp Extended Wall

- Extended Wall Datamate allows back potting to be performed.
- Polarised mouldings.
- Crimp contacts are rear insertable.
- Large bore 22AWG, small bore 24 – 28 AWG.
- Part numbers are for a housing and the equivalent number of contacts.
- Mates with male connectors shown on pages 52, 54, 56, 58, 60, 63 and 64.
- Spare contacts are available – see page 51.

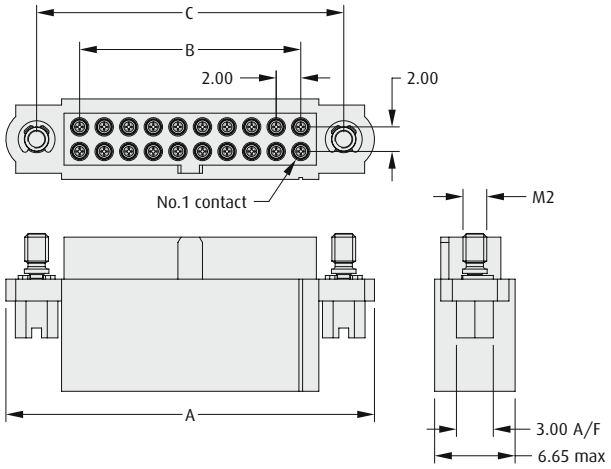


WITHOUT JACKSCREWS



CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

WITH JACKSCREWS

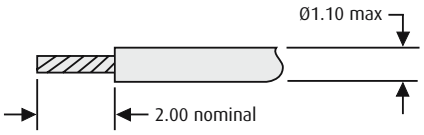


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX XX

SERIES CODE

TYPE			
465	Large Bore, with Jackscrews*	**476**	Small Bore, without Jackscrews
466	Small Bore, with Jackscrews*	**485**	Large Bore, with Hex Jackscrews
475	Large Bore, without Jackscrews	**486**	Small Bore, with Hex Jackscrews

*Slotted

WALL SIZE	
BLANK	Wall = 5mm
A	Wall = 1mm

FINISH	
05	Gold (P6)
42	Gold + Tin (P6)

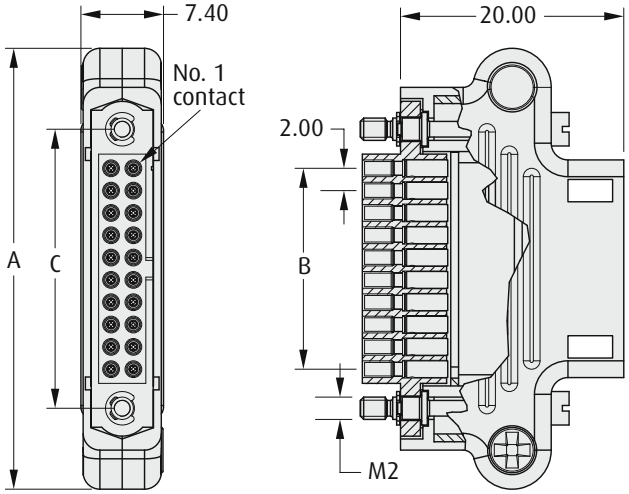
TOTAL NO. OF CONTACTS
06, 10, 12, 14, 18, 20, 26, 34, 42, 50

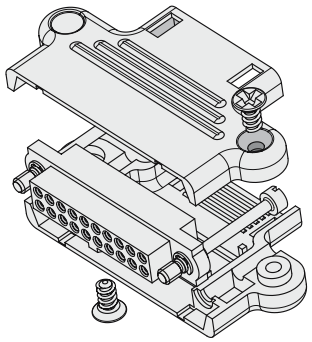
All dimensions in mm.

Female Crimp with Hood

- Supplied as a complete kit, including hood, screws, connector, contacts and Jackscrews.
- For spare crimp contacts, see page 51.
- Provides strain relief by preventing cable bending at the rear of the connector, and also has the option of inserting a cable tie to reduce pull strain.
- Mates with male connectors shown on pages 52, 54, 56, 58, 60, 63 and 64.

FEMALE





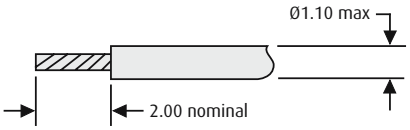
CALCULATION	
A	B + 21.5
B	Total no. of contacts - 2
C	B + 7

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- Instruction sheets available at www.harwin.com/downloads/instructions

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 94 X XX XX

SERIES CODE

TYPE

0	Small Bore 24-28AWG
1	Large Bore 22AWG

FINISH

05	Gold
42	Gold + Tin

TOTAL NO. OF CONTACTS

06, 08, 10, 12, 14, 20, 26, 34, 42, 50

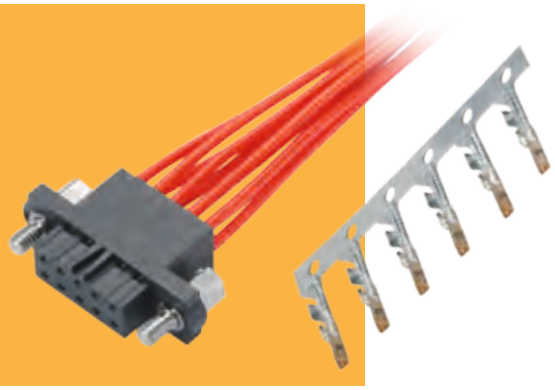
All dimensions in mm.

Datamate Connectors

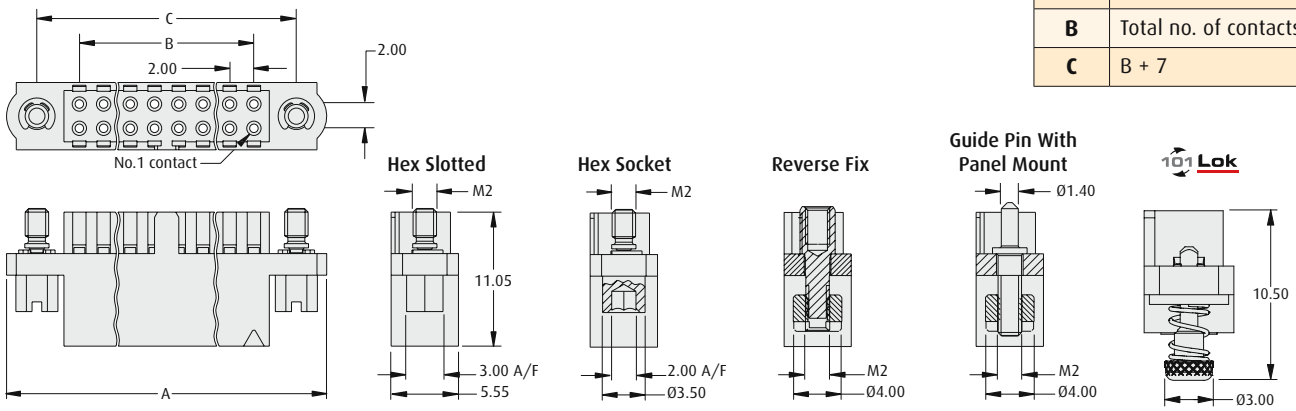
Datamate Trio-Tek

Female Crimp Trio-Tek

- Crimp inspection window in housing.
- Mates with male connectors shown on pages 52 to 64.
- Contacts available separately, see page 51.
- Triangular contact design for automated assembly equipment.
- Ideal for volume applications.

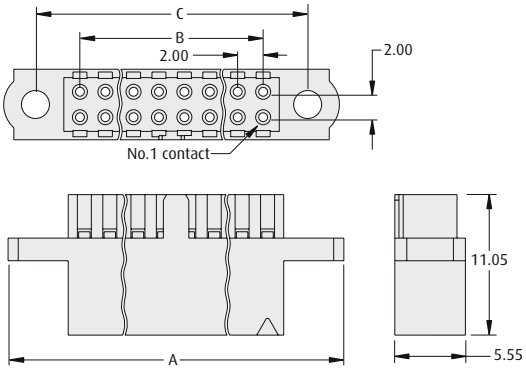


WITH JACKSCREWS



CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

WITHOUT JACKSCREWS

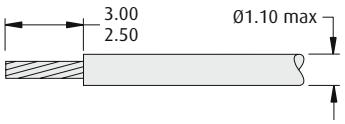


TOOLS

Recommended Hand Crimp Tool – Z80-255
Contact Removal Tool – Z80-258
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 45X XX 98

SERIES CODE

TYPE			
454	Without Jackscrews	457	Reverse Fix Jackscrews
455	Hex Slotted Jackscrews	458	Guide pin with panel mount
456	Hex Socket Jackscrews	459	101Lok Jackscrews

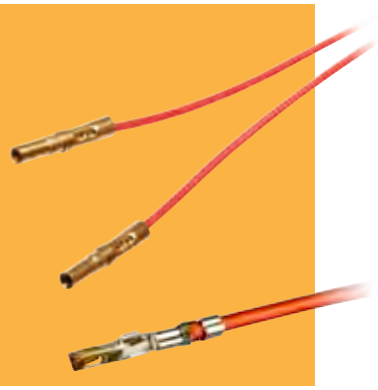
FINISH	
98	Housings (Pb)

TOTAL NO. OF CONTACTS
06, 08, 10, 12, 14, 20, 26, 34, 42, 50

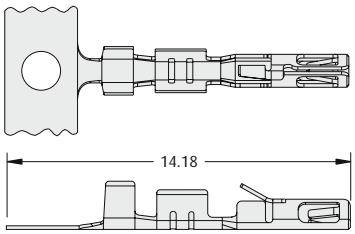
All dimensions in mm.

Female Crimp Contacts

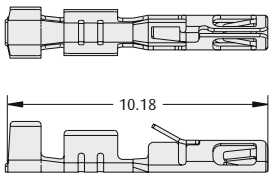
- Trio-Tek contacts must be ordered separately, see page 50 for applicable housings.
- Barrel Crimp contacts are supplied with the connectors (pages 44 to 49) – use the order codes below for extra crimps.
- For crimp and insertion tools, see pages 87 to 89.



TRIO-TEK



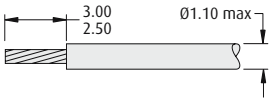
Reeled



Loose

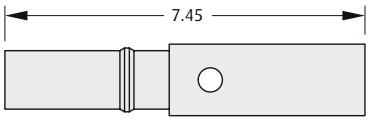
Datamate Trio-Tek

Wire Stripping Details

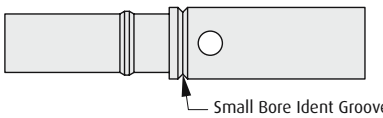


BARREL CRIMP

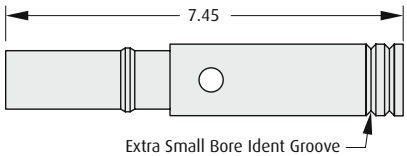
Large Bore (22 AWG):



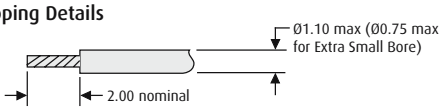
Small Bore (24 – 28 AWG):



Extra Small Bore (28 – 32 AWG):



Wire Stripping Details



HOW TO ORDER

M80 - XXX 00 XX

SERIES CODE

FINISH	
01	Gold + Tin (M80-01x)
05	Gold (M80-01x)
42	Gold + Tin (M80-2xx)
45	Gold (M80-2xx)

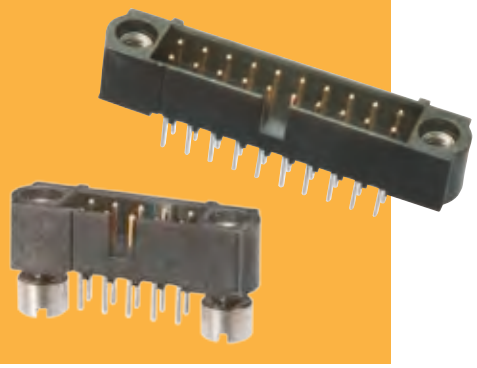
TYPE			
011	Barrel Crimp, Large Bore (22 AWG)	253	Trio-Tek Crimp 22-24 AWG, Reeled
013	Barrel Crimp, Small Bore (24-28 AWG)	254	Trio-Tek Crimp 26-28 AWG, Reeled
019	Barrel Crimp, Extra Small Bore (28-32 AWG)	283	Trio-Tek Crimp 22-24 AWG, Loose
		284	Trio-Tek Crimp 26-28 AWG, Loose

All dimensions in mm.

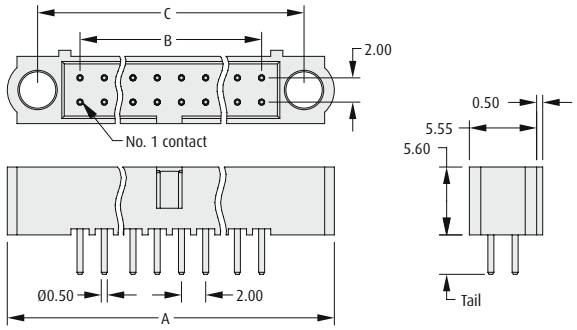
Datamate Connectors

Male Vertical PC Tail

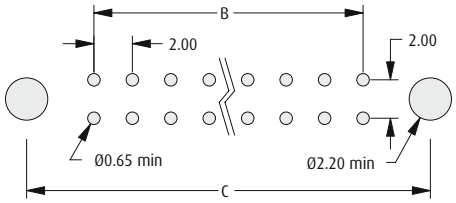
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50 (excluding 101Lok).
- Polarised mouldings.
- Fully shrouded contacts.
- Jackscrews are assembled where specified.
- Choice of PC tail length.
- Board Mount provides PCB strain relief.



WITHOUT JACKSCREWS

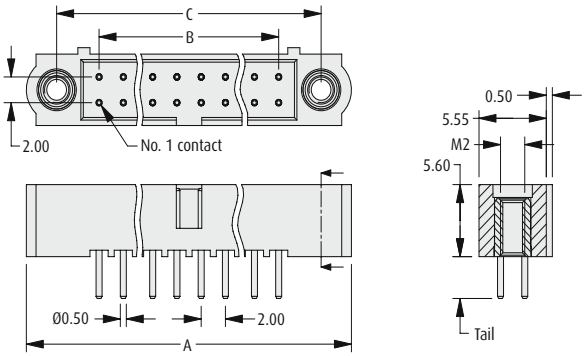


CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

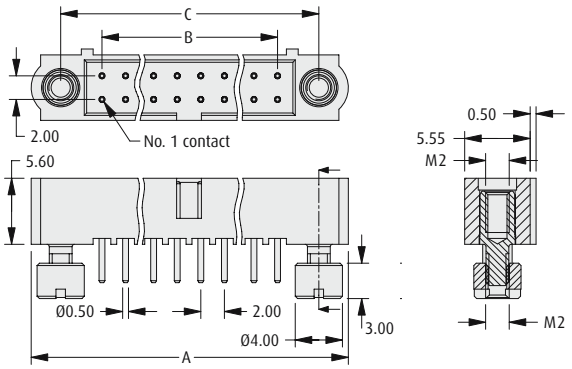


Recommended PC Board Pattern

WITH JACKSCREWS



WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 X X XX XX

SERIES CODE	
0	With Jackscrews
1	With Board Mount
2	Without Jackscrews

0	3mm Tails
1	4.5mm Tails

FINISH		
05	Gold	Pb
22	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb

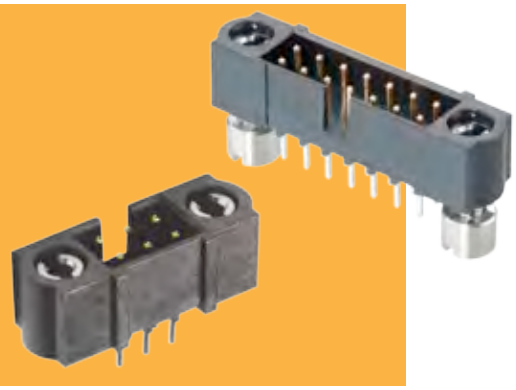
TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

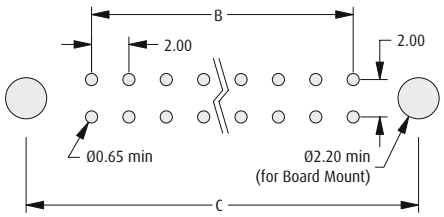
All dimensions in mm.

Male Vertical PC Tail 101Lok

- Mates with female connectors shown on pages 39, 42, 47 and 50.
- Polarised mouldings.
- Fully shrouded contacts.
- Jackscrews are assembled where specified.
- Choice of PC tail length.
- Board Mount provides PCB strain relief.



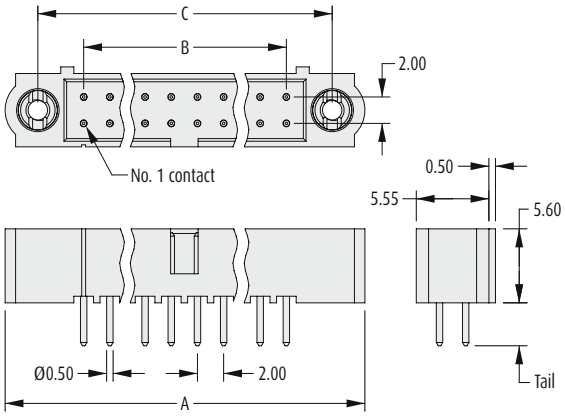
101 Lok



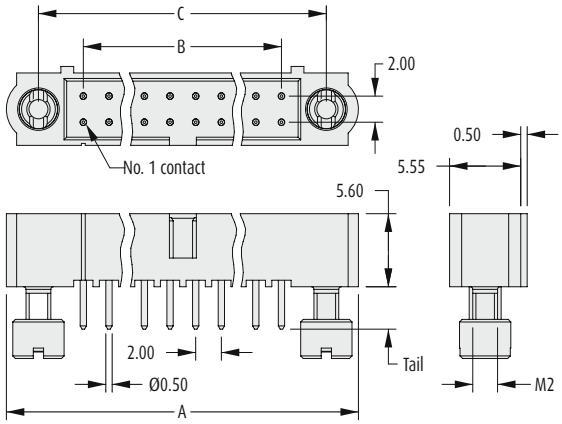
Recommended PC Board Pattern

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

101LOK



101LOK WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 TX XX XX MX

SERIES CODE

TYPE	
T1	3mm Tails
T2	4.5mm Tails

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
MC	101Lok
ME	101Lok with Board Mount

FINISH		
05	Gold	Pb
22	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb

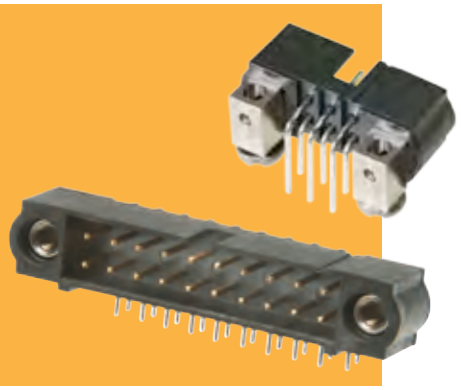
All dimensions in mm.

Datamate Connectors

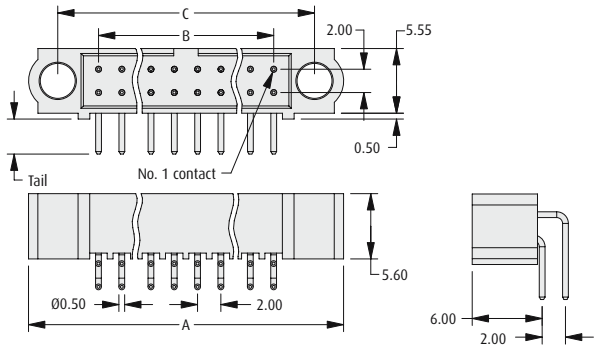
Datamate J-Tek

Male Horizontal PC Tail

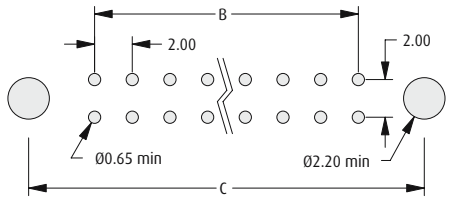
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50 (excluding 101Lok).
- Jackscrews are assembled where specified.
- Choice of PC tail length.
- Board Mount provides PCB strain relief.



WITHOUT JACKSCREWS

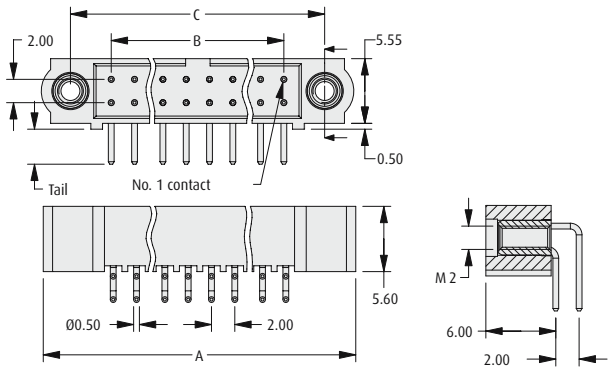


CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

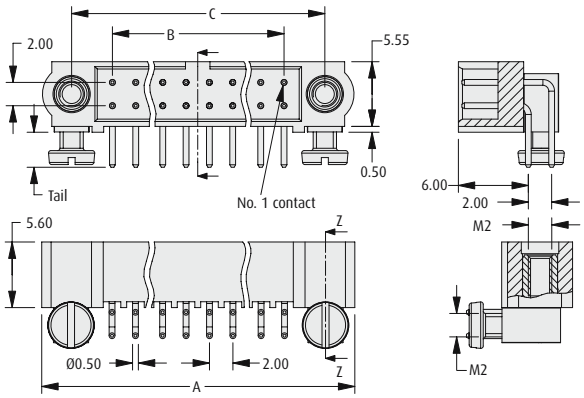


Recommended PC Board Pattern

WITH JACKSCREWS



WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 X X XX XX

SERIES CODE	
3	With Jackscrews
4	With Board Mount
5	Without Jackscrews

0	3mm Tails
1	4.5mm Tails

FINISH		
05	Gold	Pb
22	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb

TOTAL NO. OF CONTACTS
04 to 50

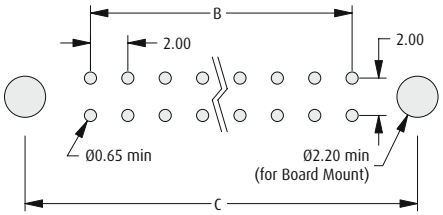
Even numbers only

All dimensions in mm.

Male Horizontal PC Tail 101Lok

- Mates with female connectors shown on pages 39, 42, 47 and 50.
- Jackscrews are assembled where specified.
- Choice of PC tail length.
- Board Mount provides PCB strain relief.

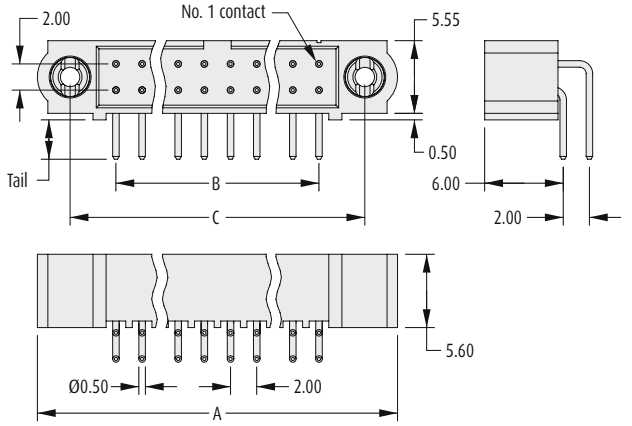
101 Lok



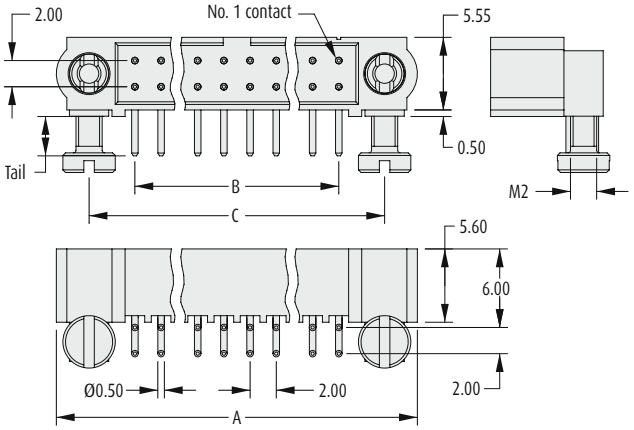
Recommended PC Board Pattern

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

101LOK



101LOK WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 LX XX XX MX

SERIES CODE

TYPE	
L1	3mm Tails
L2	4.5mm Tails

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
MC	101Lok
MD	101Lok with Board Mount

FINISH	
05	Gold
22	Gold + Tin/Lead
42	Gold + Tin

All dimensions in mm.

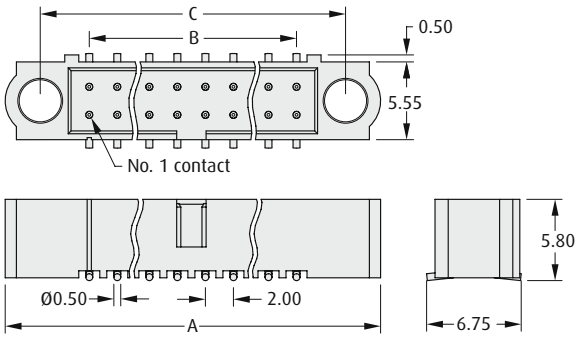
Datamate Connectors

Datamate J-Tek

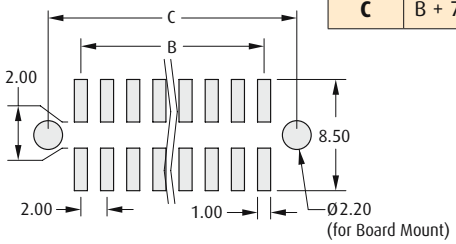
Male Vertical Surface Mount

- Contact **datamate@harwin.com** for tape & reel options.
- Optional pick and place cap.
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50.
- Gull wing SMT tails simplify inspection process.
- Board Mount provides PCB strain relief.

WITHOUT JACKSCREWS

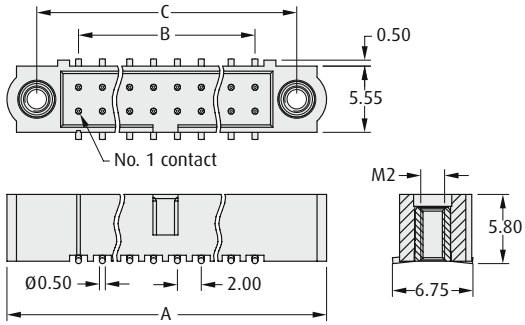


CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

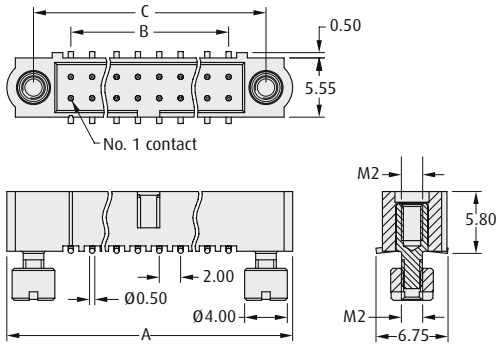


Recommended PC Board Pattern

WITH JACKSCREWS



WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 XX XX XX P

SERIES CODE

TYPE	
02	With Jackscrews
12	With 3.5mm Board Mount
13	With 5mm Board Mount
22	Without Jackscrews

TOTAL NO. OF CONTACTS

04 to 50

Even numbers only

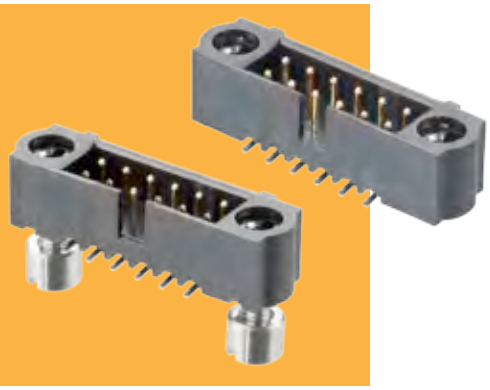
PICK AND PLACE CAP	
BLANK	No cap
P	Pick and place cap

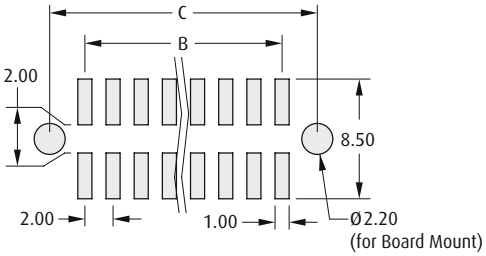
FINISH		
05	Gold	Pb
22	Gold + Tin/Lead	Pb
42	Gold + Tin	Pb

All dimensions in mm.

Male Vertical Surface Mount 101Lok

- Contact **datamate@harwin.com** for tape & reel options.
- Optional pick and place cap.
- Mates with female connectors shown on pages 39, 42, 47 and 50.
- Gull wing SMT tails simplify inspection process.
- Board Mount provides PCB strain relief.

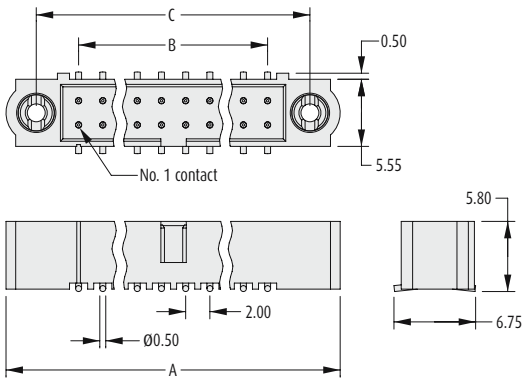




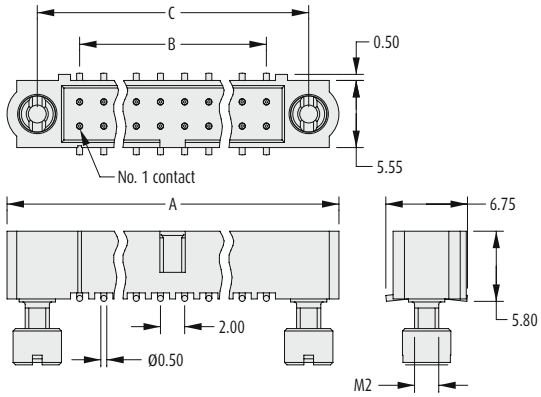
Recommended PC Board Pattern

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

101LOK



101LOK WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 S1 XX XX MX

SERIES CODE

TYPE	
S1	Vertical Surface Mount

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
MC	101Lok
ME	101Lok with 5mm Board Mount

FINISH	
05	Gold
22	Gold + Tin/Lead
42	Gold + Tin

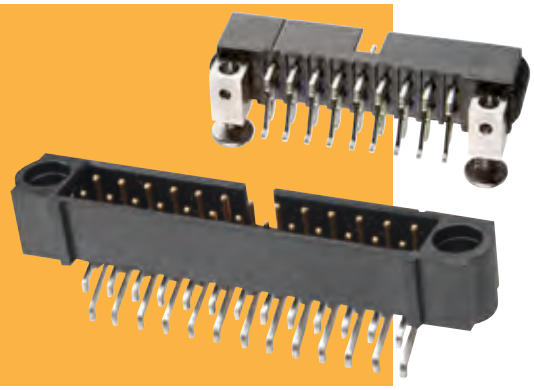
All dimensions in mm.

Datamate Connectors

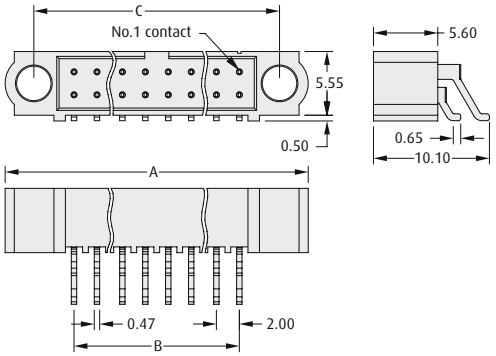
Datamate J-Tek

Male Horizontal Surface Mount

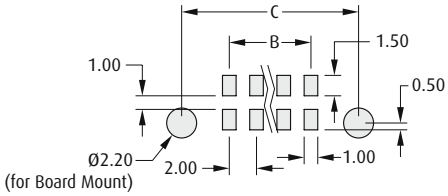
- Contact **datamate@harwin.com** for tape & reel options.
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50.
- Stamped contact ensures co-planarity.
- Board Mount provides PCB strain relief.



WITHOUT JACKSCREWS

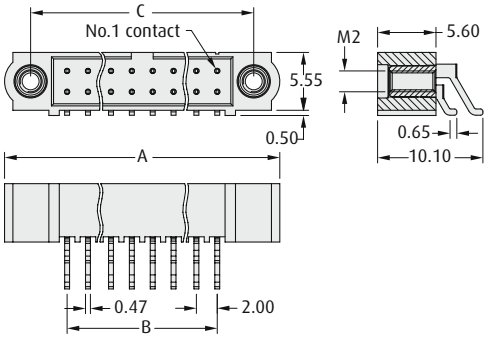


CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

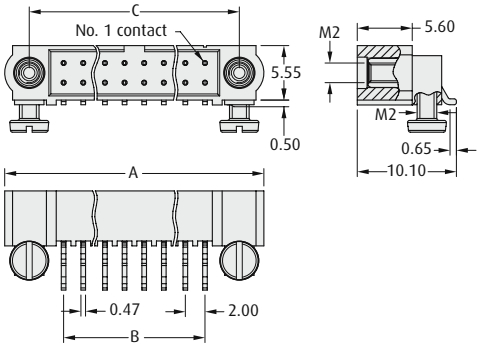


Recommended PC Board Pattern

WITH JACKSCREWS



WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 XX XX XX

SERIES CODE

TYPE

32	With Jackscrews
42	With 3.5mm Board Mount
43	With 5mm Board Mount
52	Without Jackscrews

FINISH

05	Gold
22	Gold + Tin/Lead
42	Gold + Tin

TOTAL NO. OF CONTACTS

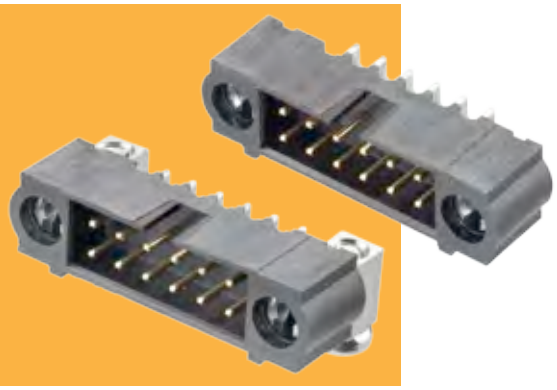
04 to 50

Even numbers only

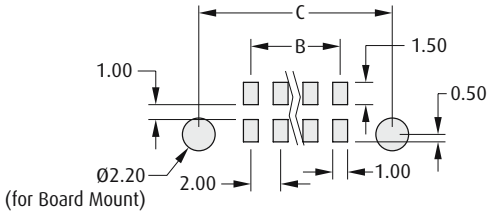
All dimensions in mm.

Male Horizontal Surface Mount 101Lok

- Contact **datamate@harwin.com** for tape & reel options.
- Mates with female connectors shown on pages 39, 42, 47 and 50.
- Stamped contact ensures co-planarity.
- Board Mount provides PCB strain relief.

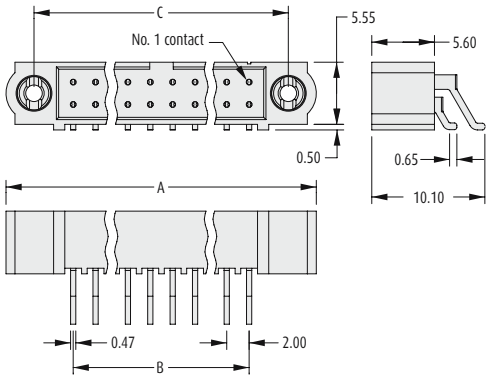


CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

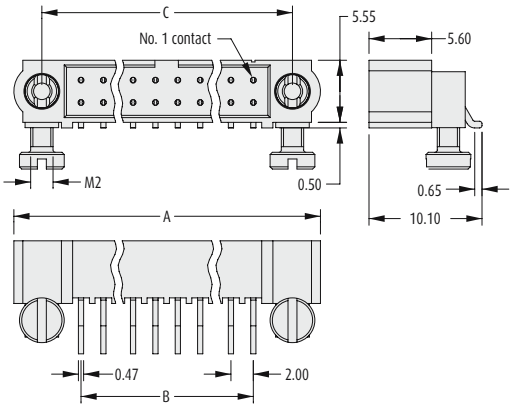


Recommended PC Board Pattern

101LOK



101LOK WITH BOARD MOUNT



HOW TO ORDER

M80 - 5 S2 XX XX MX

SERIES CODE

TYPE	
S2	Horizontal Surface Mount

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
MC	101Lok
MD	101Lok with Board Mount

FINISH	
05	Gold
22	Gold + Tin/Lead
42	Gold + Tin

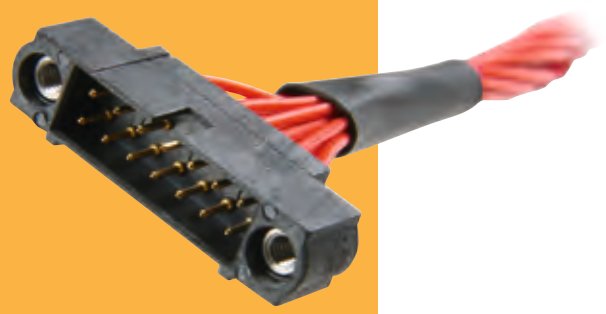
All dimensions in mm.

Datamate Connectors

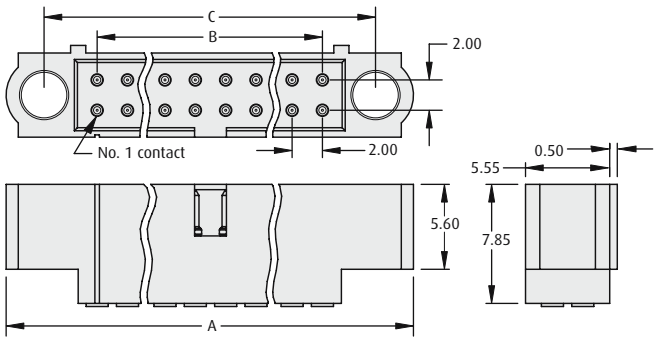
Datamate J-Tek

Male Crimp

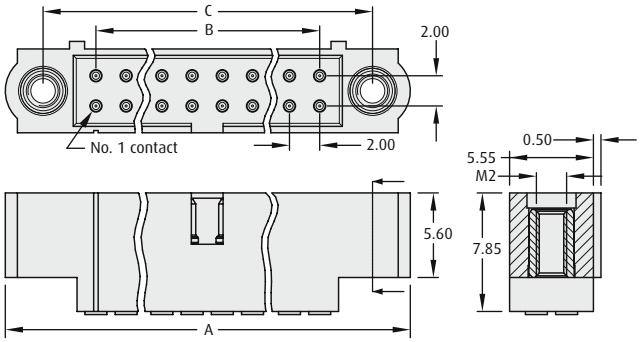
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50.
- Jackscrews are assembled where specified.
- Crimp contacts supplied loose.
- Crimp contacts are rear insertable and replaceable.
- Large Bore 22 AWG, Small Bore 24 – 28 AWG.
- Part numbers are for housings and the equivalent no. of contacts.
- Spare contacts are available – see page 65.



WITHOUT JACKSCREWS



WITH JACKSCREWS



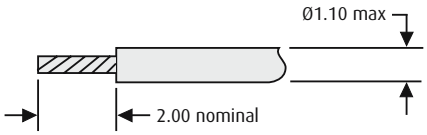
CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-193
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX 05

SERIES CODE

TYPE			
560	Large Bore, with Jackscrews	**570**	Large Bore, without Jackscrews
561	Small Bore, with Jackscrews	**571**	Small Bore, without Jackscrews

FINISH	
05	Gold

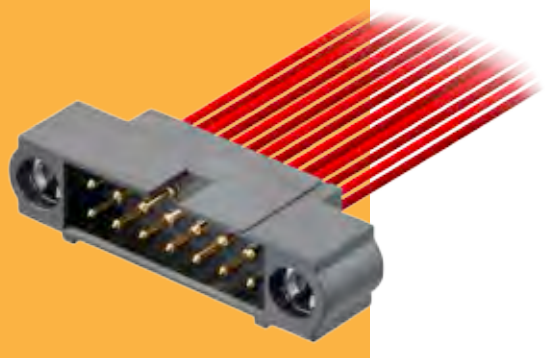
TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

All dimensions in mm.

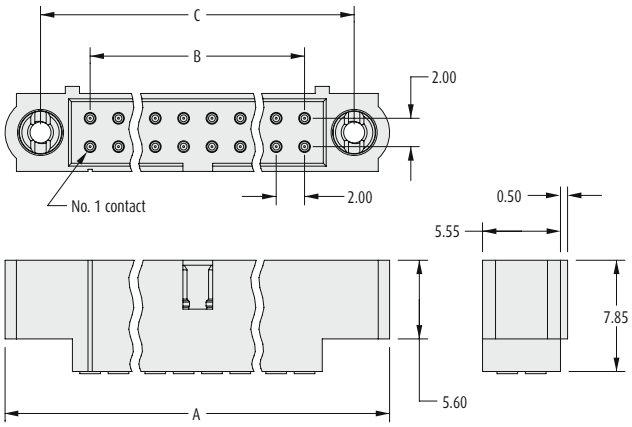
Male Crimp 101Lok

- Mates with female connectors shown on pages 39, 42, 47 and 50.
- Crimp contacts supplied loose.
- Crimp contacts are rear insertable and replaceable.
- Large Bore 22 AWG, Small Bore 24 – 28 AWG.
- Part numbers are for housings and the equivalent number of contacts.
- Spare contacts are available – see page 65.



101LOK

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

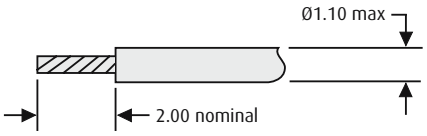


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-193
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 5 X1 XX 05 MC

SERIES CODE

TYPE	
C1	Small Bore 24-28 AWG
D1	Large Bore 22 AWG

TOTAL NO. OF CONTACTS
04 to 50

Even numbers only

JACKSCREW	
MC	101Lok

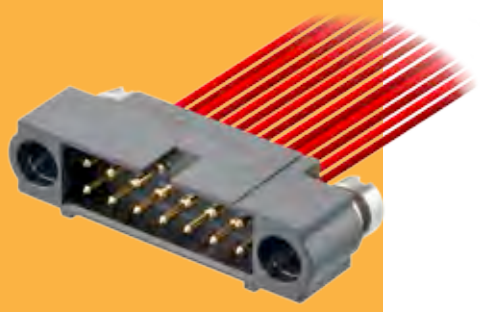
FINISH	
05	Gold

All dimensions in mm.

Datamate Connectors

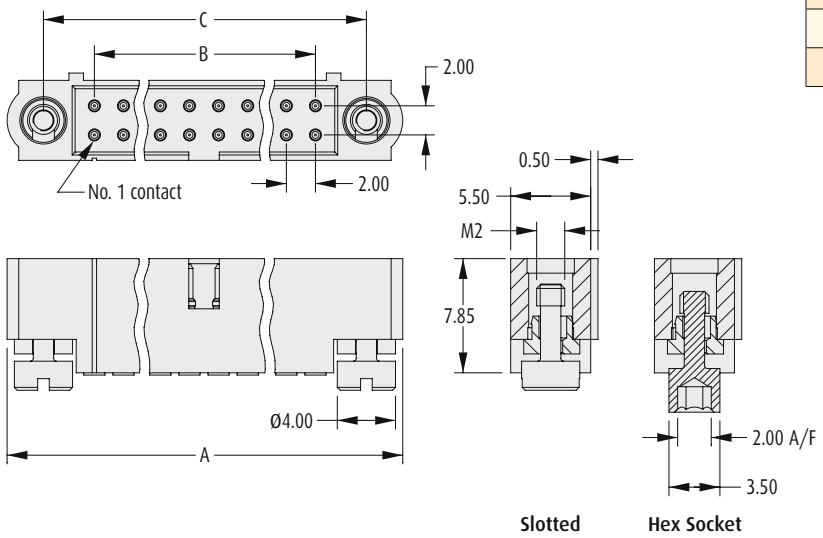
Male Crimp Reverse Fix

- Mates with female connectors shown on pages 40, 43, 45 and 46.
- Allows for further flexibility in system design.
- Crimp contacts supplied loose.
- Crimp contacts are rear insertable and replaceable.
- Large Bore 22 AWG, Small Bore 24 – 28 AWG.
- Part numbers are for housings and the equivalent number of contacts.
- Spare contacts are available – see page 65.



REVERSE FIX

CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

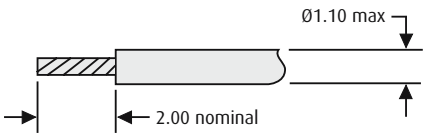


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-193
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX 05

SERIES CODE

TYPE	
562	Large Bore, Slotted Jackscrew
563	Small Bore, Slotted Jackscrew
582	Large Bore, Hex Socket Jackscrew
583	Small Bore, Hex Socket Jackscrew

FINISH	
05	Gold (Pb)

TOTAL NO. OF CONTACTS

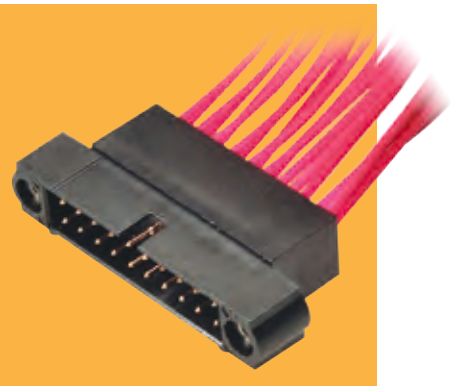
04 to 50

Even numbers only

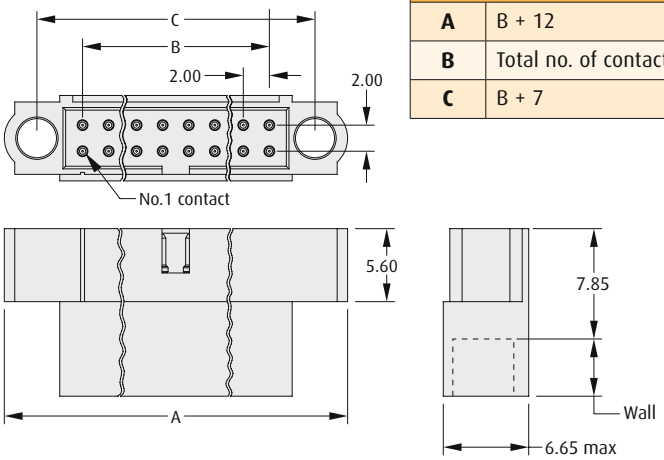
All dimensions in mm.

Male Crimp Extended Wall

- Extended Wall Datamate allows back potting to be performed.
- Fully shrouded contacts.
- Large Bore 22 AWG, Small Bore 24 – 28 AWG.
- Part numbers are for housings and the equivalent number of contacts.
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50.
- Spare contacts are available – see page 65.

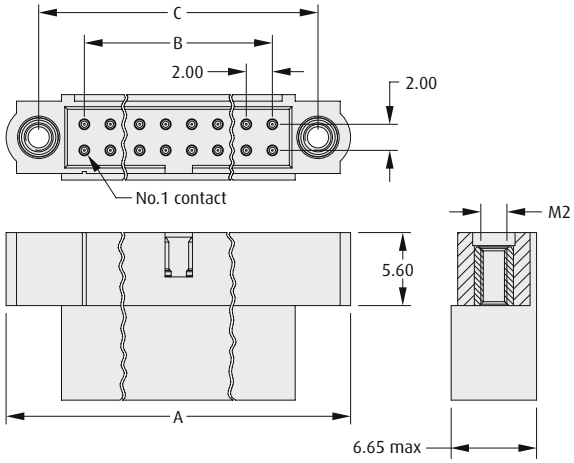


WITHOUT JACKSCREWS



CALCULATION	
A	B + 12
B	Total no. of contacts - 2
C	B + 7

WITH JACKSCREWS

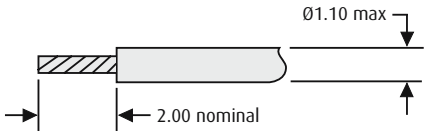


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-193
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/downloads/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - XXX XX 05 X

WALL SIZE	
BLANK	Wall = 5mm
A	Wall = 1mm

FINISH	
05	Gold (Pb)

SERIES CODE
M80

TYPE			
565	Large Bore, with Jackscrews	575	Large Bore, without Jackscrews
566	Small Bore, with Jackscrews	576	Small Bore, without Jackscrews

TOTAL NO. OF CONTACTS
06, 10, 14, 20, 26, 34

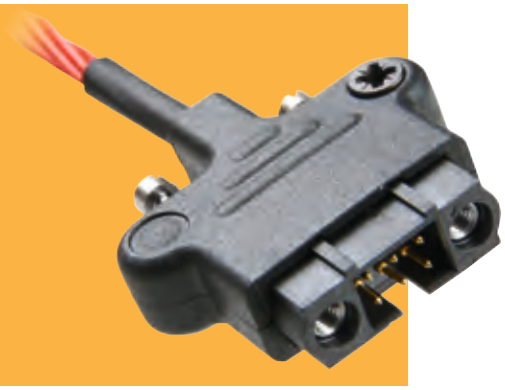
All dimensions in mm.

Datamate Connectors

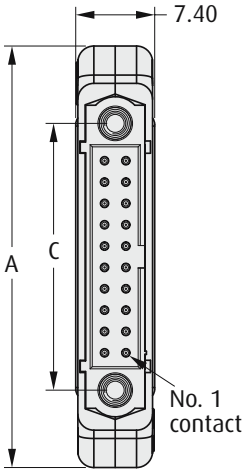
Datamate J-Tek

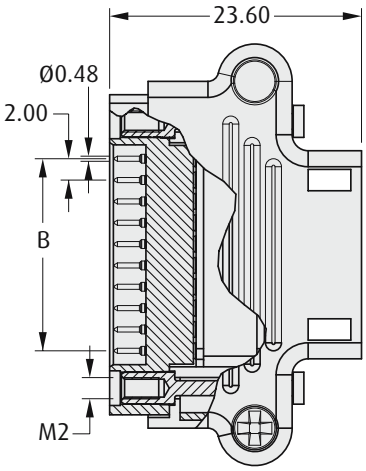
Male Crimp with Hood

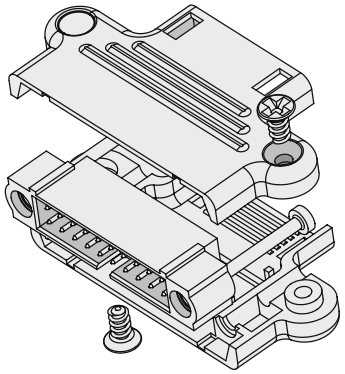
- Supplied as a complete kit, including hood, screws, connector, contacts and Jackscrews.
- For spare crimp contacts, see page 65.
- Provides strain relief by preventing cable bending at the rear of the connector, and also the option of inserting a cable tie to reduce pull strain.
- Mates with female connectors shown on pages 38, 39, 41, 42, 44 and 46 to 50.



MALE







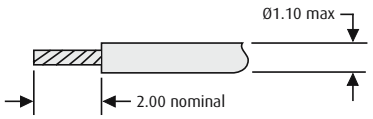
CALCULATION	
A	B + 21.5
B	Total no. of contacts - 2
C	B + 7

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-193
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- Instruction sheets available at www.harwin.com/downloads/instructions

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 94 X XX XX

SERIES CODE

TYPE

2	Small Bore 24-28AWG
3	Large Bore 22AWG

FINISH

05	Gold (Pb)

TOTAL NO. OF CONTACTS

06, 08, 10, 12, 14, 20, 26, 34, 42, 50

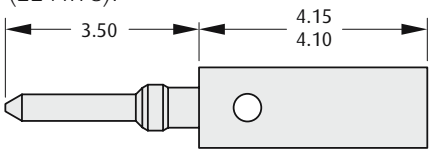
All dimensions in mm.

Male Crimp Contacts

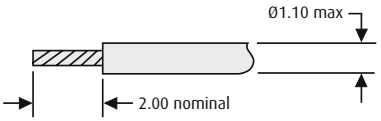
- Crimp contacts are supplied with the connectors (pages 60 to 64) – use the order codes below for extra crimp contacts.
- For crimp and insertion tools, see pages 87 to 89.

SPARE CRIMP CONTACT

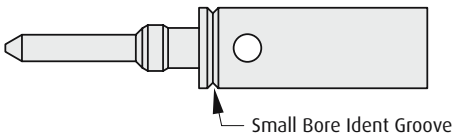
Large Bore (22 AWG):



Wire Stripping Details



Small Bore (24 – 28 AWG):



HOW TO ORDER

M80 - 19 X 00 XX

SERIES CODE

TYPE

4	Large Bore for J-Tek
5	Small Bore for J-Tek

FINISH

05	Gold (Pb)

All dimensions in mm.

Datamate Specification

Datamate 3-Row

Materials

Mouldings:	Glass-filled thermoplastic UL94V-0
Female contacts:	Brass shell, with Beryllium Copper inner contact
Male contacts:	Phosphor bronze
Finish:	See individual pages

Electrical

Current (individual contacts in isolation):	3.3A max (at 25°C) 2.6A max (at 85°C)
All contacts simultaneously:	3.0A max (at 25°C) 2.2A max (at 85°C)
Working Voltage (at sea level 1013 mbar):	800V DC or ACrms
Proof Voltage (at sea level 1013 mbar):	1200V DC or ACrms
Contact resistance (initial):	20 mΩ max
Contact resistance (after conditioning):	25 mΩ max
Insulation resistance (initial):	1000 MΩ min
Insulation resistance (after conditioning):	100 MΩ min

Mechanical

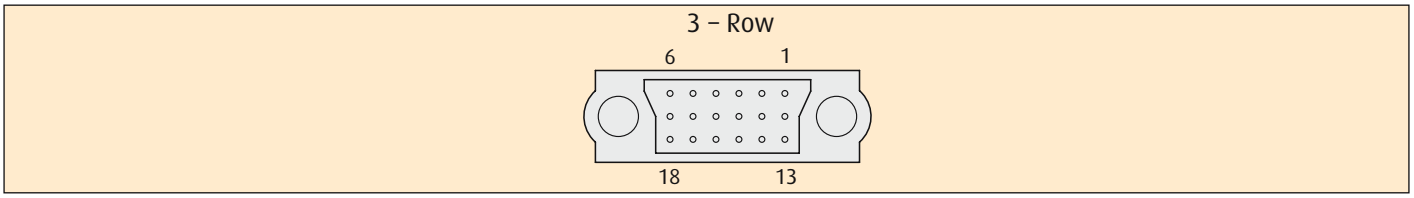
Durability:	500 operations
Insertion force (max):	1.0N
Withdrawal force (min):	0.2N
Signal crimp accommodation:	22 AWG to 28 AWG BS 3G 210 Type A or MIL-DTL-16878/6 Type ET

Environmental

Environmental classification:	55/125/56 days at 95% RH
Operational temperature:	-55ºC to +125ºC
*Vibration sensitivity:	10Hz to 2000Hz, 0.75mm, 98m/s² (10G), duration 6h
*Bump severity:	390m/s² (40G), 4000 ±10 bumps
*Shock severity:	981m/s² (100G) for 6ms
*Acceleration severity:	490m/s² (50G)

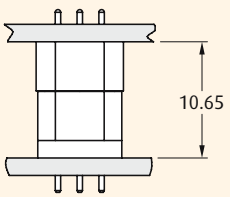
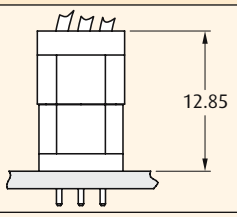
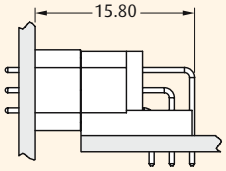
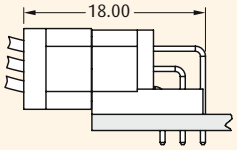
* Tested with connectors with Jackscrews.

Pin Numbering



Contact numbering is shown looking onto mating face of male connector.

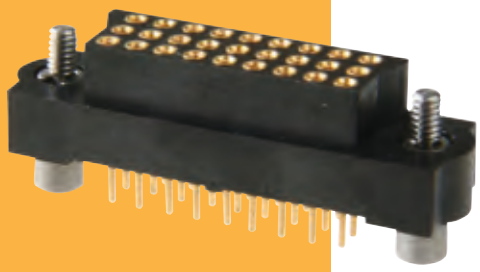
Mating Profiles

MALE \ FEMALE	VERTICAL PC TAIL	CRIMP
VERTICAL PC TAIL	M83-LFTXxxNXX  10.65 M83-LMTXxxNXX	M83-LFC1xxNXX  12.85 M83-LFD1xxNXX M83-LMTXxxNXX
HORIZONTAL PC TAIL	M83-LFTXxxNXX  15.80 M83-LMLXxxNXX	M83-LFC1xxNXX  18.00 M83-LFD1xxNXX M83-LMLXxxNXX

All dimensions in mm.

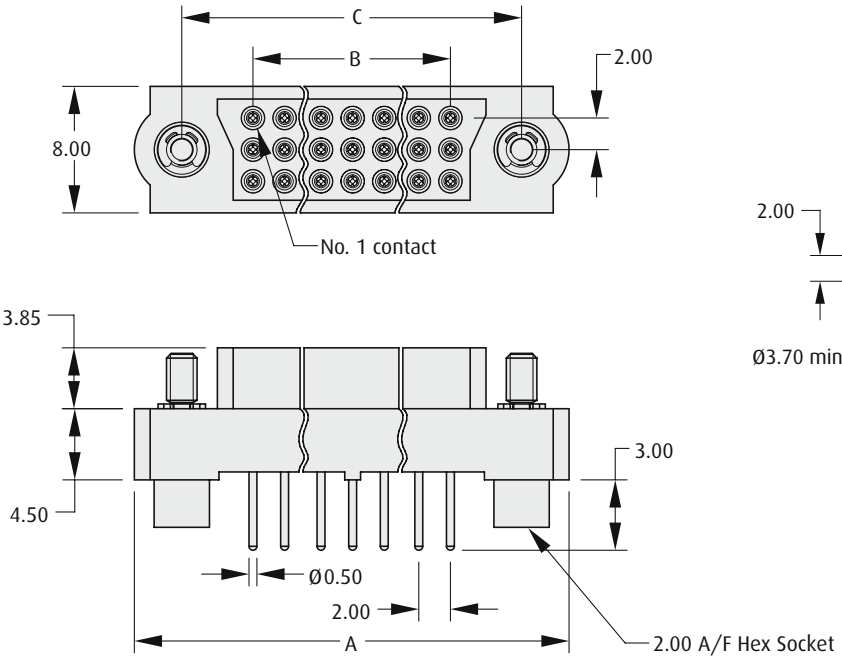
Female Vertical PC Tail

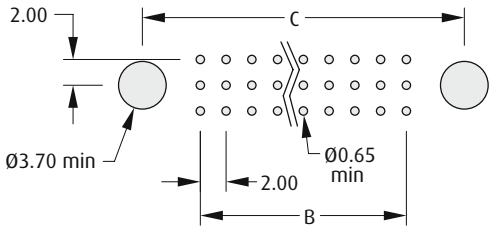
- Low-force 4-finger Beryllium Copper contact clip.
- Fully shrouded contacts.
- Polarised mouldings.
- All contacts are gold finish for full RoHS compliance.
- Mates with male connectors shown on pages 69 and 70.



FEMALE VERTICAL

CALCULATION	
A	B + 15
B	(Total no. of contacts - 3) x 2/3
C	B + 9





Recommended PC Board Pattern

HOW TO ORDER

M83 - LF T1 F2 N XX - 0000 - 000

SERIES CODE

TAIL	
T1	3mm Tail

TOTAL NO. OF CONTACTS
18, 27, 36, 54, 60, 96

JACKSCREW	
F2	Hex Socket Jackscrew

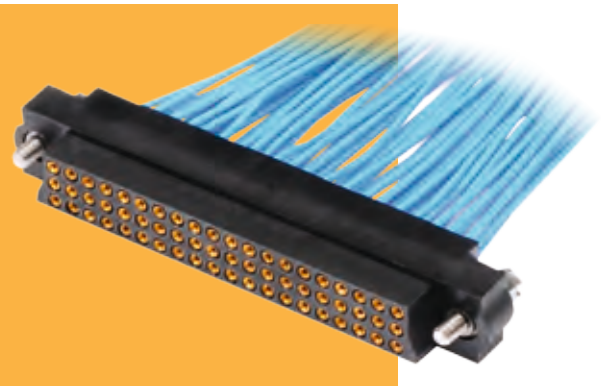
All dimensions in mm.

M83 Datamate Connectors

Datamate 3-Row

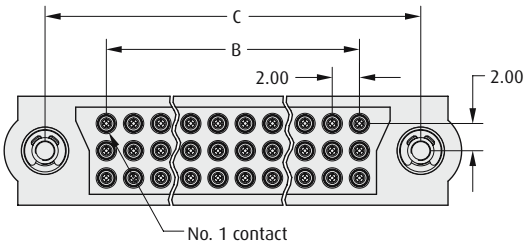
Female Crimp

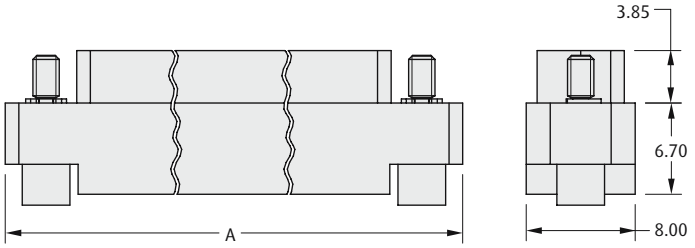
- Part numbers are for a kit of housing and contacts.
- Spare contacts are available.
- Low-force 4-finger Beryllium Copper contact clip.
- Fully shrouded contacts, rear-insertable.
- Crimp instruction sheets & video available online at **www.harwin.com**.
- Mates with male connectors shown on pages 69 and 70.



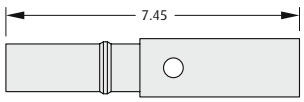
FEMALE CRIMP

CALCULATION	
A	B + 15
B	(Total no. of contacts - 3) x 2/3
C	B + 9





SPARE CONTACTS



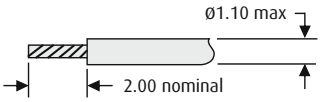
WIRE SIZE	PART NUMBER
22 AWG	**M83-0110005**
24-28 AWG	**M83-0130005**

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- Instruction sheets available at www.harwin.com/downloads/instructions

WIRE STRIPPING DETAILS



HOW TO ORDER

M83 - LF X1 F2 N XX - 0000 - 000

SERIES CODE

CRIMPS	
C1	Small Bore (24-28 AWG)
D1	Large Bore (22 AWG)

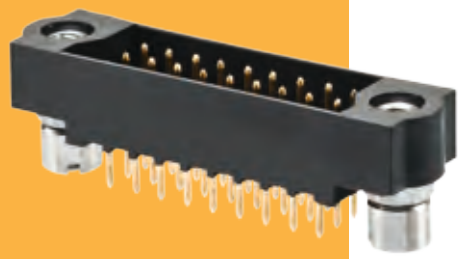
TOTAL NO. OF CONTACTS
18, 27, 36, 54, 60, 96

JACKSCREW	
F2	Hex Socket Jackscrew

All dimensions in mm.

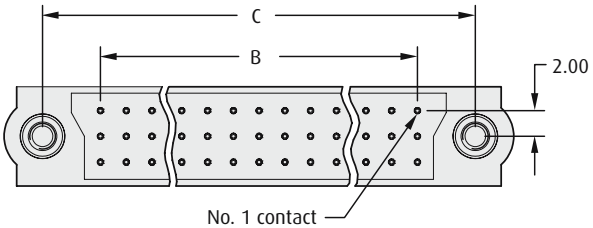
Male Vertical PC Tail

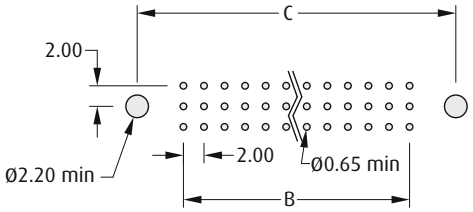
- Board Mount nuts to be tightened to a maximum torque of 23cmN.
- Fully shrouded contacts.
- Polarised mouldings.
- All contacts are gold finish for full RoHS compliance.
- Mates with female connectors shown on pages 67 and 68.



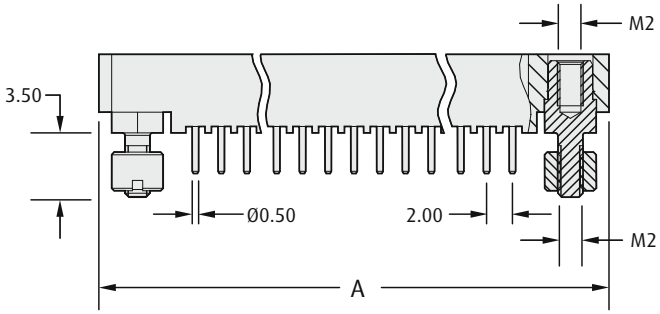
MALE VERTICAL

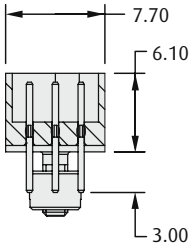
CALCULATION	
A	B + 15
B	(Total no. of contacts - 3) x 2/3
C	B + 9





Recommended PC Board Pattern





HOW TO ORDER

M83 - LM T1 M2 N XX - 0000 - 000

SERIES CODE

TAIL	
T1	3mm Tail

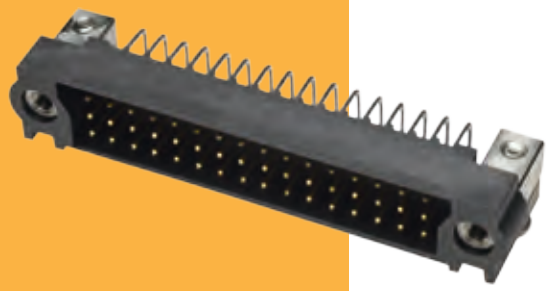
TOTAL NO. OF CONTACTS
18, 27, 36, 54, 60, 96

JACKSCREW	
M2	Board Mount Jackscrew

All dimensions in mm.

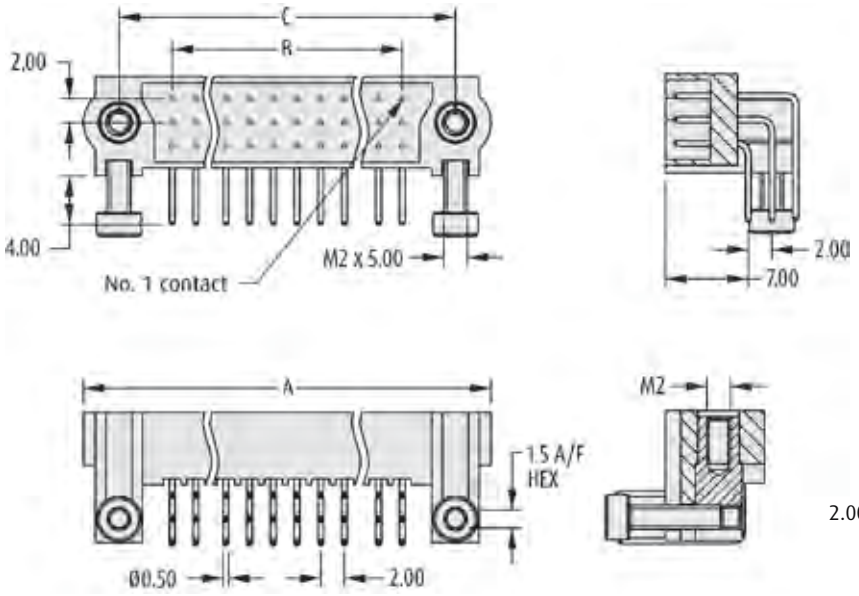
Male Horizontal PC Tail

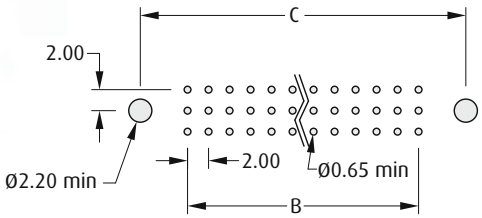
- Board Mount screws to be tightened to a maximum torque of 23cmN.
- Suitable for motherboard/daughterboard configurations.
- Fully shrouded contacts, polarised mouldings.
- All contacts are gold finish for full RoHS compliance.
- Mates with female connectors shown on pages 67 and 68.



MALE HORIZONTAL

CALCULATION	
A	B + 15
B	(Total no. of contacts - 3) x 2/3
C	B + 9





Recommended PC Board Pattern

HOW TO ORDER

M83 - LM L3 M7 N XX - 0000 - 000

SERIES CODE

TAIL	
L3	4mm Tail

TOTAL NO. OF CONTACTS
18, 27, 36, 54, 60, 96

JACKSCREW	
M7	Hex Socket Board Mount

All dimensions in mm.

Datamate Connectors

Datamate S-Tek

Features and Benefits

- Shielded High-Reliability connectors, for I/O and cable-to-board applications.
- Performs to the same high standards as the existing Datamate range, but with the added facility of complete shielding for cable-to-panel and PCB applications where EMI and RFI screening is required.
- Tested in accordance with MIL-STD-1377.
- 30dBs attenuation.
- Nickel-plated aluminium alloy construction, 360° attachment to braid.

Typical Applications

- Avionic Systems
- Communications Systems
- Control Systems
- Radar Equipment
- Space Applications
- Life Sciences

Specifications

Materials

Mouldings:	Glass-filled thermoplastic UL94V-0
Female contacts:	Brass shell, with Beryllium Copper inner contact
Male contacts:	Copper alloy
Finish:	See individual pages

Electrical

RF Attenuation:	10kHz to 400MHz @ >30dBs
Current (individual contacts in isolation):	3.3A max (at 25°C) 2.6A max (at 85°C)
All contacts simultaneously:	3.0A max (at 25°C) 2.2A max (at 85°C)
Working Voltage (at sea level 1013 mbar):	800V DC or ACrms
Voltage Proof (at sea level 1013 mbar):	1,200V DC or ACrms
Contact resistance (initial):	20 mΩ max
Contact resistance (after conditioning):	25 mΩ max
Insulation resistance (initial):	1,000 MΩ min
Insulation resistance (after conditioning):	100 MΩ min

Mechanical

Durability:	500 operations
Insertion force (max):	2.8N
Withdrawal force (min):	0.2N
Signal crimp accommodation:	22 A.W.G. to 28 A.W.G. BS 3G 210 Type A, MIL-W-16878

Environmental

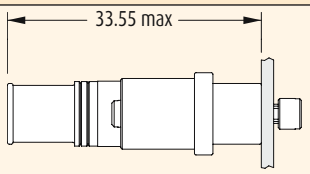
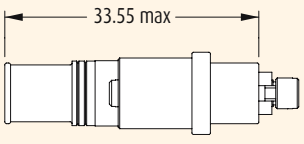
Environmental classification:	55/125/56 days at 95% RH
Operational temperature:	-55ºC to +125ºC
*Vibration sensitivity:	10Hz to 2000Hz, 0.75mm, 98m/s² (10G). duration 6h
*Bump severity:	390m/s² (40G), 4000 ±10 bumps
*Shock severity:	981m/s² (100G) for 6ms
*Acceleration severity:	490m/s² (50G)

* Tested with connectors with Jackscrews.

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

See page 35 for Pin Numbering

MALE / FEMALE	PC TAIL	CRIMP
CRIMP		

All dimensions in mm.

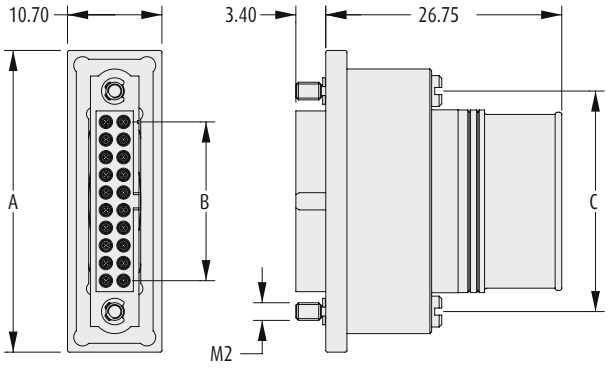
Datamate Connectors

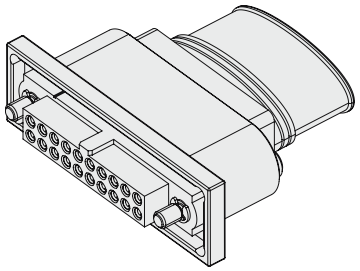
Female Crimp with Metal Backshell

A range of shielded Datamate connectors, performing to the same high-reliability standards, with the added feature of aluminium backshells compatible with full 360° securing to braiding.

- Supplied as a kit, including backshell, tie-band (not shown), e-clips, Jackscrews, connector housing and contacts (braiding not included).
- For spare crimp contacts, see page 51.
- Mates with male connectors shown on pages 73 and 74.

FEMALE





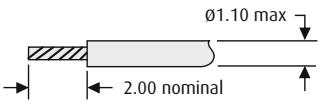
CALCULATION	
A	B + 16.20
B	Total no. of contacts - 2
C	B + 7

TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – T5747
Contact Insertion/Removal Tool – Z80-280
E-Clip Assembly Tool – Z80-300
See pages 87 to 89

- Instruction sheets available at www.harwin.com/downloads/instructions

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 4 X1 XX XX S1

SERIES CODE

TYPE	
C1	Small Bore 24-28 AWG
D1	Large Bore 22 AWG

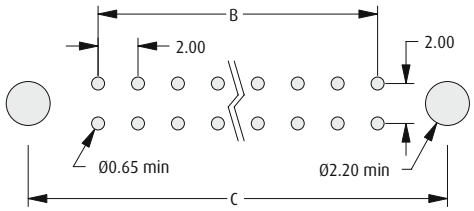
FINISH		
05	Gold	Pb
42	Gold + Tin	Pb

TOTAL NO. OF CONTACTS
06, 10, 14, 20, 26

All dimensions in mm.

Male Vertical PC Tail with Metal Backshell

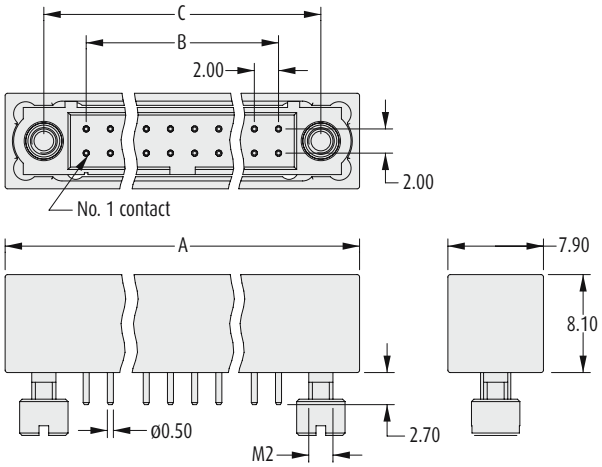
- Board Mount version, with Jackscrew fixings for attachment to PCB for added strain relief.
- Supplied as a complete kit, including backshell, jackscrew nuts, and connector with Jackscrew studs assembled.
- Mates with female connectors shown on page 72.



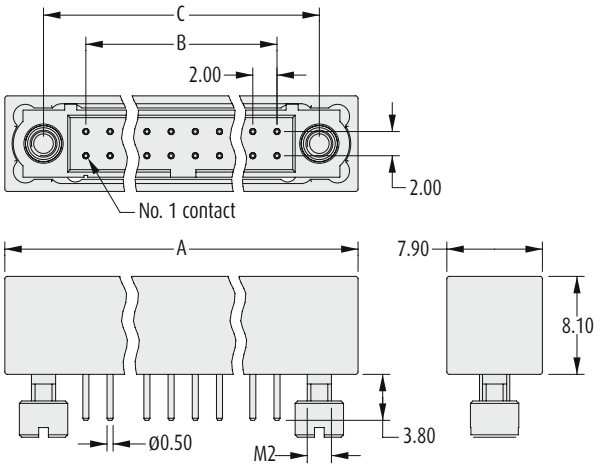
Recommended PC Board Pattern

CALCULATION	
A	B + 13.40
B	Total no. of contacts - 2
C	B + 7

2.7mm TAIL



3.8mm TAIL



HOW TO ORDER

M80 - 5 TX XX XX B1

SERIES CODE

TYPE	
T1	2.7mm Tails
T2	3.8mm Tails

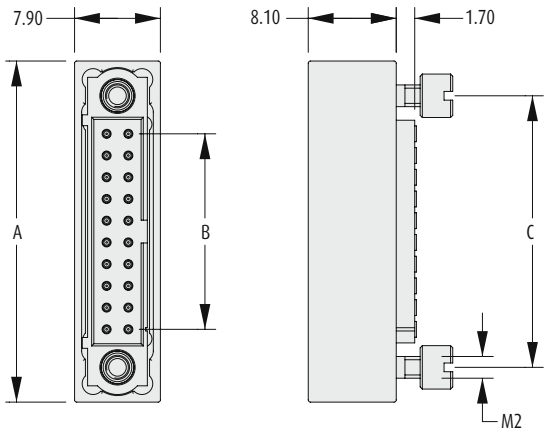
FINISH		
05	Gold	Pb free
22	Gold + Tin/Lead	
42	Gold + Tin	Pb free

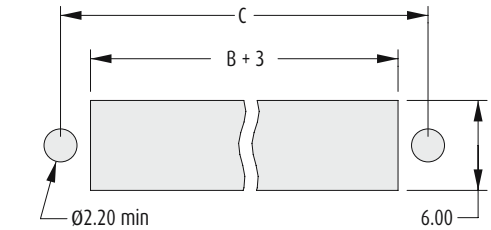
TOTAL NO. OF CONTACTS
06, 10, 14, 20, 26

All dimensions in mm.

Male Crimp with Metal Backshell

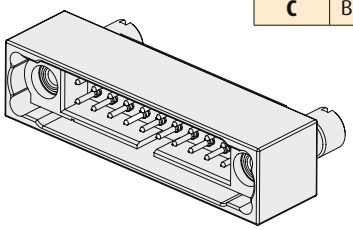
- Panel mount version, with Jackscrew fixings for attachment to panels.
- Supplied as a complete kit, including backshell, contacts, Jackscrew nuts, and connector housing with jackscrew studs assembled.
- For spare crimp contacts, see page 65.
- Mates with female connectors shown on page 72.





Recommended Panel Cutout

CALCULATION	
A	B + 13.40
B	Total no. of contacts - 2
C	B + 7

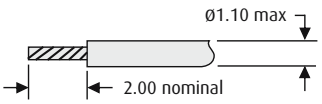


TOOLS

Recommended Crimp Tool – M22520/2-01
Positioner – Z80-193
Contact Insertion/Removal Tool – Z80-280
See pages 87 to 89

- Instruction sheets available at www.harwin.com/downloads/instructions

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - 5 X1 XX 05 B1

SERIES CODE

TYPE

C1	Small Bore 24-28 AWG
D1	Large Bore 22 AWG

FINISH

05	Gold (Pb)

TOTAL NO. OF CONTACTS

06, 10, 14, 20, 26

All dimensions in mm.

Datamate Specification

Datamate Mix-Tek

Materials

Mouldings:	Glass-filled thermoplastic UL94V-0
Female contacts:	Brass shell, with Beryllium Copper inner contact
Male contacts:	Copper alloy
Finish:	See individual pages

Electrical

Current (individual contacts in isolation):	3.3A max (at 25°C) 2.6A max (at 85°C)
All contacts simultaneously:	3.0A max (at 25°C) 2.2A max (at 85°C)
Working Voltage (at sea level 1013 mbar):	800V DC or ACrms
Voltage Proof (at sea level 1013 mbar):	1,200V DC or ACrms
Contact resistance (initial):	20 mΩ max
Contact resistance (after conditioning):	25 mΩ max
Insulation resistance (initial):	1,000 MΩ min
Insulation resistance (after conditioning):	100 MΩ min

Mechanical

Durability:	500 operations
Insertion force (max):	2.8N
Withdrawal force (min):	0.2N
Signal crimp accommodation:	22 AWG to 32 AWG BS 3G 210 Type A

Environmental

Environmental classification:	55/125/56 days at 95% RH
Operational temperature:	-55ºC to +125ºC
*Vibration sensitivity:	10Hz to 2000Hz, 0.75mm, 98m/s² (10G), duration 6h
*Bump severity:	390m/s² (40G), 4000 ±10 bumps
*Shock severity:	981m/s² (100G) for 6ms
*Acceleration severity:	490m/s² (50G)

* Tested with connectors with Jackscrews.

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Power Contacts

Materials

Latching collar:	Beryllium Copper, nickel plated
Other metallic parts:	Copper alloy, Gold plated

Electrical

Current (in isolation):	32x, 33x: 20A max PFx, PMx: 40A nominal, up to 80A max
Contact resistance:	6 mΩ max

Mechanical

Insertion force (max):	32x, 33x: 8N PFx, PMx: 15N
Withdrawal force (min):	0.5N
Contact replacement in connector:	5 times
Power contact accommodation:	32x, 33x: 12 to 20 AWG PFx, PMx: 10 AWG

Coax Contacts

Materials

Latching collar:	Beryllium Copper, nickel plated
Other metallic parts:	Copper alloy, Gold plated
Insulator:	PTFE

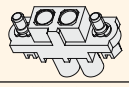
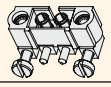
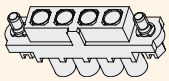
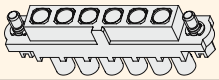
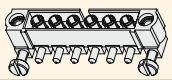
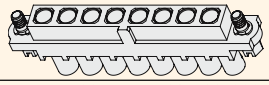
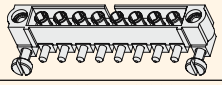
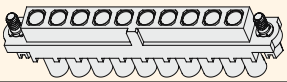
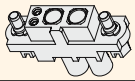
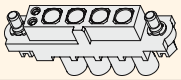
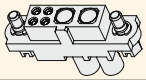
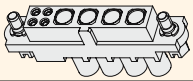
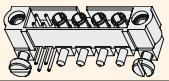
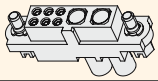
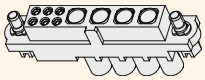
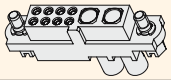
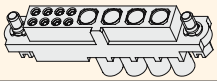
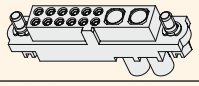
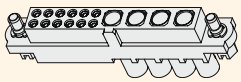
Electrical

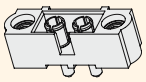
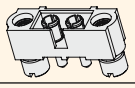
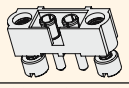
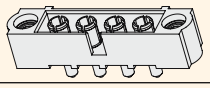
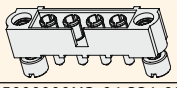
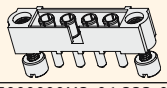
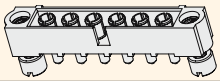
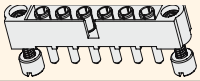
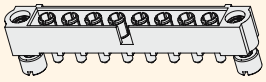
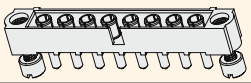
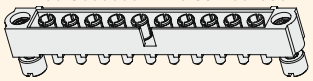
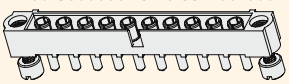
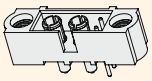
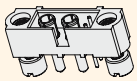
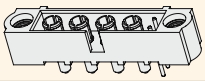
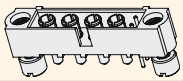
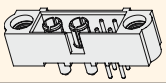
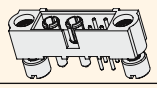
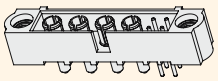
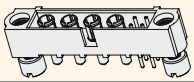
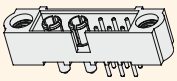
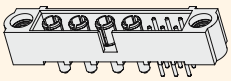
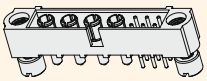
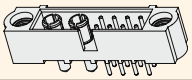
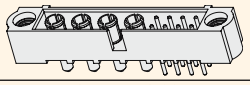
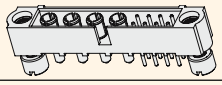
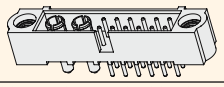
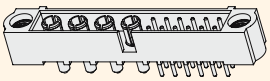
Frequency range:	6 GHz (depending on cable)
Impedance:	50Ω
VSWR:	1.05 + (0.04 x Frequency) GHz max
Operating voltage (sea level):	180 V AC at 500 mA
Maximum voltage (sea level):	1000 V ACrms
Contact resistance:	6 mΩ max
Insulation resistance:	10^6 MΩ at 250 V ACrms

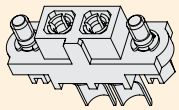
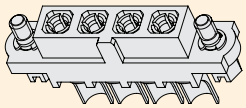
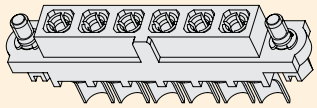
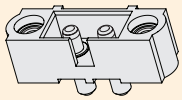
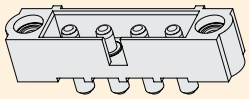
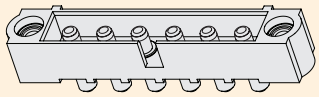
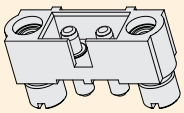
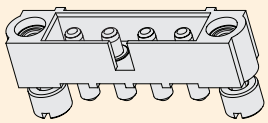
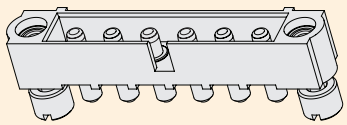
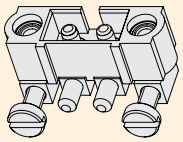
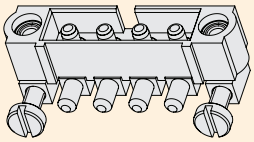
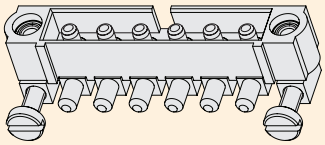
Mechanical

Insertion force (max):	8N
Withdrawal force (min):	0.5N
Contact replacement in connector:	5 times

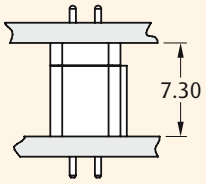
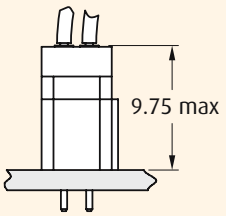
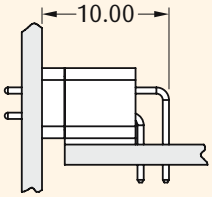
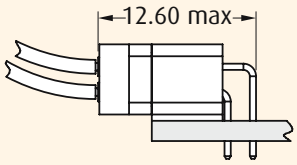
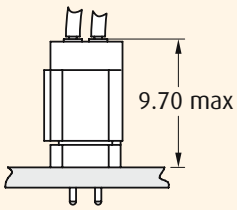
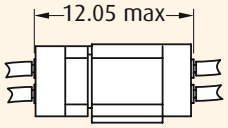
All dimensions in mm.

		FEMALE CABLE	MALE HORIZONTAL PC TAIL
		HEXAGONAL SLOTTED JACKSCREW	JACKSCREW WITH 5mm BOARD-MOUNT
CONTACT ARRANGEMENT	2 Power	M80-4000000F1-02-325-00-000 	M80-5000000M5-02-333-00-000 
	4 Power	M80-4000000F1-04-325-00-000 	M80-5000000M5-04-333-00-000 
	6 Power	M80-4000000F1-06-325-00-000 	M80-5000000M5-06-333-00-000 
	8 Power	M80-4000000F1-08-325-00-000 	M80-5000000M5-08-333-00-000 
	10 Power	M80-4000000F1-10-325-00-000 	M80-5000000M5-10-333-00-000 
	2 Signal, 2 Power	M80-4C10205F1-02-325-00-000 	
	2 Signal, 4 Power	M80-4C10205F1-04-325-00-000 	
	4 Signal, 2 Power	M80-4C10405F1-02-325-00-000 	M80-5L10405M5-02-333-00-000 
	4 Signal, 4 Power	M80-4C10405F1-04-325-00-000 	M80-5L10405M5-04-333-00-000 
	6 Signal, 2 Power	M80-4C10605F1-02-325-00-000 	
	6 Signal, 4 Power	M80-4C10605F1-04-325-00-000 	
	8 Signal, 2 Power	M80-4C10805F1-02-325-00-000 	
	8 Signal, 4 Power	M80-4C10805F1-04-325-00-000 	
	12 Signal, 2 Power	M80-4C11205F1-02-325-00-000 	
	12 Signal, 4 Power	M80-4C11205F1-04-325-00-000 	

CONTACT ARRANGEMENT	MALE VERTICAL PC TAIL		
	JACKSCREW ONLY	JACKSCREW WITH 3.5mm BOARD-MOUNT	JACKSCREW WITH 5mm BOARD-MOUNT
2 Power	M80-5000000M1-02-331-00-000 	M80-5000000M2-02-331-00-000 	M80-5000000M3-02-332-00-000 
4 Power	M80-5000000M1-04-331-00-000 	M80-5000000M2-04-331-00-000 	M80-5000000M3-04-332-00-000 
6 Power		M80-5000000M2-06-331-00-000 	M80-5000000M3-06-332-00-000 
8 Power		M80-5000000M2-08-331-00-000 	M80-5000000M3-08-332-00-000 
10 Power		M80-5000000M2-10-331-00-000 	M80-5000000M3-10-332-00-000 
2 Signal, 2 Power	M80-5T10205M1-02-331-00-000 	M80-5T10205M2-02-331-00-000 	
2 Signal, 4 Power	M80-5T10205M1-04-331-00-000 	M80-5T10205M2-04-331-00-000 	
4 Signal, 2 Power	M80-5T10405M1-02-331-00-000 	M80-5T10405M2-02-331-00-000 	
4 Signal, 4 Power	M80-5T10405M1-04-331-00-000 	M80-5T10405M2-04-331-00-000 	
6 Signal, 2 Power	M80-5T10605M1-02-331-00-000 		
6 Signal, 4 Power	M80-5T10605M1-04-331-00-000 	M80-5T10605M2-04-331-00-000 	
8 Signal, 2 Power	M80-5T10805M1-02-331-00-000 		
8 Signal, 4 Power	M80-5T10805M1-04-331-00-000 	M80-5T10805M2-04-331-00-000 	
12 Signal, 2 Power	M80-5T11205M1-02-331-00-000 		
12 Signal, 4 Power	M80-5T11205M1-04-331-00-000 		

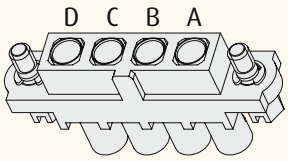
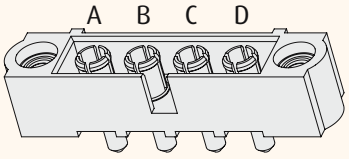
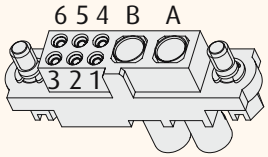
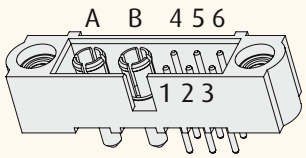
		CONTACT ARRANGEMENT		
		2 HIGH POWER	4 HIGH POWER	6 HIGH POWER
CONNECTOR TYPE	Female Cable, Hexagonal Slotted Jackscrew	M80-4000000F1-02-PF5-00-000 	M80-4000000F1-04-PF5-00-000 	M80-4000000F1-06-PF5-00-000 
	Male Vertical PC Tail, Jackscrew only	M80-5000000M1-02-PM1-00-000 	M80-5000000M1-04-PM1-00-000 	M80-5000000M1-06-PM1-00-000 
	Male Vertical PC Tail, Jackscrew with 3.5mm Board Mount	M80-5000000M2-02-PM1-00-000 	M80-5000000M2-04-PM1-00-000 	M80-5000000M2-06-PM1-00-000 
	Male Horizontal PC Tail, Jackscrew with 5mm Board Mount	M80-5000000M5-02-PM3-00-000 	M80-5000000M5-04-PM3-00-000 	M80-5000000M5-06-PM3-00-000 

Mating Profiles

FEMALE / MALE	VERTICAL PC TAIL	CRIMP
VERTICAL PC TAIL		
HORIZONTAL PC TAIL		
CRIMP		

All dimensions in mm.

Pin Numbering

FEMALE	MALE
	
	

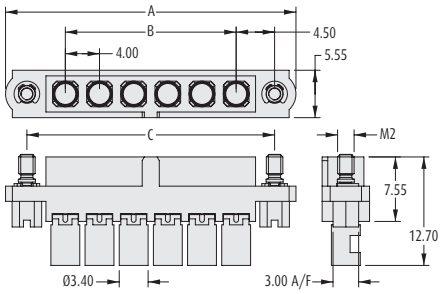
Female Off-The-Shelf

A selection of stocked, female crimp, Datamate Mix-Tek standard layouts.

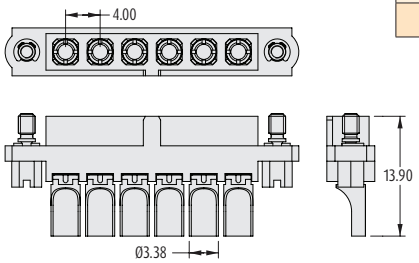
- Hexagonal slotted jackscrew style.
- Tooling for signal contacts on pages 87 and 88.
- Standard Power contacts rated to 20A, signal to 3A.
- High Power rated to 40A nominal, up to 80A max.
- Mates with connectors on pages 80 and 81.

POWER CONTACTS ONLY

CALCULATION	
A	B + 14
B	(No. of Power contacts - 1) x 4
C	B + 9



Standard Power



High Power

HOW TO ORDER

M80 - 4000000F1 - XX - XXX - 00 - 000

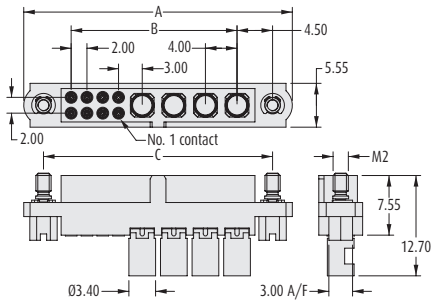
Refer to page 76, 77a for stocked sizes.

NO. OF POWER CONTACTS
02, 04, 06, 08, 10

POWER CONTACT PART NO.	
325	Standard Power
PF5	High Power

SIGNAL AND POWER CONTACTS

CALCULATION	
A	B + 13
B	(No. of Power contacts - 1) x 4 + Total no. of Signal contacts +1
C	B + 8



HOW TO ORDER

M80 - 4C1 XX 05F1 - XX - 325 - 00 - 000

Refer to page 76 for stocked sizes.

NO. OF SIGNAL CONTACTS
02, 04, 06, 08, 12

NO. OF POWER CONTACTS
02, 04

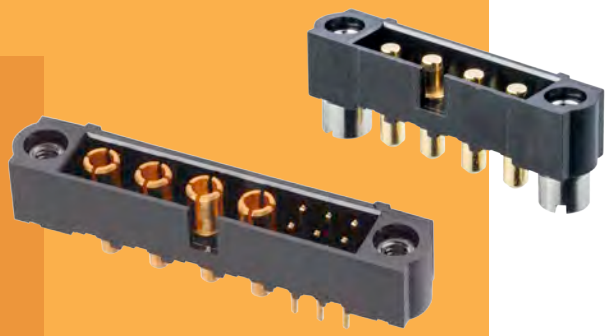
All dimensions in mm.

Datamate Connectors

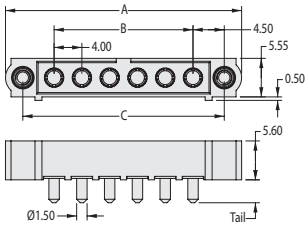
Datamate Mix-Tek OFF THE SHELF

Male Vertical Off-The-Shelf

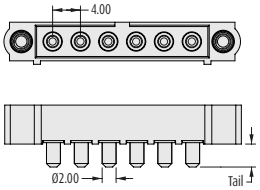
- A selection of stocked Datamate Mix-Tek solder tail standard layouts.
- Choice to suit two PCB thicknesses and two stud lengths.
- Mates with connectors shown on page 79.
- Standard Power contacts rated to 20A, signal to 3A.
- High Power rated to 40A nominal, up to 80A max.



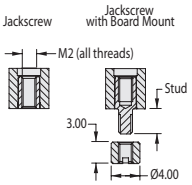
POWER CONTACTS ONLY



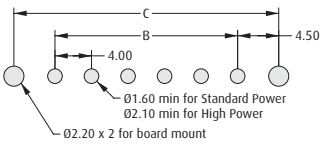
Standard Power



High Power



CALCULATION	
A	B + 14
B	(No. of Power contacts - 1) x 4
C	B + 9



Recommended PC Board Pattern

HOW TO ORDER

Refer to pages 77, 77a for stocked sizes

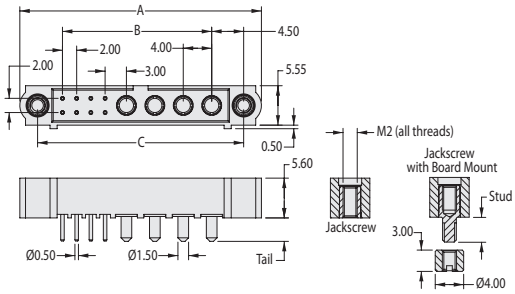
M80 - 5000000 XX - XX - XXX - 00 - 000

JACKSCREW	
M1	Jackscrew only
M2	With 3.5mm Board Mount stud
M3	With 5mm Board Mount stud

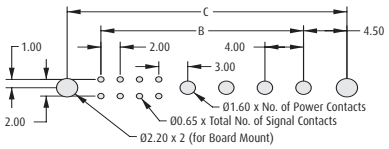
NO. OF POWER CONTACTS
02, 04, 06, 08, 10

POWER CONTACT PART NO.	
331	3.5mm Tail Standard Power
332	5 mm Tail Standard Power
PM1	3.5 mm Tail High Power

SIGNAL AND POWER CONTACTS



CALCULATION	
A	B + 13
B	(No. of Power contacts - 1) x 4+ Total no. of Signal contacts +1
C	B + 8



Recommended PC Board Pattern

HOW TO ORDER

M80 - 5T1 XX 05 XX - XX - 331 - 00 - 000

NO. OF SIGNAL CONTACTS
02, 04, 06, 08, 12

JACKSCREW	
M1	Jackscrew only
M2	With 3.5mm Board Mount stud

Refer to page 77 for stocked sizes.

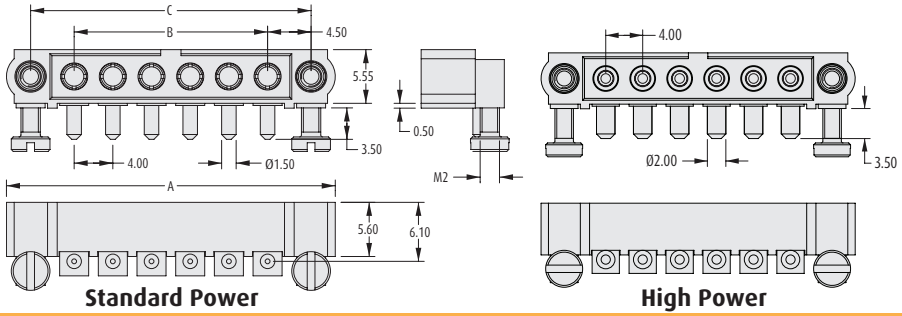
NO. OF POWER CONTACTS
02, 04

All dimensions in mm.

Male Horizontal Off-The-Shelf

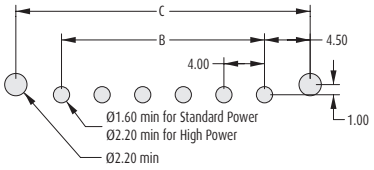
- A selection of stocked Datamate Mix-Tek solder tail standard layouts.
- Choice to suit two PCB thicknesses and two stud lengths.
- Mates with connectors shown on page 79.
- Standard Power contacts rated to 20A, signal to 3A.
- High Power rated to 40A nominal, up to 80A max.

POWER CONTACTS ONLY



Standard Power | High Power

CALCULATION	
A	B + 14
B	(No. of Power contacts - 1) x 4
C	B + 9



Recommended PC Board Pattern

HOW TO ORDER

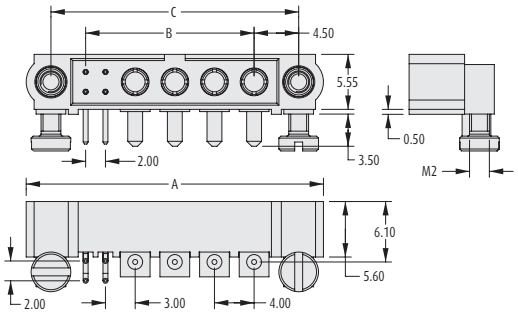
M80 - 5000000 M5 - XX - XXX - 00 - 000

Refer to page 76 for stocked sizes.

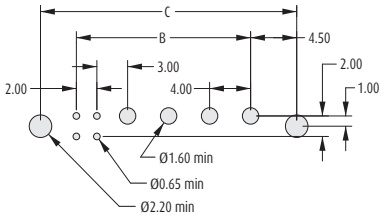
NO. OF POWER CONTACTS
02, 04, 06, 08, 10

POWER CONTACT PART NO.	
333	3.5mm Tail Standard Power
PM3	3.5mm Tail High Power

SIGNAL AND POWER CONTACTS



CALCULATION	
A	B + 13
B	(No. of Power contacts - 1) x 4 + Total no. of Signal contacts +1
C	B + 8



Recommended PC Board Pattern

HOW TO ORDER

M80 - 5L1 04 05 M5 - XX - 333 - 00 - 000

Refer to page 76 for stocked sizes.

NO. OF SIGNAL CONTACTS
04

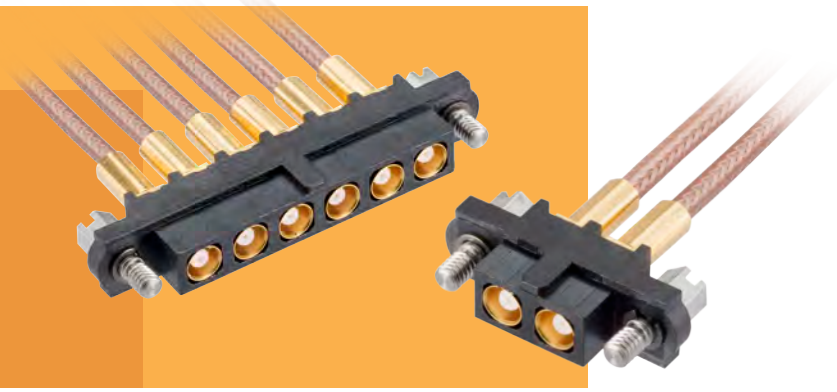
NO. OF POWER CONTACTS
02, 04

Datamate Connectors

Datamate Coax

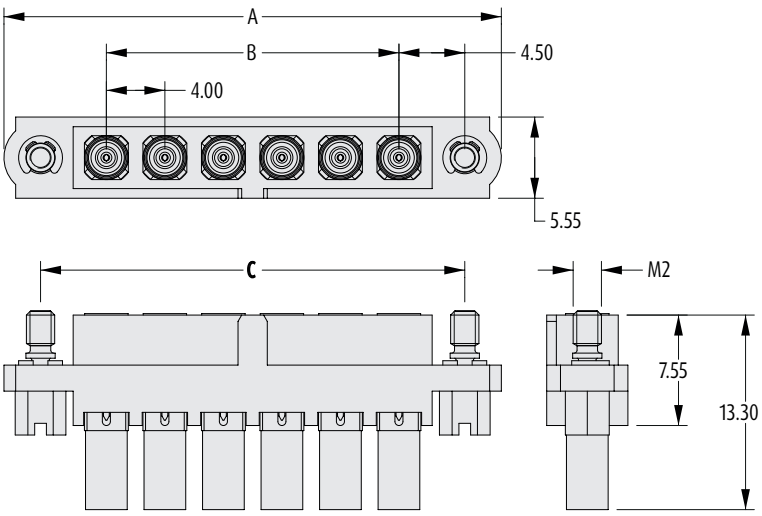
Female Crimp

- A selection of stocked, female crimp, Datamate Coax standard layouts.
- 6GHz, 50Ω Coax contacts, suitable for RG178 cable.
- Crimp tooling on pages 87 to 89.
- Polarised mouldings.
- Hexagonal slotted jackscrew style.
- Mates with connectors on page 81b.



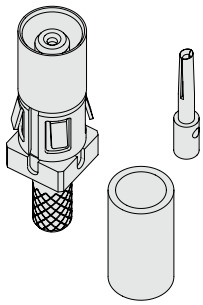
CABLE

CALCULATION	
A	B + 14
B	(No. of Coax contacts - 1) x 4
C	B + 9



For Spare Contacts, use Order Code:

M80-305

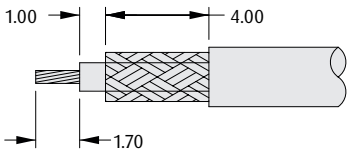


TOOLS

Recommended Crimp Tool – Z80-292, Z80-293
Positioner – Z80-291 (use with Z80-292)
Contact Removal Tool – Z80-290
See pages 87 to 89

- **Instruction sheets available at www.harwin.com/instructions**

WIRE STRIPPING DETAILS



HOW TO ORDER

M80 - FC 305 F1 - XX

COAX CONTACT TYPE	
305	Ø2.00mm cable

NO. OF COAX CONTACTS
02, 04, 06, 08

All dimensions in mm.

Datamate Connectors

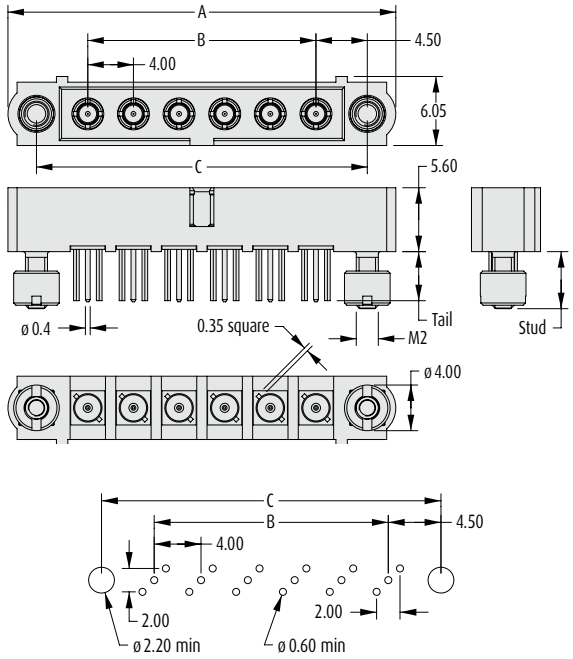
Datamate Coax

Male PC Tail

- Stocked coax connectors in vertical or horizontal orientation, with board-mount jackscrews for added security.
- 6GHz Coax contacts.
- Choice to suit two PCB thicknesses.
- Screwdriver **Z80-298** available for Vertical jackscrew nuts (see page 88).
- Mates with female connectors on page 81a.

VERTICAL

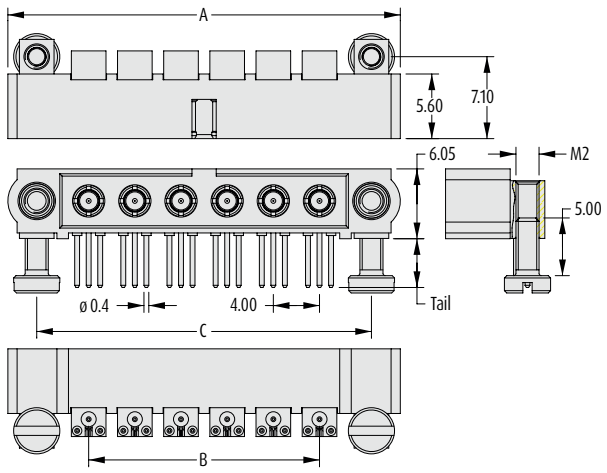
CALCULATION	
A	B + 14
B	(No. of Coax contacts - 1) x 4
C	B + 9

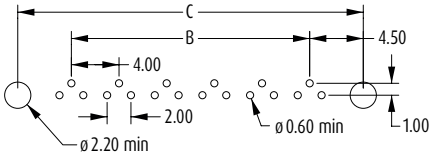


Recommended PCB Pattern

HORIZONTAL

CALCULATION	
A	B + 14
B	(No. of Coax contacts - 1) x 4
C	B + 9





Recommended PCB Pattern

HOW TO ORDER

M80 - MX 3XX MX - XX

TYPE	
MV311M2	Vertical, 3mm Tail with 3.5mm Board Mount Stud
MV312M3	Vertical, 4.5mm Tail with 5mm Board Mount Stud
MH313M5	Horizontal, 3mm Tail with 3.5mm Board Mount Bolt
MH314M5	Horizontal, 4.5mm Tail with 5mm Board Mount Bolt

NO. OF COAX CONTACTS
02, 04, 06, 08

All dimensions in mm.

Datamate Connectors

Datamate Mix-Tek

If you are unable to specify the connectors you require from our Off-The-Shelf range of Datamate Mix-Tek (pages 76 to 81), then customise your own Mix-Tek part number.

All items in this range are made-to-order, and may be subject to minimum order quantities and current availability conditions.

PART NUMBERING SYSTEM

M80 - X #X XX XX #X - XX - XXX - XX - XXX

PRODUCT RANGE

GENDER

4	Female (Socket)
5	Male (Plug)

SIGNAL CONTACT STYLE

00	No Signal Contacts
T1	Vertical PC Tail, 3mm tail
T2	Vertical PC Tail, 4.5mm tail
L1	Horizontal PC Tail, 3mm tail (Male only)
L2	Horizontal PC Tail, 4.5mm tail (Male only)
C1	Crimp 24-28 AWG (Small Bore)
D1	Crimp 22 AWG (Large Bore)
E1	Crimp 28-32 AWG (Extra Small Bore)
S1	Vertical Surface Mount
S2	Horizontal Surface Mount (Male only)

NO. OF SIGNAL CONTACTS

00, 02 to 50 (Must be even number)

SIGNAL CONTACT FINISH

00	No Signal Contacts	
01	Gold + Tin/Lead	Female PC Tail only
05	Gold	
22	Gold + Tin/Lead	Male PC Tail only
42	Gold + Tin	All PC Tail & Female Crimp

PART NUMBER OF SPECIAL CONTACTS AFTER FINAL SIGNAL CONTACT

See page 86, or 000 if none loaded

NUMBER OF SPECIAL CONTACTS AFTER FINAL SIGNAL CONTACT

00 to 12

PART NUMBER OF SPECIAL CONTACTS BEFORE SIGNAL CONTACT NO. 1

See page 86, or 000 if none loaded

NUMBER OF SPECIAL CONTACTS BEFORE SIGNAL CONTACT NO. 1

00 to 12

JACKSCREW VARIANT

00	None assembled
Fx	Female Jackscrews – see page 84
Mx	Male Jackscrews – see page 85

Note: If special contacts are being ordered separately, and cavities in mould are to be left empty, then the Special Contact part numbers should be 000.

EXAMPLES:

M80-5T11422M1-02-311-02-311
DIL Male Vertical with Jackscrew, no Board Mount,
3mm PC Tail – 2 Coax, 14 Signal, 2 Coax.

M80-4C12005F1-04-326-00-000
DIL Female Crimp with Slotted Hex Jackscrews,
Small Bore – 4 Power (for 14 AWG), 20 Signal.

M80-4D11042F2-04-305-02-308
DIL Female Crimp with Hex Socket Jackscrews,
Large Bore – 4 Special cavity, 10 Signal, 2 Special cavity.
Supplied with 4-off Female Straight Crimp Coax for Ø2mm cable, and 2-off Female 90° Crimp Coax for Ø2mm cable.

Max. number of contacts per connector: Special contacts only – 12 off, Signal contacts only – 50 off.

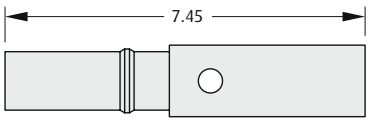
All dimensions in mm.

Spare Signal Crimp Contacts

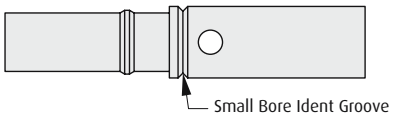
- Crimp contacts are supplied with all Mix-Tek connectors – use the order codes below for extra crimp contacts.
- For crimp and insertion tools, see pages 87 to 89.

FEMALE

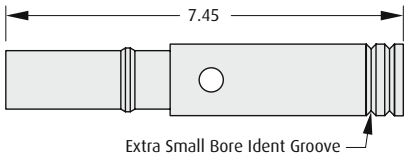
Large Bore (22 AWG):



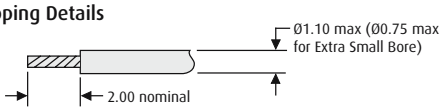
Small Bore (24 – 28 AWG):



Extra Small Bore (28 – 32 AWG):

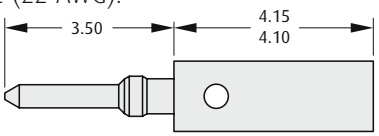


Wire Stripping Details

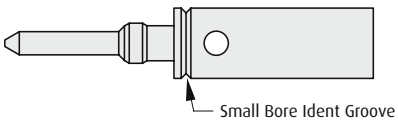


MALE

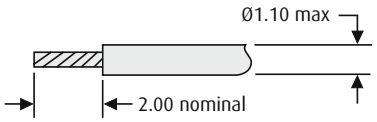
Large Bore (22 AWG):



Small Bore (24 – 28 AWG):



Wire Stripping Details



HOW TO ORDER

M80 - XXX 00 XX

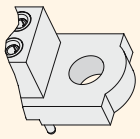
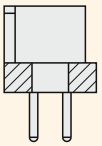
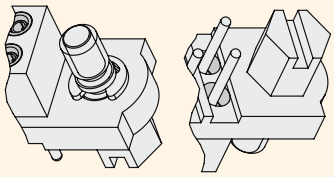
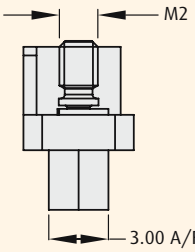
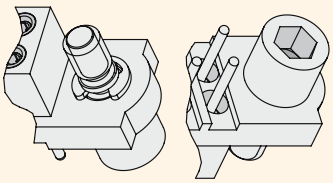
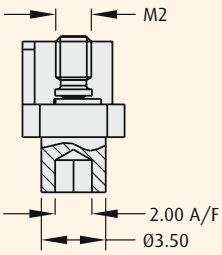
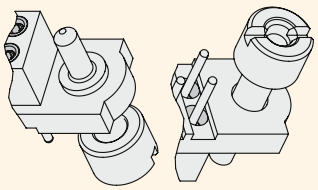
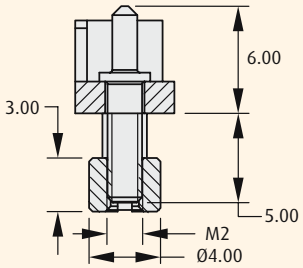
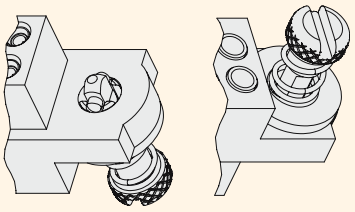
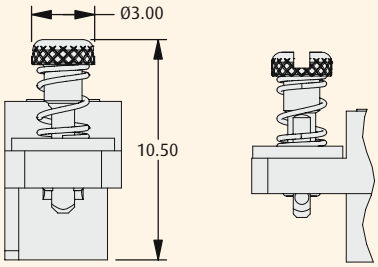
SERIES CODE

FINISH	
01	Gold + Tin (Female only)
05	Gold

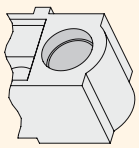
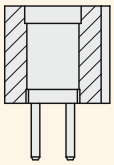
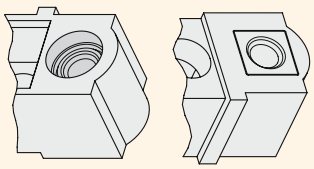
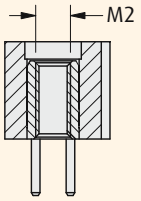
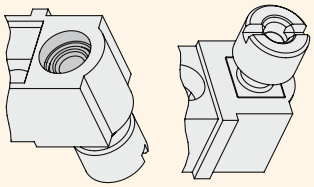
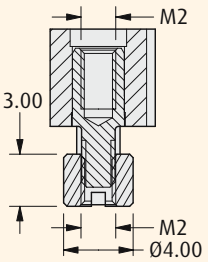
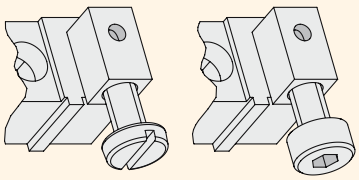
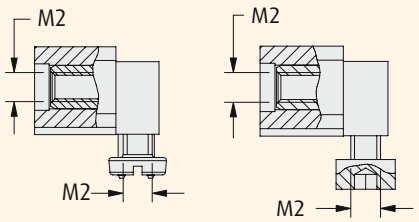
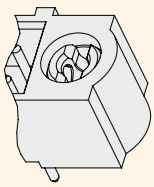
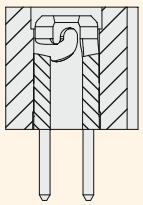
TYPE			
011	Female Large Bore (22 AWG)	194	Male Large Bore (22 AWG)
013	Female Small Bore (24-28 AWG)	195	Male Small Bore (24-28 AWG)
019	Female Extra Small Bore (28-32 AWG)		

All dimensions in mm.

Datamate – Jackscrews Female

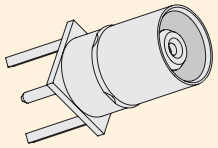
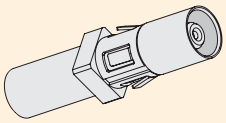
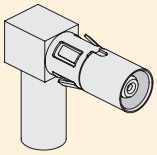
00			None assembled
F1			Hexagonal Slotted Jackscrew (floating)
F2			Hexagonal Socket Jackscrew (floating)
F3			Guide Pin Jackscrew with Panel Mount
FC			101 Lok Jackscrew

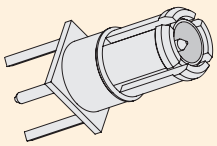
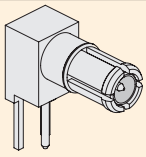
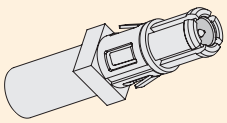
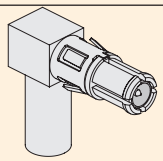
Datamate – Jackscrews Male

00			None assembled
M1			Jackscrew nut only
M2 or M3			Jackscrew with Vertical Board Mount, slotted nut M2 = 3.50mm stud length M3 = 5.00mm stud length
M5 or M7			Jackscrew with Horizontal Board Mount, 5mm bolt length M5 = Slotted bolt M7 = Hex Socket bolt
MC			101 Lok Jackscrew Retainer

Datamate – Special Contacts

COAX

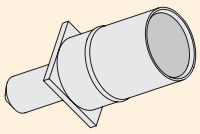
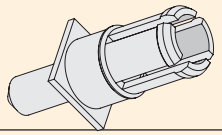
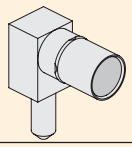
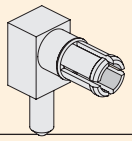
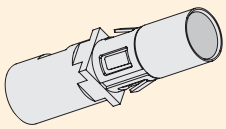
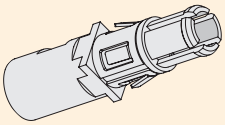
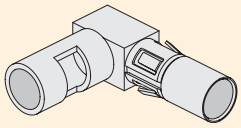
	FEMALE	
301 or 302		Vertical PC Tail 301 = 3.00mm tail 302 = 4.50mm tail
305 306 307		Straight Crimp 305 = Ø2.00mm cable 306 = Ø2.40mm cable 307 = Ø2.70mm cable
308 or 309		90° Crimp 308 = Ø2.00mm cable 309 = Ø2.70mm cable

	MALE	
311 or 312		Vertical PC Tail 311 = 3.00mm tail 312 = 4.50mm tail
313 or 314		Horizontal PC Tail 313 = 3.00mm tail 314 = 4.50mm tail
315 316 317		Straight Crimp 315 = Ø2.00mm cable 316 = Ø2.40mm cable 317 = Ø2.70mm cable
318 or 319		90° Crimp 318 = Ø2.00mm cable 319 = Ø2.70mm cable

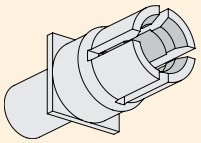
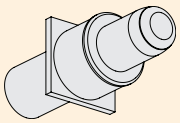
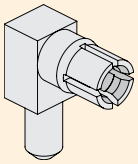
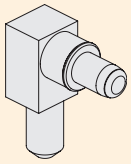
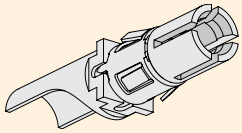
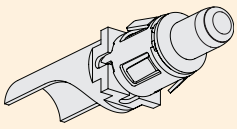
CABLE SIZE	CABLE TYPE	CONTACTS
Ø2.00mm cable	RG 178	305 315 308 318
Ø2.40mm cable	PTFE Cellular	306 316
Ø2.70mm cable	RG 174 RG 179 RG 316	307 317 309 319

Datamate – Special Contacts

POWER

	FEMALE		MALE		
321 or 322		Vertical PC Tail 321 = 3.50mm tail 322 = 5.00mm tail	331 or 332		Vertical PC Tail 331 = 3.50mm tail 332 = 5.00mm tail
323 or 324		Horizontal PC Tail 323 = 3.50mm tail 324 = 5.00mm tail	333 or 334		Horizontal PC Tail 333 = 3.50mm tail 334 = 5.00mm tail
325 326 327 328 329		Straight Solder 325 = 12 AWG cable 326 = 14 AWG cable 327 = 16 AWG cable Straight Crimp 328 = 18 AWG cable 329 = 20 AWG cable	335 336 337 338 339		Straight Solder 335 = 12 AWG cable 336 = 14 AWG cable 337 = 16 AWG cable Straight Crimp 338 = 18 AWG cable 339 = 20 AWG cable
32A 32B 32C		90° Solder 32A = 12 AWG cable 32B = 14 AWG cable 32C = 16 AWG cable			

HIGH POWER

	FEMALE		MALE		
PF1 or PF2		Vertical PC Tail PF1 = 3.50mm tail PF2 = 5.00mm tail	PM1 or PM2		Vertical PC Tail PM1 = 3.50mm tail PM2 = 5.00mm tail
PF3 or PF4		Horizontal PC Tail PF3 = 3.50mm tail PF4 = 5.00mm tail	PM3 or PM4		Horizontal PC Tail PM3 = 3.50mm tail PM4 = 5.00mm tail
PF5		Straight Solder 10 AWG cable	PM5		Straight Solder 10 AWG cable

Datamate Tooling

Instruction sheets (where available) can be accessed at **www.harwin.com/downloads/instructions**

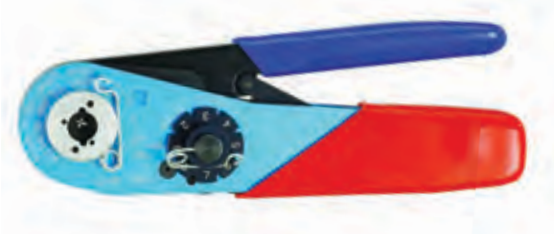
HAND CRIMP TOOL

- Standard circular crimp tool BS5210-3A-300 and MIL specification M22520/2-01.
- Precision tool with ratchet mechanism and 8-indent form.
- Must be used with applicable positioner shown below.
- Instruction sheet available.

ORDER CODE	
Signal contacts, L-Tek, J-Tek & Mix-Tek	**M22520/2-01**

HAND CRIMP TOOL

- Standard circular crimp tool.
- Precision tool with ratchet mechanism and 8-indent form.
- Must be used with applicable positioner shown below.
- Instruction sheet available.



ORDER CODE	
Inner contact of Mix-Tek coax contacts	**Z80-292**

HAND CRIMP TOOL

- Standard coax crimp tool for crimping the outer sleeve of Mix-Tek coax contacts.
- Instruction sheet available.

ORDER CODE	
Outer sleeve of Mix-Tek coax contacts	**Z80-293**

POSITIONER

- Used with applicable hand crimp tool shown above.

ORDER CODE	
Female Signal Barrel Crimp, Male L-Tek Crimp	**T5747**
Male J-Tek, Mix-Tek Signal Crimp	**Z80-193**
Inner contact of Mix-Tek coax contacts	**Z80-291**

Datamate Tooling

Instruction sheets (where available) can be accessed at **www.harwin.com/downloads/instructions**

INSERTION/REMOVAL TOOL

- For inserting crimped contacts into the rear of mouldings.
- Instruction sheet available.
- Suitable for all Datamate signal Barrel crimp contacts.

ORDER CODE	
Barrel Signal crimps for L-Tek, J-Tek & Mix-Tek	**Z80-280**

REMOVAL TOOL

- To aid removal of special cable contacts from Mix-Tek connectors.

ORDER CODE	
Mix-Tek special cable connectors	**Z80-290**

SEPARATOR TOOL

- Recommended for unplugging L-Tek latched connectors (tool releases the latches prior to disengagement).
- Can also be used with unlatched and friction lock connectors.
- Suitable for all sizes.

ORDER CODE	
L-Tek	**Z80-299**

SCREWDRIVER

- Recommended for use on J-Tek board mount nuts.

ORDER CODE	
J-Tek screwdriver	**Z80-298**

E-CLIP TOOL

- For assembling E-Clips supplied with J-Tek hooded connectors.

ORDER CODE	
J-Tek E-Clips	**Z80-300**

Instruction sheets (where available) can be accessed at **www.harwin.com/downloads/instructions**

HAND CRIMP TOOL

- 'Rigidus' crimp tool design.
- Precision parallel action crimp tool with ratchet mechanism.
- Supplied with locator and die-set – spares available.
- Instruction sheet available.

ORDER CODE
Z80-255

REMOVAL TOOL

- For removal of crimped contacts from mouldings.
- Instruction sheet available.

ORDER CODE
Z80-258

SPARE DIE-SET

- Spare die-set for use with hand crimp tool shown above.

ORDER CODE
Z80-244

SPARE LOCATOR

- Used with hand crimp tool shown above.

ORDER CODE
Z80-259

Datamate Crimping

Datamate Signal Contacts: Barrel Crimps

Crimps and Tools

These instructions are applicable for the following crimp contacts:

- Female Crimp contacts **M80-01100XX, M80-01300XX, M80-01900XX, M83-01100XX, M83-01300XX**
- Male Crimp contacts **M80-04000XX, M80-04100XX, M80-19400XX, M80-19500XX**

The following tools are used (see pages 87 and 88):

- Hand Crimp Tool **M22520/2-01**
- Positioner **Z80-193** (for M80-19400XX or M80-19500XX) or **T5747** (for all others)
- Insertion/Removal Tool **Z80-280**

All tools are supplied with instruction sheets, which are available at **www.harwin.com/downloads/instructions**. Before starting, assemble the positioner to the crimp tool (see the M22520/2-01 Instruction Sheet for details).

Crimping

- Check that your selected cable size is correct to the following table – Harwin recommend PTFE insulated equipment wire to BS 3G 210 Type A or MIL-W-16878:

Type	Wire gauge (AWG)	Typical Stranding	Crimp tool setting	Minimum pull-off force	Insulator diameter
Large Bore	22	19/0.15	6	50 Newtons	Ø1.10mm max
Small Bore	24	7/0.2	6	44 Newtons	
	26	7/0.15	6	25 Newtons	
	28	7/0.125	6	12.5 Newtons	
Extra Small Bore	28	7/0.12	5	12.5 Newtons	Ø0.75mm max
	30	7/0.25	4	7 Newtons	
	32	7/0.08	4	4 Newtons	

- Cut the end of the cable to give a clean cut end. Strip the end of the cable by 2.00±0.15mm using a PTFE wire stripper, ideally with an adjustable rotating cutter. This should result in a clean edge to the insulation, and all the strands laying together neatly. If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.
- Assemble the contact onto the end of the cable – make sure all the strands are within the crimp body. The cable insulation should also go inside the crimp barrel – see Figure 1.
- Position the contact fully into the positioner, by inserting it clip-end first through the crimp tool jaws. Keep a small amount of pressure on the cable, to ensure it stays inserted in the crimp.
- Squeeze the handles of the crimp tool fully together, until the ratchet releases. The handles will then return to the open position. Remove the crimped wire, and check the following:
  - Evenness of crimp indentations, no fractures or rough edges around the crimp
  - No damage to the rest of the crimp or insulation
  - Regularly check a sample to ensure the minimum pull-off force is maintained

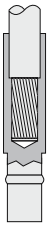


Fig. 1

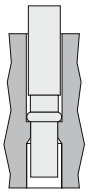


Fig. 2 – correct

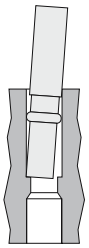


Fig. 3 – incorrect

Crimp Insertion

- Attach the correct tool piece to the handle of Z80-280 for inserting your cable size (check the instruction sheet for further advice).
- Place the crimped contact partially in the moulding – this should leave 1.5-2mm of crimp protruding from the moulding. It is important that the correct position is found (Figure 2), otherwise the retention shoulder inside the moulding will get removed when force is applied, and the crimp will not stay in the moulding (Figure 3).
- Support the face of the moulding on a solid surface (do not rest the connector on any fitted latches). Place the insertion tool around the wire and onto the back of the crimp (Figure 4). Push firmly – there will be an audible click when the socket is correctly seated.

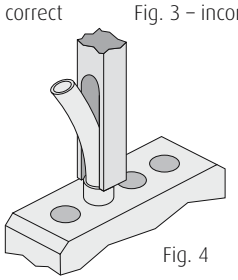


Fig. 4

Datamate Signal Contacts: Datamate Trio-Tek

Crimps and Tools

These instructions are applicable for the following crimp contacts:

- Female Crimp contacts **M80-25300XX, M80-25400XX, M80-28300XX, M80-28400XX** (Pages 25 and 51).

The following tools are used (see page 89):

- Hand Crimp Tool **Z80-255**
- Locator **Z80-259** (supplied with crimp tool)
- Removal Tool **Z80-258**

All tools are supplied with instruction sheets, which are available at **www.harwin.com/downloads/instructions**.

Crimping

- Check that your selected cable size is correct to the following table – Harwin recommend PTFE insulated equipment wire to BS 3G 210 Type A:

Type	Wire gauge (AWG)	Typical Stranding	Minimum pull-off force	Insulator diameter
M80-25300XX or M80-28300XX	22	19/0.15	45 Newtons	Ø1.10mm max
	24	7/0.2	29 Newtons	Ø0.95mm max
M80-25400XX or M80-28400XX	26	7/0.15	18 Newtons	Ø0.80mm max
	28	7/0.125	9.8 Newtons	Ø0.71mm max

- Cut the end of the cable to give a clean cut end. Strip the end of the cable by 2.75±0.25mm using a PTFE wire stripper, ideally with an adjustable rotating cutter. This should result in a clean edge to the insulation, and all the strands laying together neatly. If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.
- Check the locator is assembled (see the Z80-255 Instruction Sheet for details). Ensure that the crimp tool is at the fully open position (Figure 1).
- Push the button on the back of the locator (Figure 2), which will move the locator forward between the crimp dies (Figure 3). Whilst holding the locator in the forward position, insert the crimp contact into the correct locator nest (Figure 4). The wire size is marked on the crimp die, above each location.

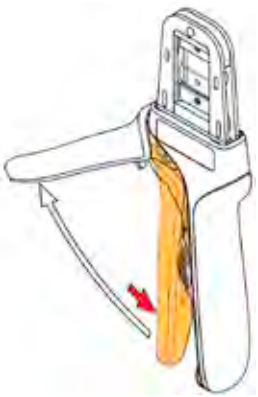


Fig. 1

Fig. 2

Fig. 3

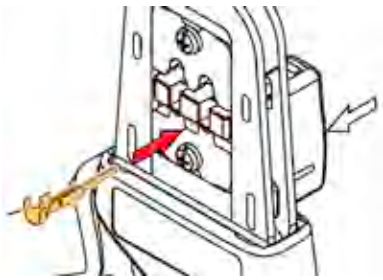


Fig. 4

Datamate Crimping

- Release the locator button, allowing the crimp contact to move back between the crimping jaws (Figure 5). Partially close the handle, until the second ratchet position engages (Figure 6). Load the stripped wire through the terminal, and against the wire stop inside the tool (Figure 7).

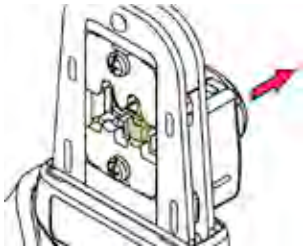


Fig. 5

Fig. 6

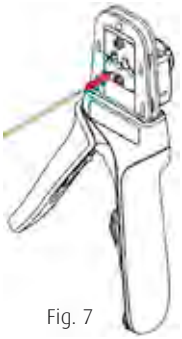


Fig. 7

Fig. 8

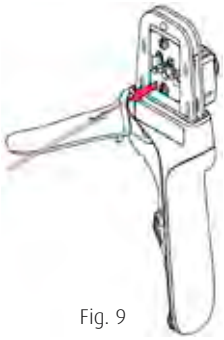


Fig. 9

- Whilst holding the wire against the wire stop, complete the crimp by squeezing the tool handles together through the rest of the ratchet clicks – another 3, to make 5 in total (Figure 8). The handles should then be free to open. Remove the crimped wire (Figure 9).

Crimp Insertion

- The completed crimp can now be inserted into the appropriate Trio-Tek crimp housing. Crimps are assembled into the mould with the retaining tang towards the outer edge of the housing. With thinner wires, it may be helpful to push onto the back of the crimp with the Extraction Tool Z80-258. If it is necessary to remove a crimp once assembled, please refer to the instruction sheet for the Removal Tool Z80-258.

Datamate Coax Contacts: Datamate Mix-Tek

Crimps and Tools

These instructions are applicable for the following crimp contacts:

- Female Crimp Coax contacts: straight **M80-305, M80-306, M80-307** and 90° **M80-308, M80-309** (Page 86)
- Male Crimp Coax contacts: straight **M80-315, M80-316, M80-317** and 90° **M80-318, M80-319** (Page 86)

The following tools are used (see pages 87 and 88):

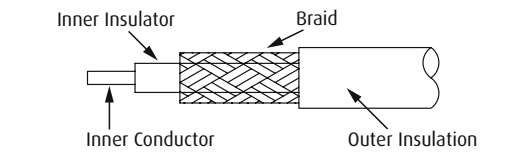
- Hand Crimp Tools **Z80-292, Z80-293**
- Positioner **Z80-291**
- Removal Tool **Z80-290**

Crimping Straight Coax Contacts

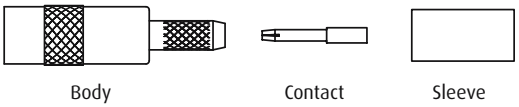
- Check that your selected cable size is correct to the following table:

Type	Cable size	Cable type	Correct Hex on tool Z80-293, for crimping sleeve	Correct setting on tool Z80-292, for crimping inner contact
M80-305, M80-315	Ø2.00mm	RG 178	Small Hex	4
M80-306	Ø2.40mm	PTFE Cellular	Small Hex	4
M80-307, M80-317	Ø2.70mm	RG 174, 179, 316	Large Hex	4 (M80-307), 6 (M80-317)

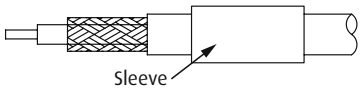
- Strip the cable to the appropriate dimensions for the part being crimped (as specified on the drawing). If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.



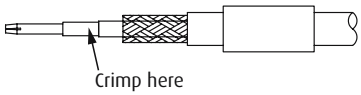
- Identify the pieces of the coax connector to be assembled:



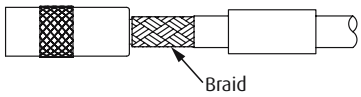
- Slide the sleeve onto the cable, past the stripped area:



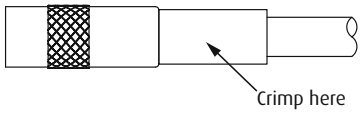
- Crimp the inner contact to the end of the cable inner conductor, using the Hand Crimp Tool **Z80-292**, with the Positioner **Z80-291** assembled.



- Insert the cable and crimped inner contact into the coax body from the rear. Make sure that the braid goes outside and over the rear section of the body.



- Slide the sleeve back to the body of the coax, so that it covers the exposed braid, and touches the shoulder of the coax body. Crimp into place using the Hand Crimp Tool **Z80-293**.

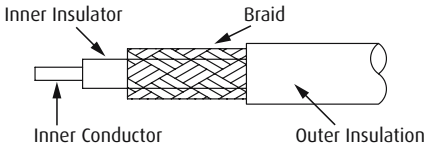


Crimping 90° Coax Contacts

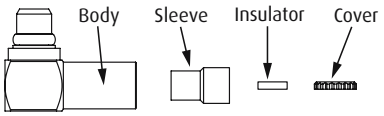
- Check that your selected cable size is correct to the following table:

Type	Cable size	Cable type	Correct Hex on tool Z80-293, for crimping sleeve
M80-308, M80-318	Ø2.00mm	RG 178	Small Hex
M80-316	Ø2.40mm	PTFE Cellular	Small Hex
M80-309, M80-319	Ø2.70mm	RG 174, 179, 316	Large Hex

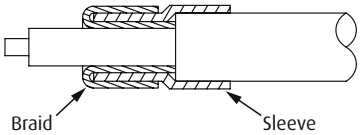
- Strip the cable to the appropriate dimensions for the part being crimped (as specified on the drawing). If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.



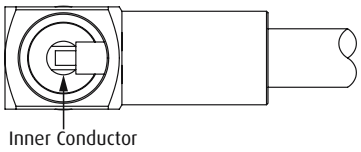
- Identify the pieces of the coax connector to be assembled:



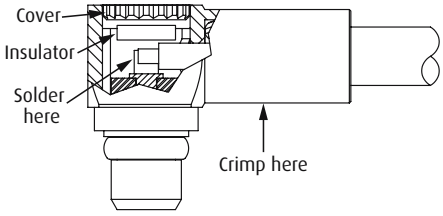
- Slide the sleeve onto the cable until it stops against the outer insulation. Fold the braid over the sleeve:



- Push the cable and sleeve into the body, as far as it will go. The cable inner conductor will be visible through the hole in the top of the coax body, and should go into the slot in the inner contact of the body.



- Solder the cable inner conductor to the body inner contact. When cool, place the insulator inside the top, and press the cover into place. Crimp the back end of the coax onto the insulation of the cable using the Hand Crimp Tool **Z80-293**.



Datamate Jackscrews

Using Datamate Jackscrews: Datamate J-Tek

Introduction

Jackscrews are available for all variations of Datamate J-Tek and Mix-Tek. They are often specified where the following needs may require more than the holding force of the contacts:

- To prevent disengaging of connectors under adverse conditions, where the withdrawal forces may be exceeded.
- To provide a locking feature which deters accidental disengaging by operators.
- To aid engaging, where the number of contacts is high enough to require additional force to complete the mating operation.
- To aid engaging where access to the connector is restricted.

Using M2 threaded Jackscrews

- Engage the two halves of the connector, and lightly push together until the Jackscrews touch.
- Maintaining pressure, turn one of the floating Jackscrews clockwise, until it engages with the fixed Jackscrews. Repeat with the other jackscrew.
- If high forces are encountered early on during engaging, then you may have cross-threaded the Jackscrews. Unscrew anti-clockwise, and try again. Ensure the connectors are directly in line before attempting to engage.
- Once both Jackscrews have begun to engage, ensure an even movement by applying a maximum of one turn to each jackscrew, in sequence. When the connectors have bottomed, the force required to turn the Jackscrews will suddenly increase.
- The torque force on each jackscrew should not exceed 23 cmN.
- To disengage the connectors, repeat the instructions in reverse: unscrew with an anti-clockwise movement. Ensure even movement by applying a maximum of one turn to each jackscrew, in sequence. Once the Jackscrews turn loose with no resistance, you can then easily pull apart the two connectors.

Using 101 Lok Jackscrews

Please see Jackscrews FC and MC on pages 84 and 85.

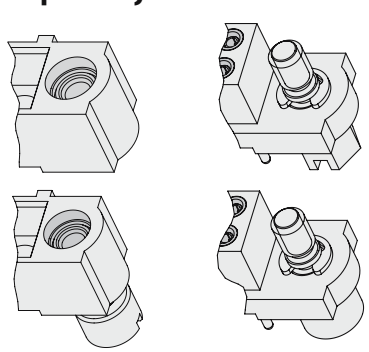
- Before engaging, the slot on the jackscrew should be at right angles to the length of the connector.
- Push the connectors together. Once the connectors are mated, use a screwdriver to push down onto each 101Lok jackscrew until the spring is compressed. Turn the jackscrew clockwise 101 degrees, and release. The jackscrew should remain partially compressed.
- To disengage, use a screwdriver to push down onto each 101Lok jackscrew until the spring is compressed. Turn the jackscrew anti-clockwise 101 degrees, and release. The jackscrew will spring back to its uncompressed position.

Using Board Mount

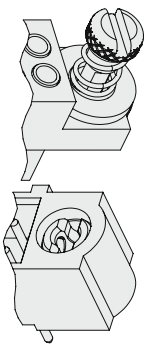
Two styles of Board Mount are used, either using a nut or a screw. Both are assembled by placing the connector in the correct position on the board, then screwing in the board fixing nut/screw on the underside of the board. Harwin recommend Slotted Screwdriver Z80-298 (page 88) for use with the slotted nuts.

- Nuts and Screws should be tightened to a torque of 21±2cmN.

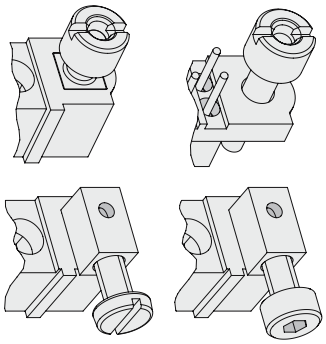
Examples of Jackscrews:



M2 Threaded Jackscrews



101 Lok Jackscrews



Board Mount Jackscrews

Connectors

CONTENTS

HARWiN

M40-600/620 Connectors Specification

Materials

Mouldings:	High Temp Thermoplastic, UL94V-0
Contacts:	Phosphor Bronze
Finish:	Tin

Electrical

Current rating:	0.5A per contact
Voltage rating:	150V AC
Voltage proof:	250V AC
Contact resistance:	50 mΩ max
Insulation resistance:	500 MΩ min

Environmental

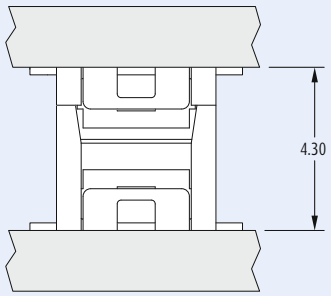
Operating temperature:	-20°C to +125°C
Solderability:	210°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Mechanical

Durability:	30 operations
Insertion force (max):	2.7N per contact
Withdrawal force (min):	0.4N per contact

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

FEMALE / MALE	M40-620
M40-600	

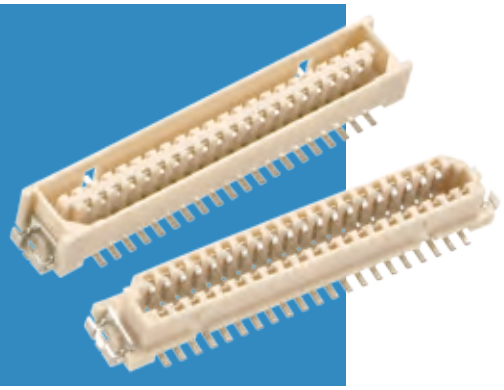
All dimensions in mm.

M40 Connectors

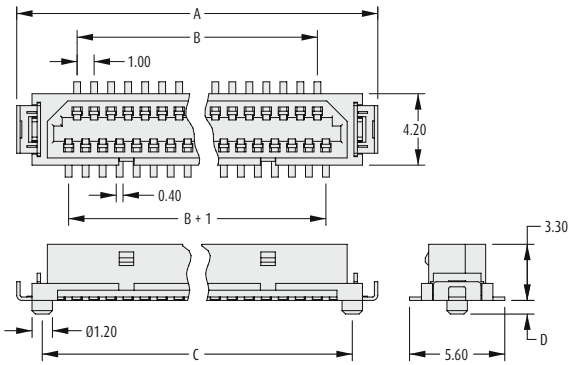
Vertical Surface Mount

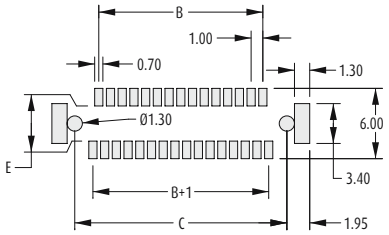
A range of double row 1.00mm pitch SMT male and female connectors for board-to-board stacking.

- Locating pegs to ensure correct positioning onto the board.
- Polarised to prevent mis-mating.
- Staggered pin-out to help board layout.



FEMALE

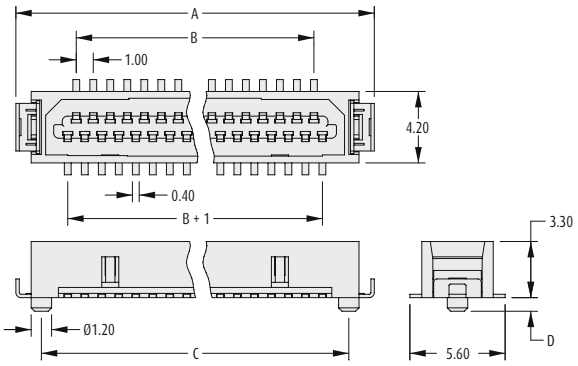


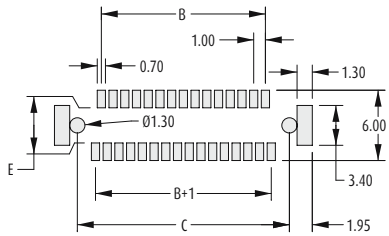


Recommended PC Board Pattern

CALCULATION	
A	B + 7.1
B	(Total No. Of Contacts – 3) / 2
C	B + 4.1
D	1.0mm for 9, 15, 21, 25 way; otherwise 0.80mm
E	1.84mm for 9, 15, 21, 25 way; otherwise 3.00mm

MALE





Recommended PC Board Pattern

HOW TO ORDER

M40 - 6 X 0 XX XX X

SERIES CODE

GENDER	
0	Male
2	Female

PACKAGING	
Blank	Loose
R	Tape & Reeled

FINISH	
46	Tin

TOTAL NO. OF CONTACTS

09, 15, 21, 25, 31, 41, 51

All dimensions in mm.

M40-310/320 Connectors Specification

Materials

Mouldings:	High Temp Thermoplastic, UL94V-0
Contacts:	Male: Brass Female: Phosphor Bronze
Finish:	Gold

Electrical

Current rating:	1.0A per contact
Voltage proof:	500V AC
Contact resistance:	30 mΩ max
Insulation resistance:	1,000 MΩ min

Environmental

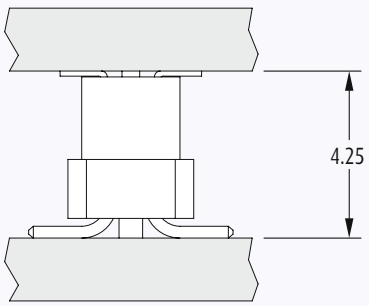
Operating temperature:	-40°C to +105°C
Solderability:	245°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Mechanical

Durability:	300 operations
Insertion force (max.):	1.5N per contact
Withdrawal force (min.):	0.1N per contact
Vibration sensitivity:	50 – 2000Hz, 45 minutes duration
Shock severity:	294m/s² (30G) for 11ms

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

FEMALE / MALE	M40-310
M40-320	

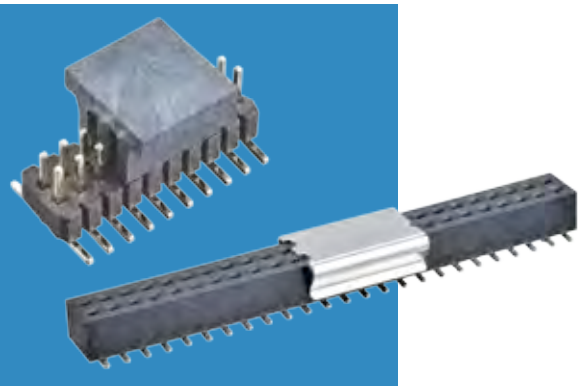
All dimensions in mm.

M40 Connectors

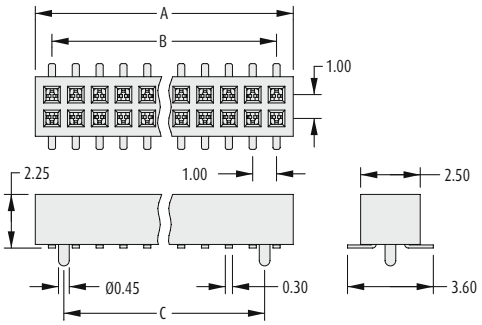
Vertical Surface Mount

A range of double row 1.00mm pitch SMT male and female connectors for board-to-board stacking.

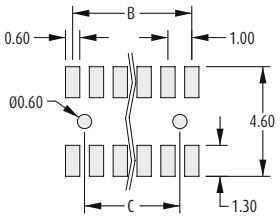
- Locating pegs to ensure correct positioning onto the board.
- Supplied in tape and reel packaging with pick and place caps as standard.
- Twin beam female connector for higher durability.



FEMALE

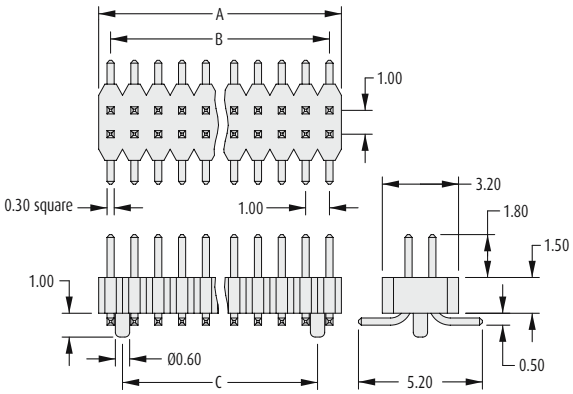


CALCULATION	
A	B + 1.40
B	No. of contacts per row - 1
C	No. of contacts per row - 2

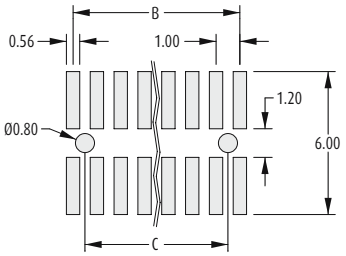


Recommended PC Board Pattern

MALE



CALCULATION	
A	No. of contacts per row
B	No. of contacts per row - 1
C	No. of contacts per row - 2



Recommended PC Board Pattern

HOW TO ORDER

M40 - 3 X 0 XX 45 R

SERIES CODE

GENDER

1	Female
2	Male

TAPE & REELED

FINISH

45	Gold

TOTAL NO. OF CONTACTS

03, 04, 05, 06, 08, 10, 20, 25

All dimensions in mm.

M30 Connectors Specification

Material

Mouldings:	SMT: Nylon 6T, UL94V-0 Others: Nylon 66, UL94V-0
Contacts:	Male: Brass Female: Phosphor Bronze
Finish:	Tin

Environmental

Operating temperature:	-25°C to +85°C
Solderability:	245°C for 5 seconds
Soldering heat resistance:	PC Tail: 250°C for 5 seconds SMT: 260°C for 10 seconds

Electrical

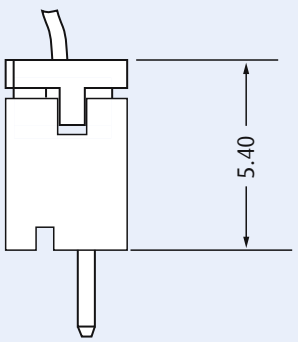
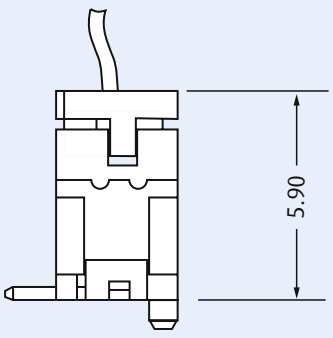
Current rating:	1A per contact
Voltage rating:	150V AC
Voltage proof:	500V AC/DC
Contact resistance:	30 mΩ max
Insulation resistance:	500 MΩ min

Mechanical

Durability:	50 operations
Insertion force (max):	4.9N per contact
Withdrawal force (min):	0.5N per contact
Crimp retention (min):	4.9N per contact
Crimped wire retention (min):	26 AWG wire: 19.6N 28 AWG wire: 9.8N 30 AWG wire: 7.8N
Vibration sensitivity:	10 – 55Hz, 1.5mm, 6 hours duration
Shock severity:	490m/s² (50G) for 11ms

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

MALE / FEMALE	PC TAIL	SMT
CRIMP	M30-110  M30-610	M30-110  M30-600

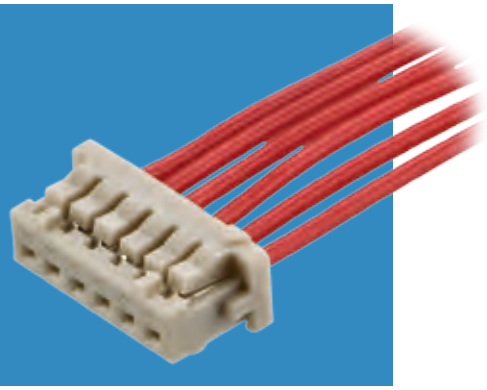
All dimensions in mm.

M30 Connectors

Female Crimp Housing and Contacts

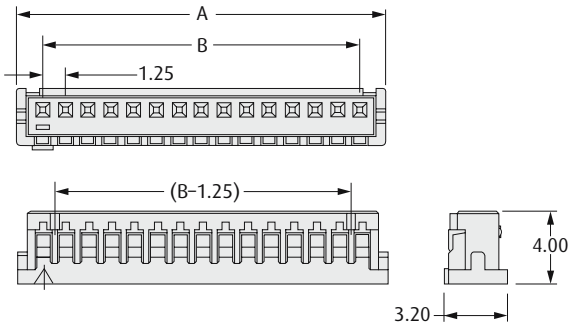
A range of 1.25mm pitch male and female connectors, for cable-to-board applications.

- Loose or reeled contacts.
- Suitable for use with male connectors shown on page 102.



HOUSING

CALCULATION	
A	B + 2.9
B	1.25 x (No. of contacts per row - 1)

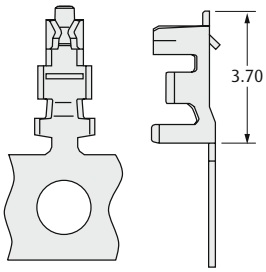


HAND CRIMP TOOL

ORDER CODE
Z30-021

- Instruction sheets available at www.harwin.com/downloads/instructions

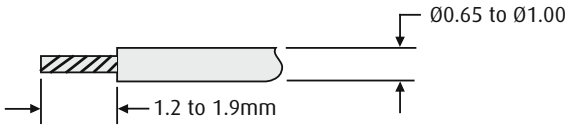
CONTACTS



TYPE	AWG	ORDER CODE
Reeled	26 – 30	M30-1050046
Loose	26 – 30	M30-1060046

- Order codes for reeled contacts refer to one reel of 10,000 contacts.
- Order codes for loose contacts refer to one pack of 100 contacts.

WIRE STRIPPING DETAILS



HOW TO ORDER

M30 - 1 XX XX XX

SERIES CODE

TYPE	
05	Reeled contact
06	Loose contact
10	Housing

FINISH		
00	Housing	Pb
46	Tin (Contacts)	Pb

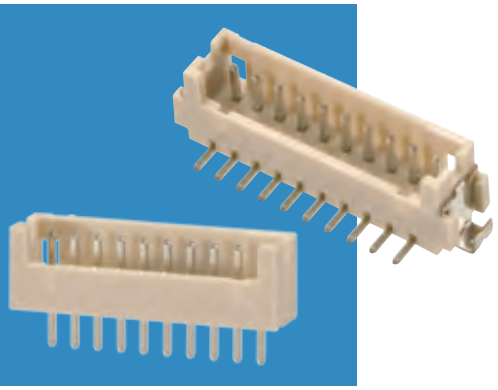
NO. OF CONTACTS PER ROW	
02 to 15	Housing
00	Contacts

All dimensions in mm.

M30 Connectors

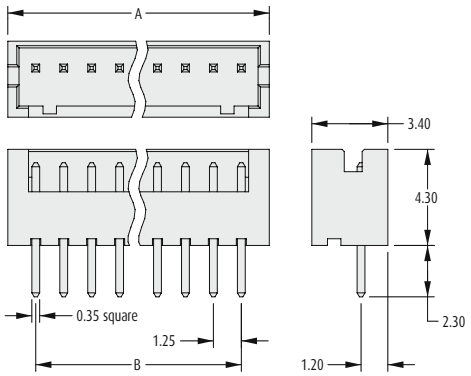
Male Vertical

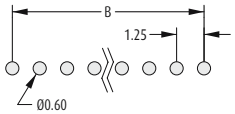
- Shrouded male connectors.
- Suitable for use with female connectors on page 101.
- SMT version features metal solder-down tabs and locating pegs to ensure correct positioning onto the board.



PC TAIL

CALCULATION	
A	1.25 x (No. of contacts per row + 1)
B	1.25 x (No. of contacts per row - 1)

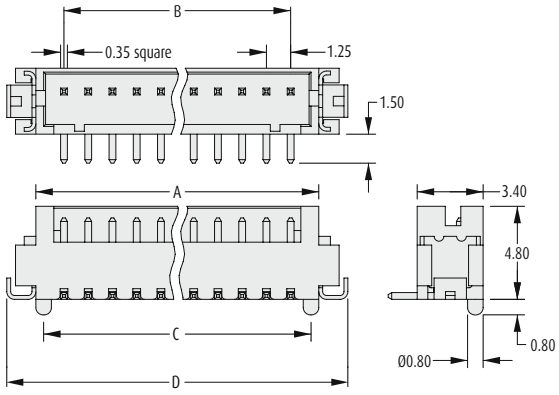


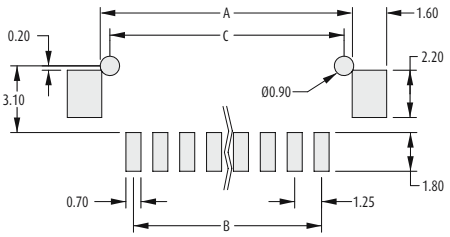


Recommended PC Board Pattern

SURFACE MOUNT

CALCULATION	
A	B + 2.9
B	1.25 x (No. of contacts per row - 1)
C	B + 2.1
D	B + 6.0





Recommended PC Board Pattern

HOW TO ORDER

M30 - 6 X 0 XX XX X

SERIES CODE

TYPE	
0	Surface Mount
1	PC Tail

NO. OF CONTACTS PER ROW
02 to 15

PACKAGING	
Blank	Loose
R	Tape & Reeled (M30-600)

FINISH	
46	Tin

All dimensions in mm.

Archer Connectors – M50 Specification

Materials

Mouldings:	High Temperature Plastic UL94V-0
Contacts:	Copper Alloy
Finish:	See individual pages

Electrical

Current rating:	1A per contact
Voltage proof:	300V AC, 500V DC for 1 minute (see individual drawings)
Contact resistance:	30 mΩ max
Insulation resistance:	500 MΩ min

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

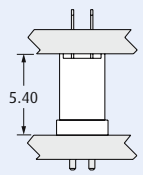
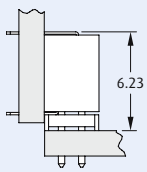
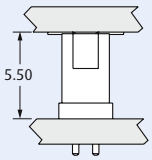
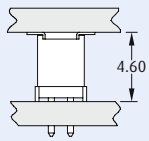
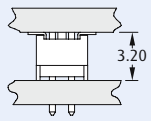
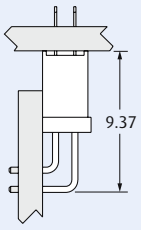
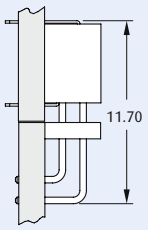
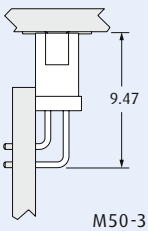
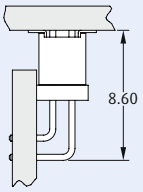
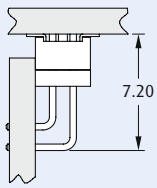
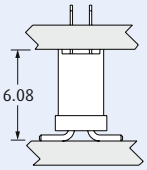
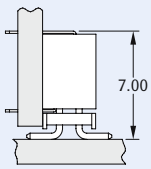
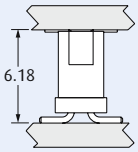
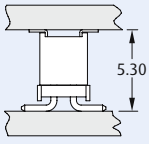
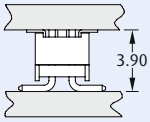
Environmental

Operating temperature:	-40°C to +105°C
Solderability:	245°C for 5 seconds typical
Soldering heat resistance:	260°C for 5 seconds

Mechanical

Durability:	M50-310, 312: 100 operations M50-311: 600 operations M50-315: 25 operations Others: 300 operations
Insertion force (max):	Jumper Sockets: 10.0N Others: 2.0N per contact
Withdrawal force (min):	Jumper Sockets: 1.3N Others: 0.1N per contact
Vibration sensitivity:	10 – 55Hz, 1.5mm, 6 hours duration
Shock severity:	294m/s² (30G) for 11ms

Mating Profiles

	FEMALE				
MALE	**VERTICAL PC TAIL**	**HORIZONTAL PC TAIL**	**VERTICAL SMT**	**VERTICAL SMT** Low Profile	
	DIL	**DIL**	**DIL**	**DIL**	**DIL**
VERTICAL PC TAIL	M50-300  M50-350	M50-320  M50-350	M50-310 M50-311  M50-350	M50-312  M50-350	M50-315  M50-350
HORIZONTAL PC TAIL	M50-300  M50-390	M50-320  M50-390	M50-310 M50-311  M50-390	M50-312  M50-390	M50-315  M50-390
VERTICAL SMT	M50-300  M50-360	M50-320  M50-360	M50-310 M50-311  M50-390	M50-312  M50-360	M50-315  M50-360

All dimensions in mm.

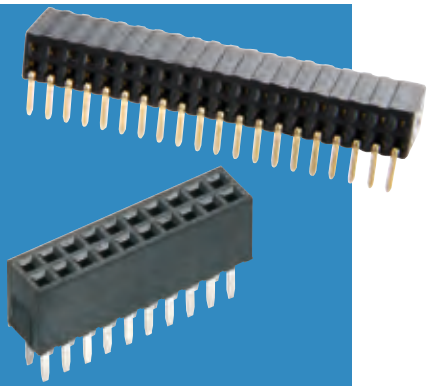
1.27mm (.050") PITCH

Archer Connectors – M50

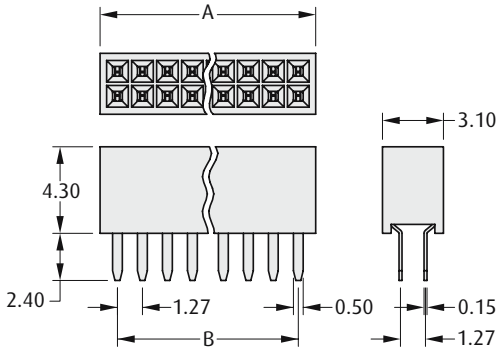
Female PC Tail

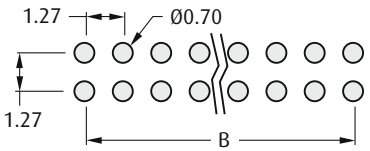
A range of 1.27mm pitch female connectors, for vertical and horizontal board-to-board applications.

- Suitable for use with male connectors on pages 108 to 109.
- Horizontal connector has two point solder fixing for connector rigidity.



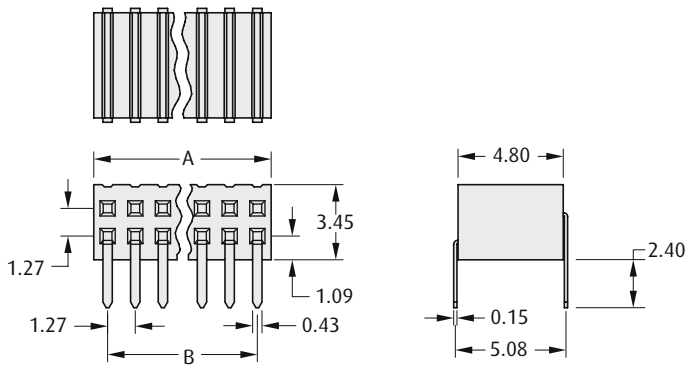
VERTICAL

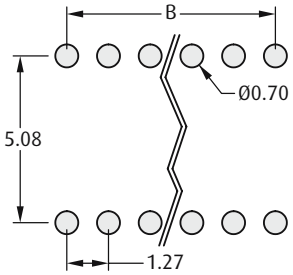




Recommended PC Board Pattern

HORIZONTAL





Recommended PC Board Pattern

CALCULATION	
A	B + 1.77
B	1.27 x (No. of contacts per row - 1)

HOW TO ORDER

M50 - 3 X 0 XX 45

SERIES CODE

TYPE

0	Vertical
2	Horizontal

NO. OF CONTACTS PER ROW

03 to 50	M50-300
02 to 50	M50-320

FINISH

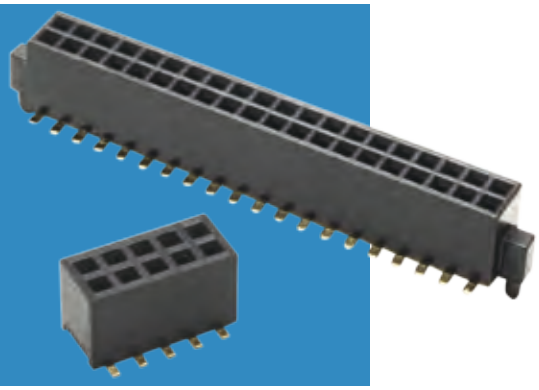
45	Gold (PG)

All dimensions in mm.

Archer Connectors – M50

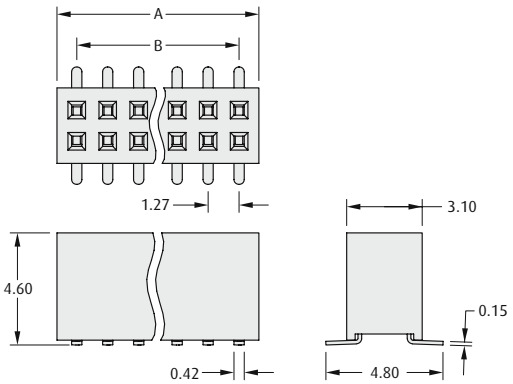
Female Vertical Surface Mount

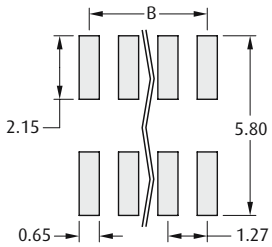
- Locating pegs (posts) available to ensure correct positioning on the board.
- Suitable for use with male connectors on pages 108 to 109.
- Alternative height connectors available on page 106.



WITHOUT POST

CALCULATION	
A	B + 1.62
B	1.27 x (No. of contacts per row - 1)

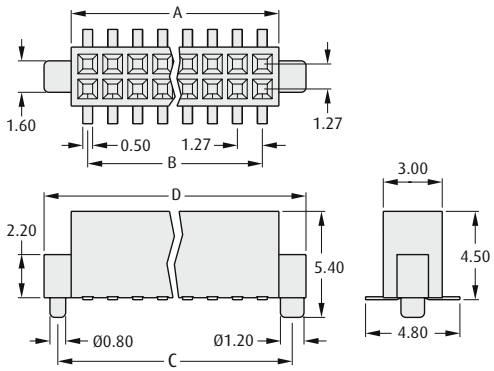


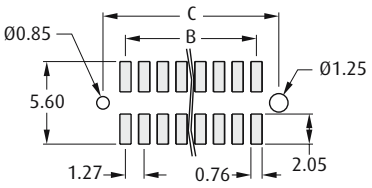


Recommended PC Board Pattern

WITH POST

CALCULATION	
A	B + 1.67
B	1.27 x (No. of contacts per row - 1)
C	B + 3.04
D	B + 4.43





Recommended PC Board Pattern

HOW TO ORDER

M50 - 31 X XX XX

SERIES CODE

TYPE	
0	Without Posts
1	With Posts

NO. OF CONTACTS PER ROW	
03 to 50	M50-310
05 to 12, 15, 20, 25, 30, 35, 40, 45, 50	M50-311

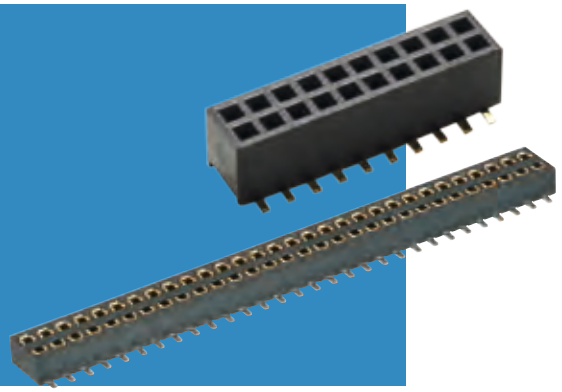
FINISH	
42	Gold + Tin (M50-311)
45	Gold (M50-310)

All dimensions in mm.

Archer Connectors – M50

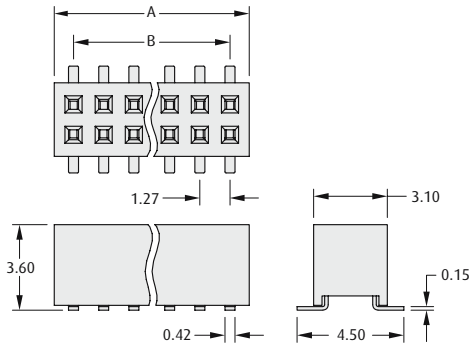
Female Vertical Surface Mount, Low Profile

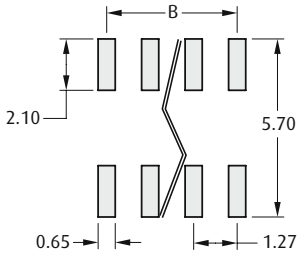
- Suitable for use with male connectors on pages 108 to 109.
- Locating pegs (posts) available to ensure correct positioning on the board.
- Dual entry connector can be used as either top or bottom entry.



3.6mm HIGH WITHOUT POSTS

CALCULATION	
A	B + 1.73
B	1.27 x (No. of contacts per row - 1)

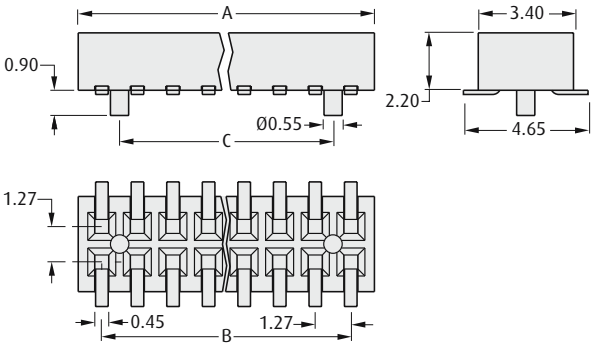


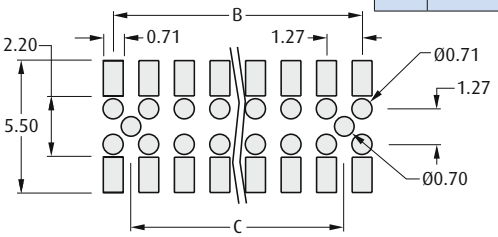


Recommended PC Board Pattern

2.2mm HIGH WITH POSTS, DUAL ENTRY

CALCULATION	
A	B + 1.67
B	1.27 x (No. of contacts per row - 1)
C	B – 1.27





Recommended PC Board Pattern

HOW TO ORDER

M50 - 31 X XX XX

SERIES CODE

TYPE	
2	3.6mm high without posts
5	2.2mm high with posts, dual entry

NO. OF CONTACTS PER ROW

03 to 50

FINISH	
42	Gold + Tin (M50-315)
45	Gold (M50-312)

All dimensions in mm.

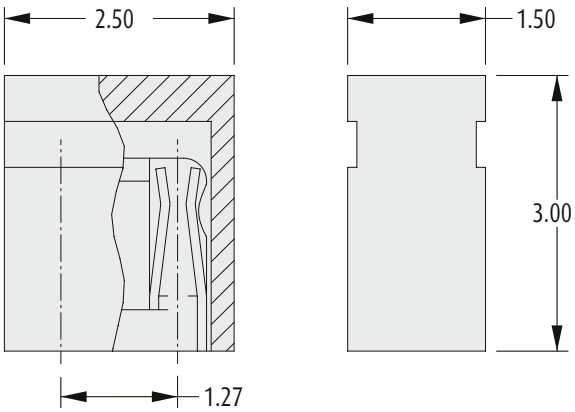
Archer Connectors – M50

Jumper Sockets

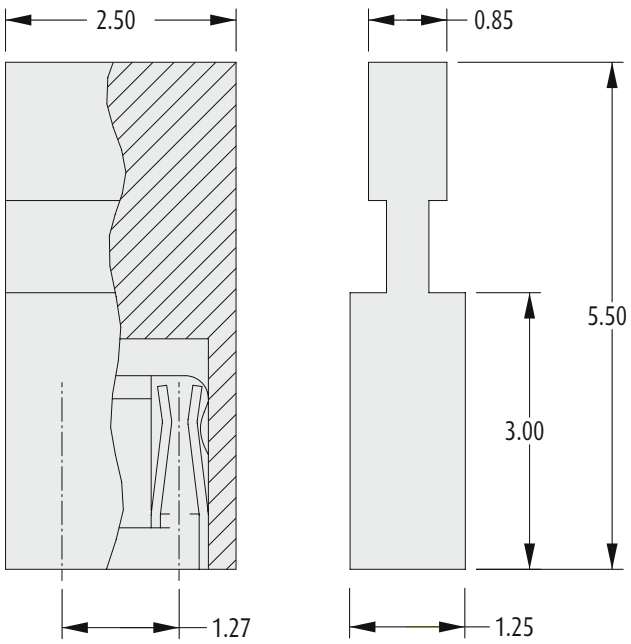
- Can be fitted and removed by hand, giving an alternative on-board programming method to DIP switches.
- Suitable for use with pin headers shown on pages 108 and 109.
- Choice of colours available.

1.27mm (.050") PITCH

CLOSED TOP



CLOSED TOP WITH HANDLE



HOW TO ORDER

M50 - XXX 05

SERIES CODE

TYPE

Closed Top		Closed Top with Handle	
190	Black	**200**	Black
192	Red	**202**	Red
193	Blue	**203**	Blue

FINISH

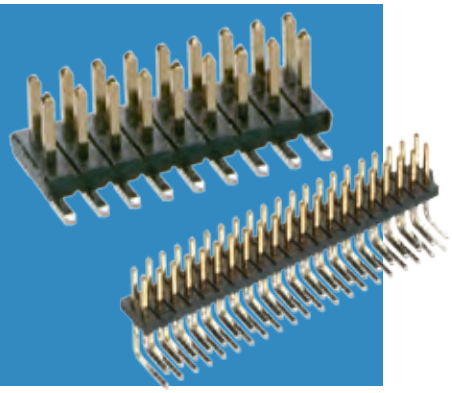
05	Gold (Pb)

All dimensions in mm.

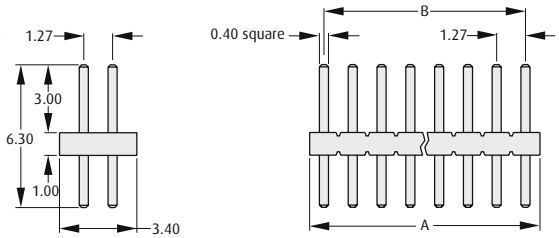
Archer Connectors – M50

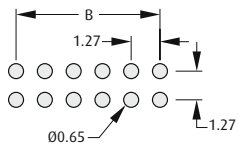
Male Vertical & Horizontal

- Suitable for use with female connectors and jumper sockets on pages 104 to 107.
- Also available with variable dimensions, see page 109.



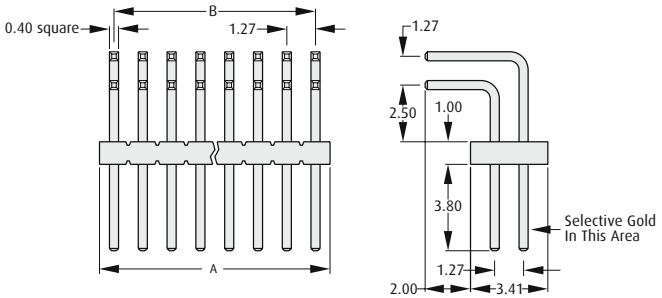
VERTICAL PC TAIL

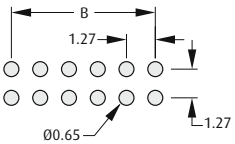




Recommended PC Board Pattern

HORIZONTAL PC TAIL

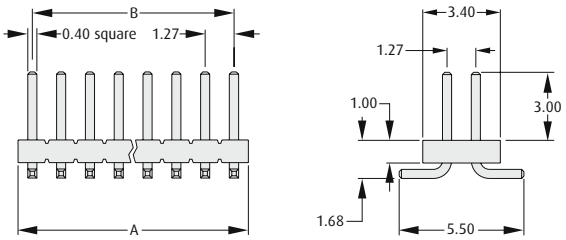


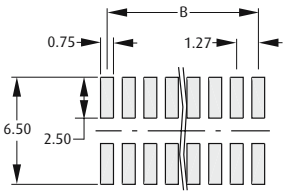


Recommended PC Board Pattern

CALCULATION	
A	1.27 x No. of contacts per row
B	1.27 x (No. of contacts per row - 1)

VERTICAL SMT





Recommended PC Board Pattern

HOW TO ORDER

M50 - 3 X 0 XX 42

SERIES CODE

TYPE	
5	Vertical PC Tail
6	Vertical SMT
9	Horizontal PC Tail

FINISH	
42	Gold + Tin (P6)

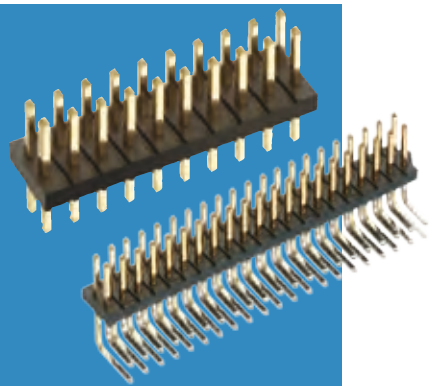
NO. OF CONTACTS PER ROW
01 to 50

All dimensions in mm.

Archer Connectors – M50

Pin Header Variants

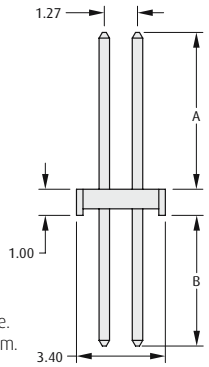
- If you are unable to specify the connector you require from our standard range of Archer M50 connectors (page 108), use the order code below to create an application-specific connector.
- Contact **technical@harwin.com** for further information, or search online for M50-XXX.
- Suitable for use with female connectors and jumper sockets on pages 104 to 107.



TERMINATION STYLES

Vertical PC Tail

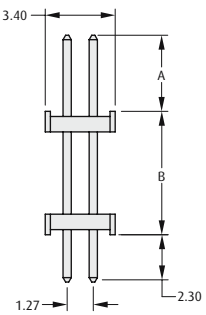
W Series



Pin section is 0.40mm square.
PCB mounting hole is Ø0.65mm.

Extended PC Tail

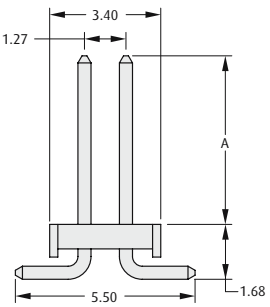
F Series



Pin section is 0.40mm square.
PCB mounting hole is Ø0.65mm.

Vertical SMT

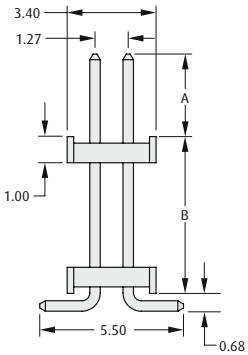
S Series



Pin section is 0.40mm square.
For PCB pad layout see page 108.
B dimension is 000.

Extended SMT

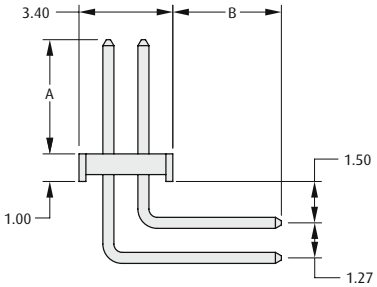
T Series



Pin section is 0.40mm square.
For PCB pad layout see page 108.
A+B+0.68 not to exceed 24.3mm.

Horizontal PC Tail

J Series



Pin section is 0.40mm square.
PCB mounting hole is Ø0.65mm.

HOW TO ORDER

M50 - XXX XXX X XX 45

SERIES CODE

DIMENSION A
Example: 7.8mm = 078

DIMENSION B
Example: 5.0mm = 050

DOUBLE ROW	
W	Vertical PC Tail
F	Extended PC Tail
S	Vertical SMT
T	Extended SMT
J	Horizontal PC Tail

NO. OF CONTACTS PER ROW
01 to 50

FINISH	
45	Gold

All dimensions in mm.

Archer Connectors – Polarised Specification

Materials

Mouldings:	High Temperature Plastic UL94V-0
Contacts:	Copper Alloy
Finish:	Gold

Environmental

Operating temperature:	-40°C to +105°C
Solderability:	245°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Electrical

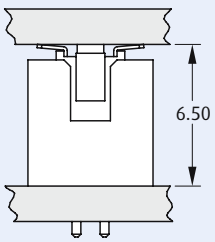
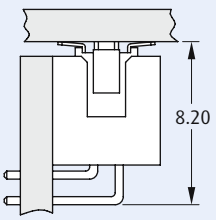
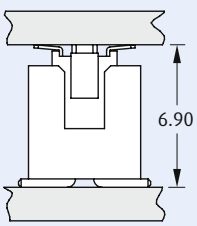
Current rating:	1A per contact
Voltage proof:	300V AC, 500V DC for 1 minute
Contact resistance:	30 mΩ max
Insulation resistance:	500 MΩ min

Mechanical

Durability:	100 operations
Insertion force (max):	2.0N per contact
Withdrawal force (min):	0.15N per contact

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

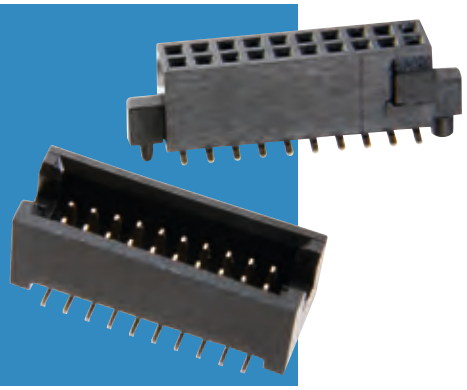
MALE / FEMALE	VERTICAL PC TAIL	HORIZONTAL PC TAIL	VERTICAL SMT
VERTICAL SMT	M50-470  M50-430	M50-480  M50-430	M50-490  M50-430

All dimensions in mm.

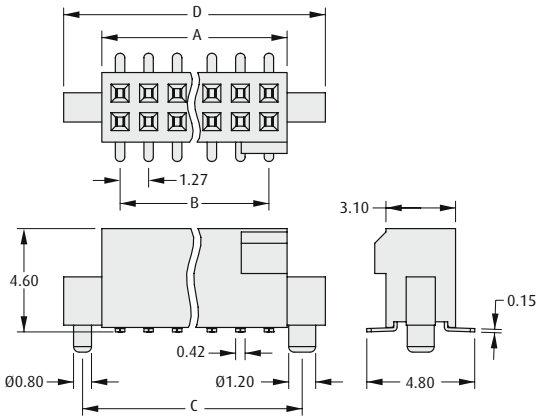
Archer Connectors – Polarised

Vertical Surface Mount

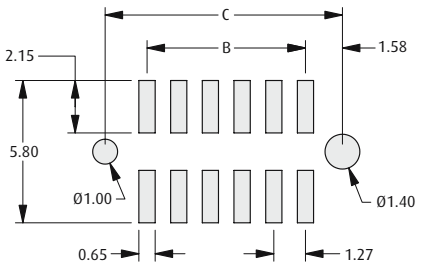
- Mating connectors in Surface Mount format.
- Female connector is also suitable for use with male connectors on page 112.
- Polarisation to prevent mis-mating.
- Female connector has locating pegs to ensure correct positioning on the board.
- Shrouded for additional pin protection.



FEMALE

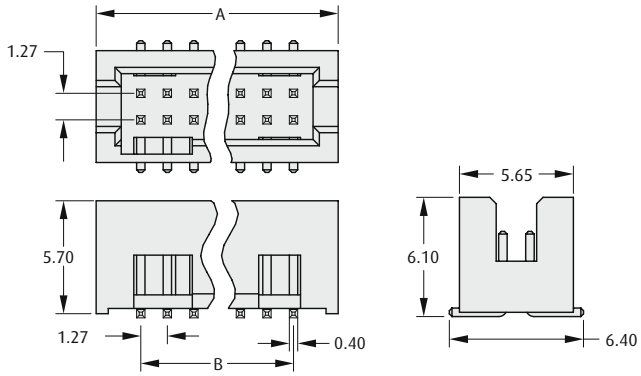


CALCULATION	
A	B + 1.62
B	1.27 x (No. of contacts per row - 1)
C	B + 3.15
D	B + 5.02

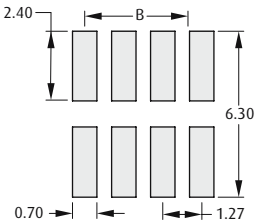


Recommended PC Board Pattern

MALE



CALCULATION	
A	B + 4.47
B	1.27 x (No. of contacts per row - 1)



Recommended PC Board Pattern

HOW TO ORDER

M50 - 4 X 0 XX 45

SERIES CODE

TYPE	
3	Female
9	Male

NO. OF CONTACTS PER ROW	
03 to 50	Female
05 to 50	Male

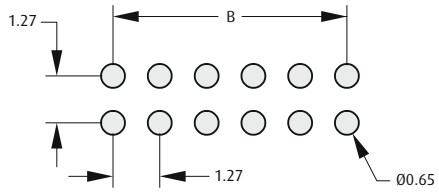
FINISH	
45	Gold (Pb)

All dimensions in mm.

Archer Connectors – Polarised

Male PC Tail

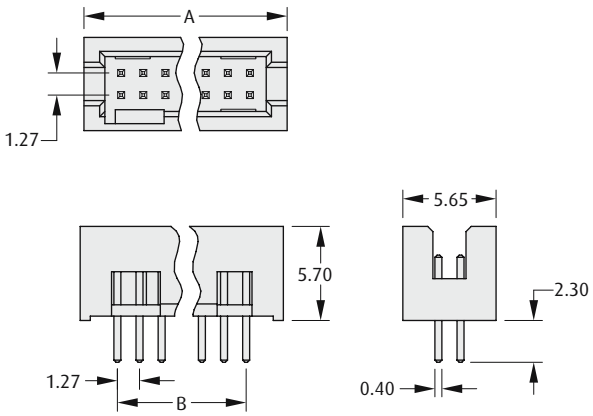
- PC Tail male connectors suitable for use with female connector M50-430 (page 111).
- Polarisation to prevent mis-mating.
- Shrouded for additional pin protection.



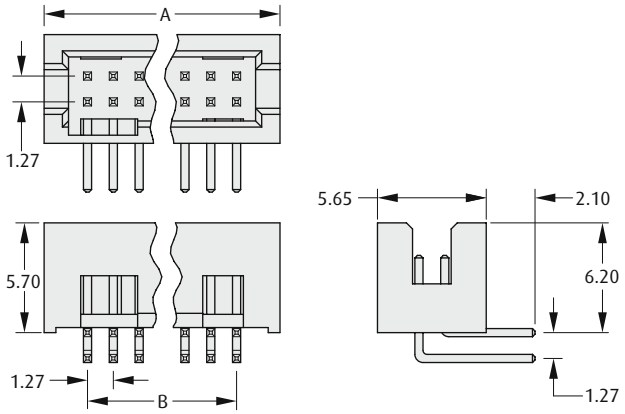
Recommended PC Board Pattern

CALCULATION	
A	B + 4.47
B	1.27 x (No. of contacts per row - 1)

VERTICAL



HORIZONTAL



HOW TO ORDER

M50 - 4 X 0 XX 45

SERIES CODE

TYPE	
7	Vertical
8	Horizontal

NO. OF CONTACTS PER ROW
05 to 40

FINISH	
45	Gold

All dimensions in mm.

Archer Connectors – M50 IDC Specification

Materials

Mouldings:	PC Tail, SMT: LCP, UL94V-0 IDC Cable: PBT, UL94V-0
Contacts:	Copper Alloy
Finish:	M50-380: Gold on contact area Others: Gold on contact area, Tin on tails

Electrical

Current rating:	M50-330, 91X: 1A per contact M50-355, 365: 1.75A per contact M50-380, 90X: 0.5A per contact
Voltage proof:	M50-90X/91X: 300V DC for 1 minute Others: 1,000V AC for 1 minute
Contact resistance:	30 mΩ max
Insulation resistance:	M50-90X, 91X: 5 MΩ min Others: 1,000 MΩ min

Environmental

Operating temperature:	PC Tail, SMT: -55°C to +125°C IDC Cable Connectors: -40°C to +105°C Cable Assembly: -20°C to +105°C
Solderability:	245°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

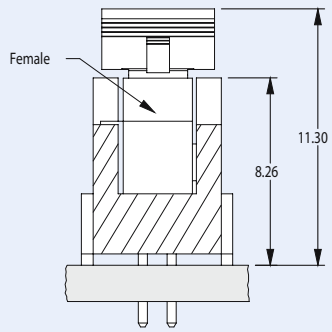
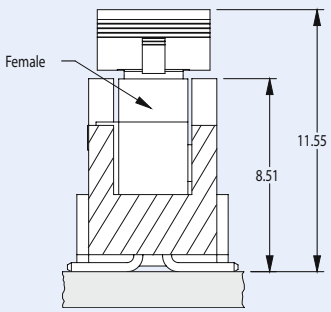
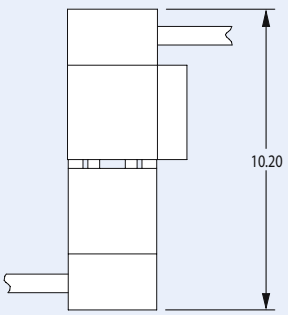
Mechanical

Durability:	100 operations
Insertion force (max):	1.0N per contact
Withdrawal force (min):	0.15N per contact

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

1.27mm (.050") PITCH

Mating Profiles

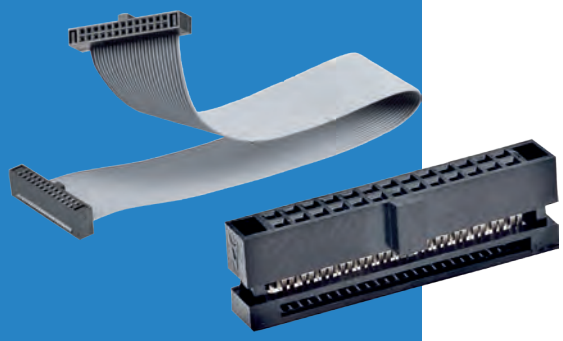
MALE / FEMALE	VERTICAL PC TAIL	VERTICAL SMT	CABLE
CABLE	M50-355  M50-330	M50-365  M50-330	M50-380  M50-330

All dimensions in mm.

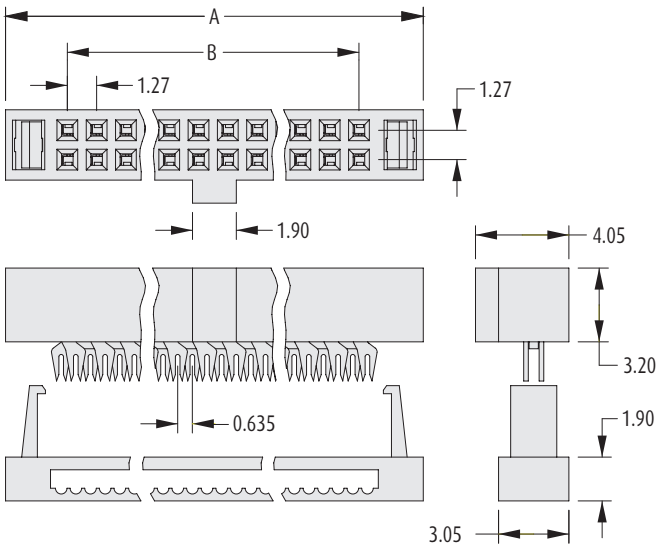
Archer Connectors – M50 IDC

Female Cable Connector & Cable Assembly

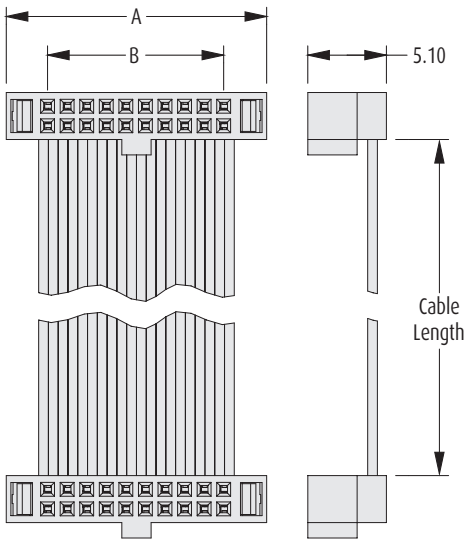
- Suitable for use with male vertical latching connectors shown on page 115.
- IDC Contact for high speed termination.
- Polarised to prevent mis-mating.
- Secure cable retention with positive latching to header.
- Standard cable assembly lengths from stock.



FEMALE IDC



FEMALE-TO-FEMALE CABLE



CALCULATION	
A	B + 5.47
B	1.27 x (No. of contacts per row - 1)

HOW TO ORDER

M50 - XXX XX 42

SERIES CODE

TYPE	
330	Female IDC Connector
910	150mm Cable Assembly
911	300mm Cable Assembly

NO. OF CONTACTS PER ROW	
05, 10, 13, 17, 20, 25	All
06, 07, 08	M50-330 only

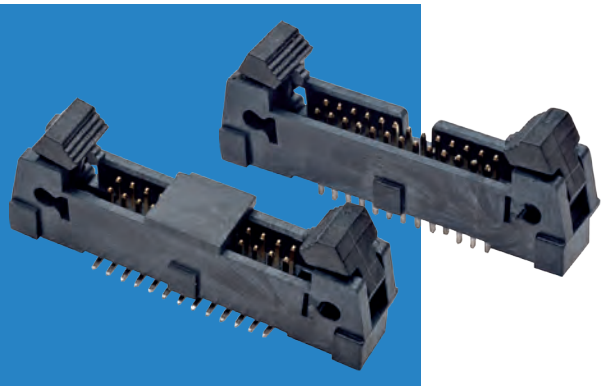
FINISH	
42	Gold + Tin

All dimensions in mm.

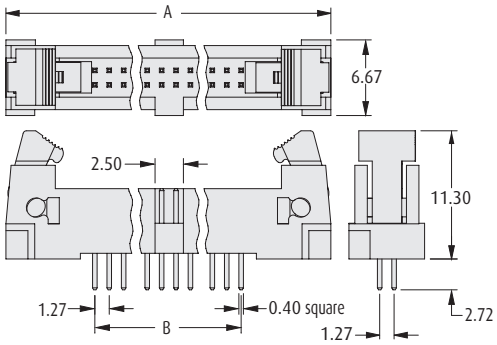
Archer Connectors – M50 IDC

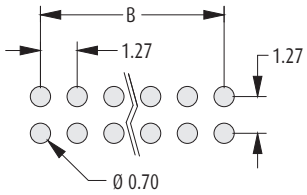
Male Vertical Latching Connectors

- Suitable for use with female cable connectors shown on page 114.
- Small footprint.
- Shrouded for robust pin protection.
- Polarised to prevent mis-mating.
- Secure, positive latch & ejection system.
- Through PCB and SMT in tape and reel.



PC TAIL

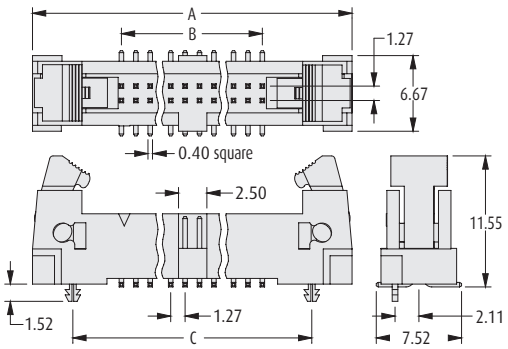


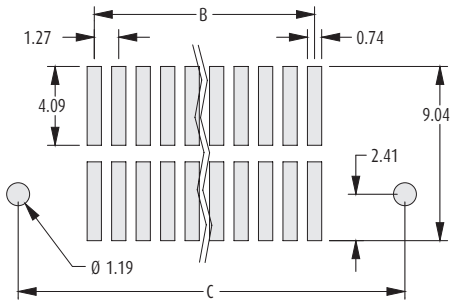


Recommended PC Board Pattern

CALCULATION	
A	B + 15.75
B	B 1.27 x (Number of contacts per row - 1)
C	B + 8.64

SURFACE MOUNT





Recommended PC Board Pattern

HOW TO ORDER

M50 - 3 X 5 XX 42 R

SERIES CODE

TYPE	
5	PC Tail
6	Surface Mount

NO. OF CONTACTS PER ROW

05, 06, 07, 08, 10, 13, 17, 20, 25

PACKAGING	
R	Tape & Reeled (M50-365)
Blank	Loose (M50-355)

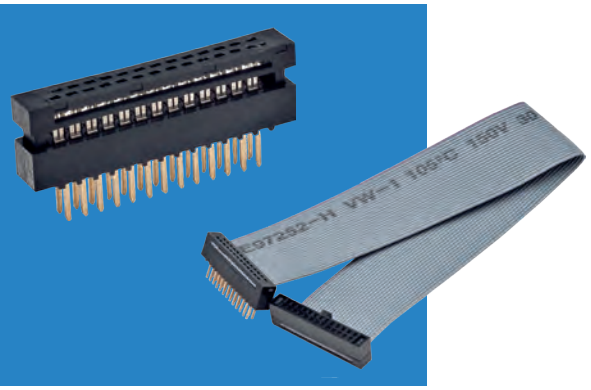
FINISH	
42	Gold + Tin

All dimensions in mm.

Archer Connectors – M50 IDC

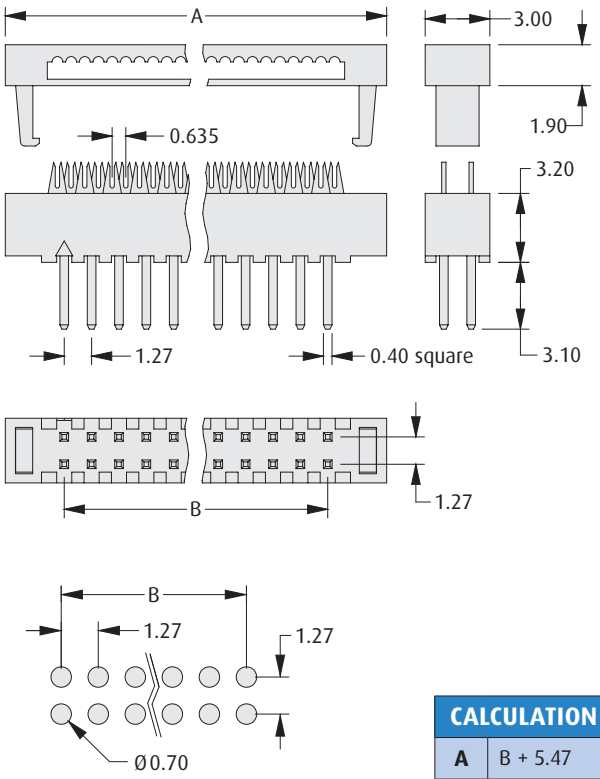
Male Cable Connectors & Cable Assembly

- Male transitional cable connector suitable for soldering directly to PCB, permits cost effective cable to PCB attachment.
- IDC contact for high speed termination.
- Suitable for mating with other sockets from the Archer range.
- Low profile, small footprint.



1.27mm (.050") PITCH

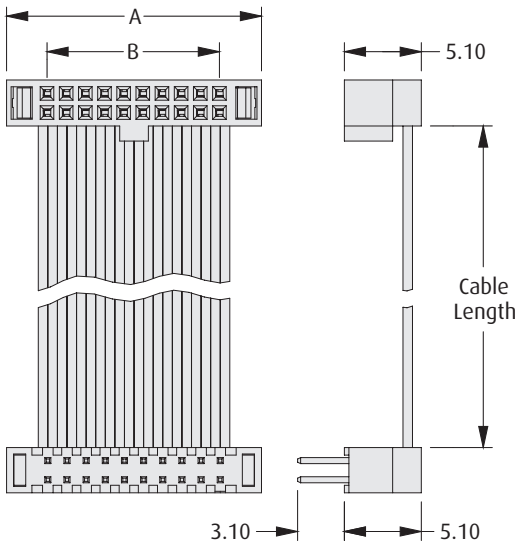
MALE IDC



Recommended PC Board Pattern

CALCULATION	
A	B + 5.47
B	1.27 x (No. of contacts per row - 1)

MALE-TO-FEMALE CABLE



HOW TO ORDER

M50 - XXX XX 42

SERIES CODE

TYPE	
380	Male IDC Connector
901	150mm Cable Assembly
902	300mm Cable Assembly

FINISH	
42	Gold + Tin

NO. OF CONTACTS PER ROW	
05, 10, 13, 17, 20, 25	All
06, 07, 08	M50-380 only

All dimensions in mm.

M52 Connectors Specification

Materials

Mouldings:	High Temperature Plastic UL94V-0
Contacts:	Copper Alloy
Finish:	Gold

Electrical

Current rating:	1A per contact
Voltage proof:	500V AC, 1000V DC for 1 minute
Contact resistance:	30 mΩ max
Insulation resistance:	1000 MΩ min

Environmental

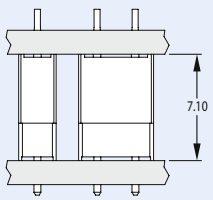
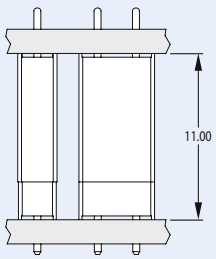
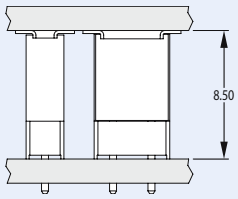
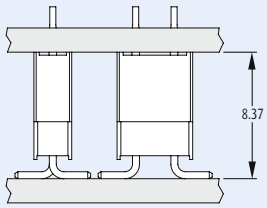
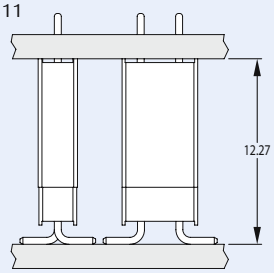
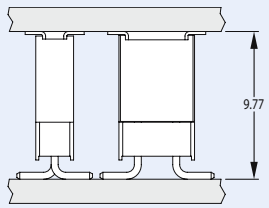
Operating temperature:	-40°C to +105°C
Solderability:	245°C for 5 seconds
Soldering heat resistance:	260°C for 5 seconds

Mechanical

Durability:	300 operations
Insertion force (max):	M52-500, 510: 1.0N per contact Others: 1.5N per contact
Withdrawal force (min):	M52-500, 510: 0.12N per contact Others: 0.1N per contact
Vibration sensitivity:	50-2000Hz, 3.13G, 45 minutes duration
Shock severity:	294m/s^2 (30G) for 11ms

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

	FEMALE		
MALE	**VERTICAL PC TAIL** (4.6mm height)	**VERTICAL PC TAIL** (8.5mm height)	**VERTICAL SMT**
VERTICAL PC TAIL	M52-500 M52-510  M52-040023VXX45 M52-040023WXX45	M52-501 M52-511  M52-040023VXX45 M52-040023WXX45	M52-505 M52-515  M52-040023VXX45 M52-040023WXX45
VERTICAL SMT	M52-500 M52-510  M52-040000PXX45 M52-040000SXX45	M52-501 M52-511  M52-040000PXX45 M52-040000SXX45	M52-505 M52-515  M52-040000PXX45 M52-040000SXX45

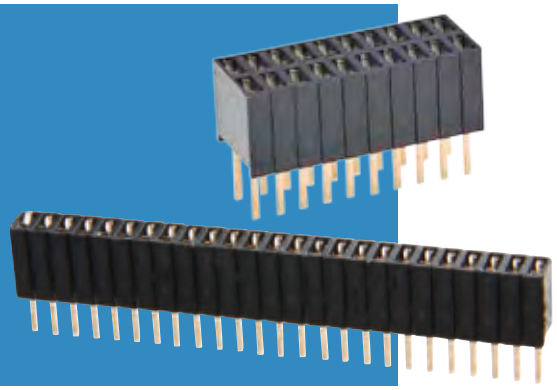
All dimensions in mm.

Archer Connectors – M52

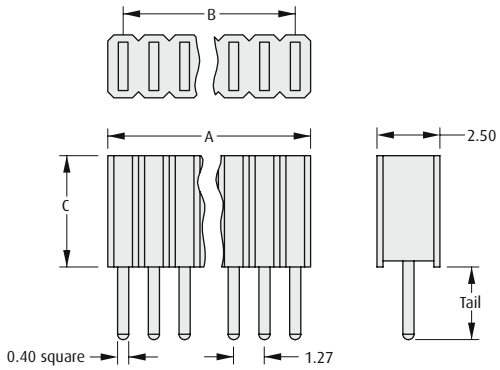
Female Vertical PC Tail

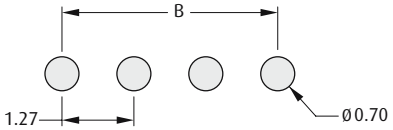
A range of 1.27mm x 2.54mm male and female connectors, for vertical board-to-board applications.

- Choice of connector height.
- Suitable for use with male connectors shown on pages 120 to 122.



SINGLE ROW

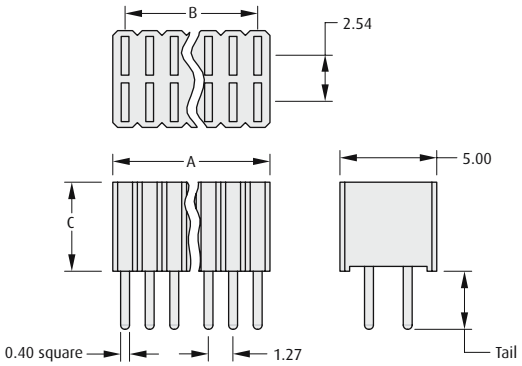


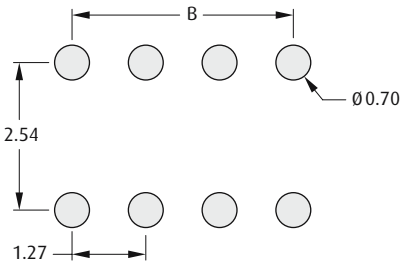


Recommended PC Board Pattern

CALCULATION	
A	B + 1.67 (when C = 4.6mm) B + 1.27 (when C = 8.5mm)
B	1.27 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M52 - 5 X X XX 45

SERIES CODE

NO. OF ROWS	
0	Single Row
1	Double Row

HEIGHT	
0	C = 4.6mm, Tail = 3.00mm
1	C = 8.5mm, Tail = 2.80mm

FINISH	
45	Gold

NO. OF CONTACTS PER ROW

02 to 40

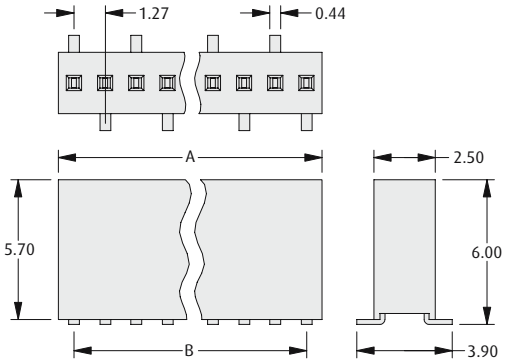
All dimensions in mm.

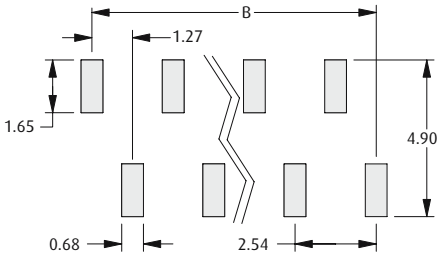
Archer Connectors – M52

Female Vertical Surface Mount

- Suitable for use with male pin connectors shown on pages 120 to 122.
- Twin beam contact for cost-effective reliability.
- Tape and reel option available. Contact **technical@harwin.com**

SINGLE ROW

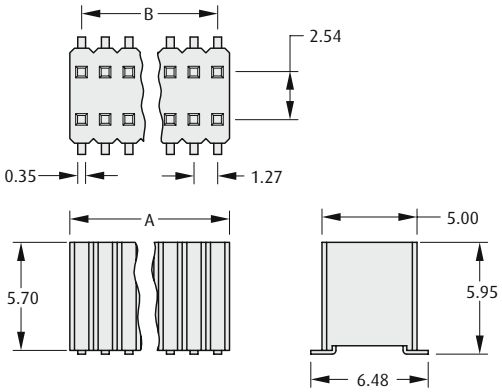


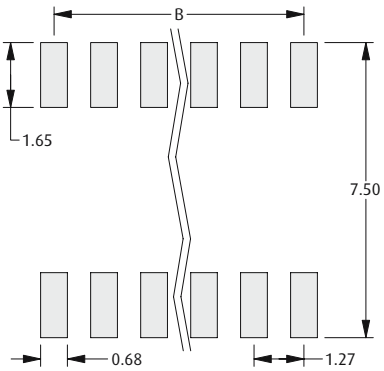


Recommended PC Board Pattern

CALCULATION	
A	B + 1.67
B	1.27 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M52 - 5 X 5 XX 45

SERIES CODE

NO. OF ROWS	
0	Single Row
1	Double Row

FINISH	
45	Gold

NO. OF CONTACTS PER ROW

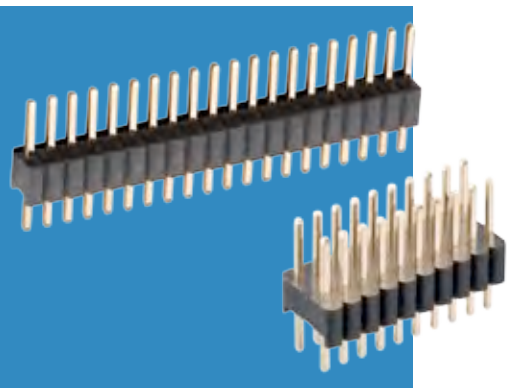
03 to 50

All dimensions in mm.

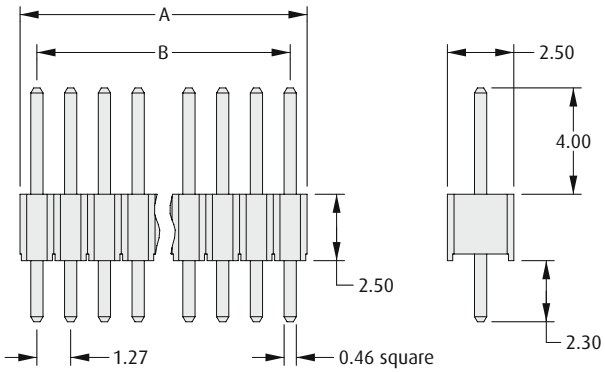
Archer Connectors – M52

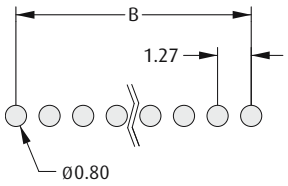
Male Vertical PC Tail

- Suitable for use with female connectors shown on pages 118 to 119.
- For alternative pin lengths, see pin header variants on page 122.



SINGLE ROW

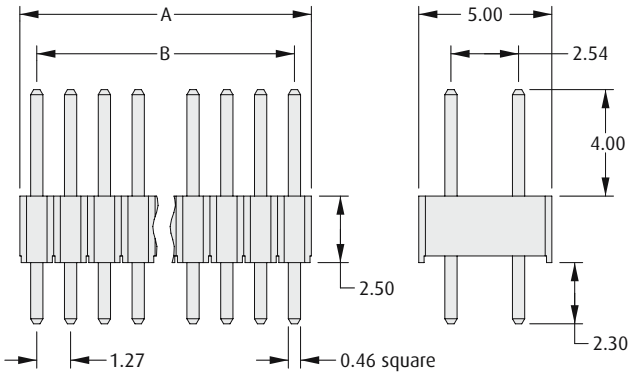


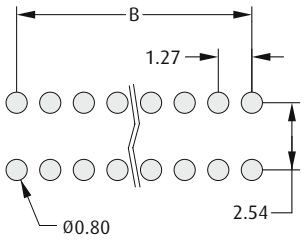


Recommended PC Board Pattern

CALCULATION	
A	1.27 x No. of contacts per row
B	1.27 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M52 - 040023 X XX 45

SERIES CODE

CONNECTOR TYPE	
V	Single Row
W	Double Row

FINISH	
45	Gold

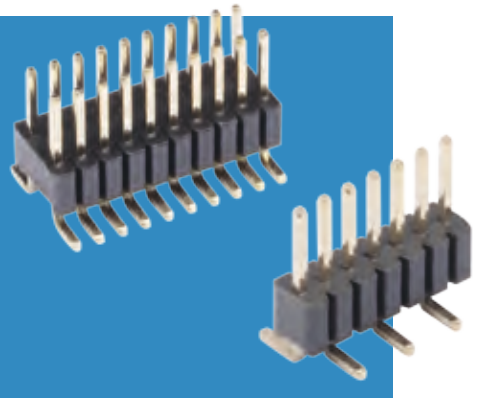
NO. OF CONTACTS PER ROW
05, 10, 20, 25

All dimensions in mm.

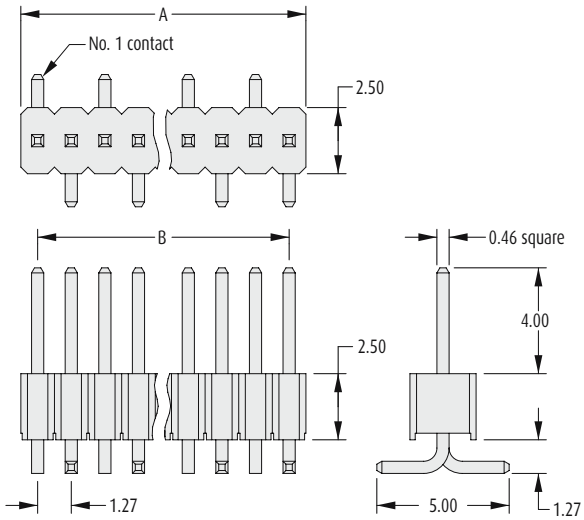
Archer Connectors – M52

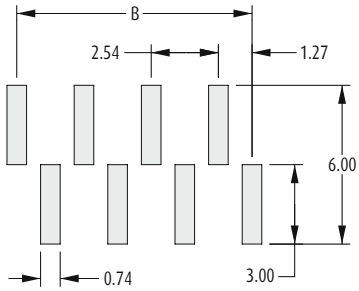
Male Vertical Surface Mount

- Suitable for use with female connectors shown on pages 118 to 119.
- For alternative pin lengths, see pin header variants on page 122.



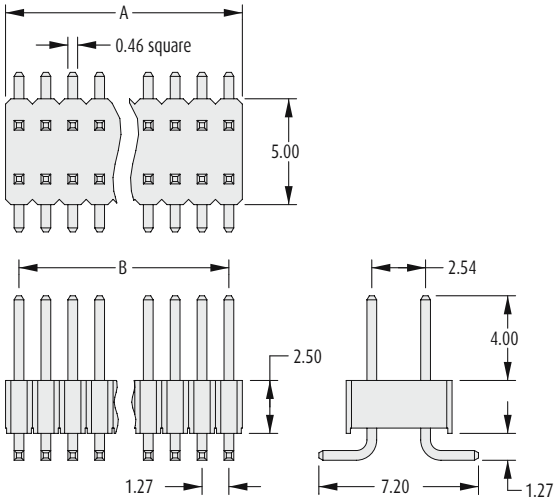
SINGLE ROW

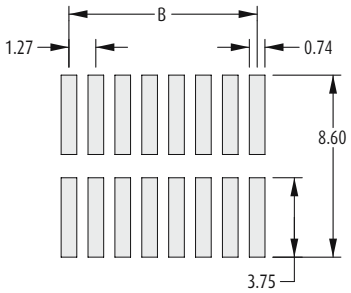




Recommended PC Board Pattern

DOUBLE ROW





Recommended PC Board Pattern

CALCULATION	
A	1.27 x No. of contacts per row
B	1.27 x (No. of contacts per row - 1)

HOW TO ORDER

M52 - 040000 X XX 45

SERIES CODE

CONNECTOR TYPE	
P	Single Row
S	Double Row

NO. OF CONTACTS PER ROW
05, 10, 20, 25

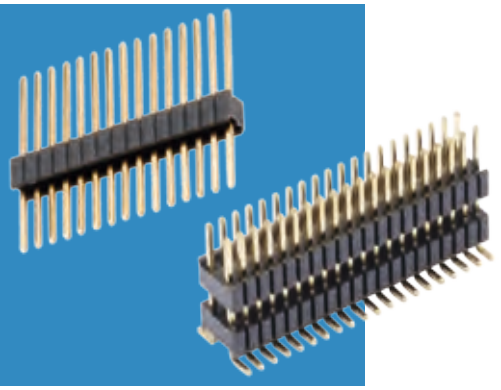
FINISH	
45	Gold (Pb)

All dimensions in mm.

Archer Connectors – M52

Pin Header Variants

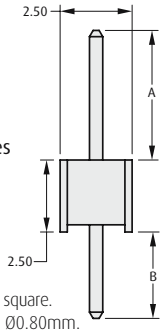
- If you are unable to specify the connector you require from our standard range of Archer M52 connectors (pages 120–121), use the order code below to create an application-specific connector.
- Contact **technical@harwin.com** for further information, or search online for M52-XXX.
- Suitable for use with female connectors on pages 118 to 119.



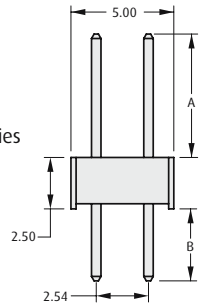
TERMINATION STYLES

Vertical PC Tail

V Series



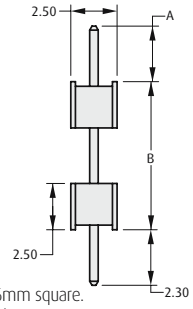
W Series



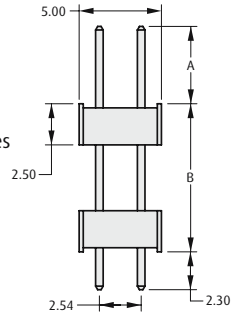
Pin section is 0.46mm square.
PCB mounting hole is Ø0.80mm.

Extended PC Tail

E Series



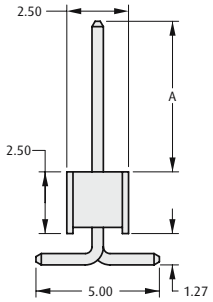
F Series



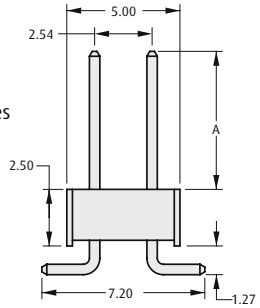
Pin section is 0.46mm square.
PCB mounting hole is Ø0.80mm.

Vertical SMT

P Series



S Series

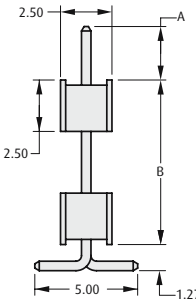


B dimension is 000.
Pin section is 0.46mm square.

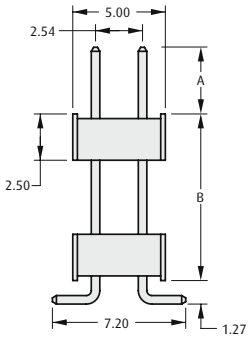
For PCB pad layout, see page 121.

Extended SMT

R Series



T Series



Pin section is 0.46mm square.
For PCB pad layout, see page 121.

HOW TO ORDER

M52 - XXX XXX X XX 45

SERIES CODE	
DIMENSION A	Example: 7.8mm = 078
DIMENSION B	Example: 5.0mm = 050

SINGLE ROW	DOUBLE ROW	
V	W	Vertical
E	F	Extended
P	S	SMT
R	T	Extended SMT

FINISH	
45	Gold (Pb)

NO. OF CONTACTS PER ROW
02 to 50

All dimensions in mm.

M22 Connectors Specification

Materials

Mouldings:	Standard or High Temperature Plastic, UL94V-0
Contacts:	Male: Copper alloy Female: Phosphor Bronze Jumper sockets: Beryllium Copper
Finish:	See individual pages

Electrical

Current rating:	1A or 2A per contact (see individual drawings)
Voltage proof:	500V AC for 1 minute
Contact resistance:	30 mΩ max
Insulation resistance:	500 MΩ min

Environmental

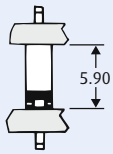
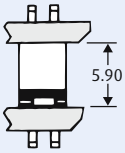
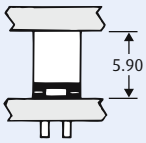
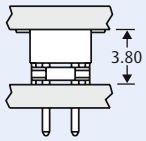
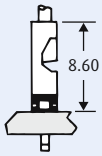
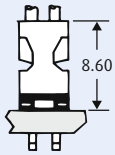
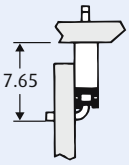
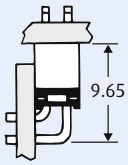
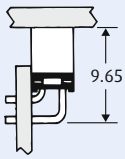
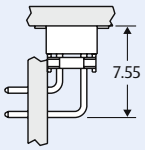
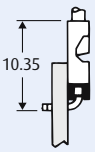
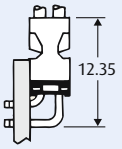
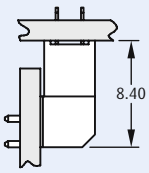
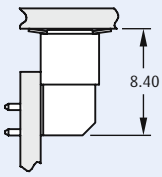
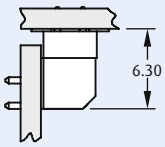
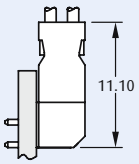
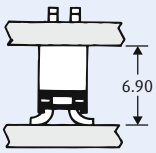
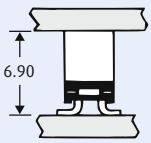
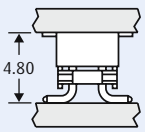
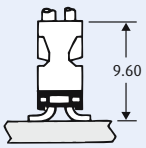
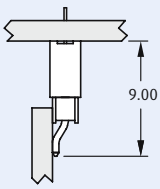
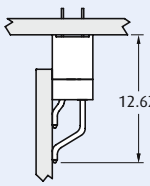
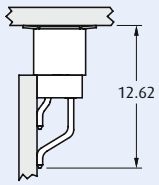
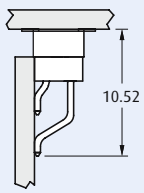
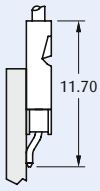
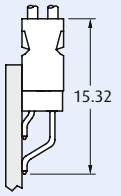
Operating Temperature:	M22-30X: -25°C to +85°C Others: -40°C to +105°C
Solderability:	M22-636, 713, 714: 250°C for 3 seconds Others: 245°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Mechanical

Durability:	M22-30X: 25 operations Others: 300 operations
Insertion force (max):	Jumper sockets: 10N total M22-30X: 2.9N per contact Others: 2.0N per contact
Withdrawal force (min):	Jumper sockets: 1N total M22-30X: 1.0N per contact Others: 0.2N per contact
Vibration sensitivity:	10 – 55Hz, 1.5mm, 6 hours duration
Shock severity:	294m/s^2 (30G) for 11ms

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

M22 Connectors Mating Profiles

MALE \ FEMALE	VERTICAL PC TAIL		VERTICAL SMT	VERTICAL SMT LOW PROFILE	CRIMP	
	SIL	DIL	DIL	DIL	SIL	DIL
VERTICAL PC TAIL	M22-713  M22-251	M22-714  M22-252	M22-634  M22-252	M22-636  M22-252	M22-301  M22-251	M22-302  M22-252
HORIZONTAL PC TAIL	M22-713  M22-253	M22-714  M22-254	M22-634  M22-254	M22-636  M22-254	M22-301  M22-253	M22-302  M22-254
HORIZONTAL PC TAIL (WIDE MOULD)	Contact: technical@harwin.com	M22-714  M22-241	M22-634  M22-241	M22-636  M22-241	Contact: technical@harwin.com	M22-302  M22-241
VERTICAL SMT	Contact: technical@harwin.com	M22-714  M22-532	M22-634  M22-532	M22-636  M22-532	Contact: technical@harwin.com	M22-302  M22-532
HORIZONTAL SMT	M22-713  M22-533	M22-714  M22-543	M22-634  M22-543	M22-636  M22-543	M22-301  M22-533	M22-302  M22-543

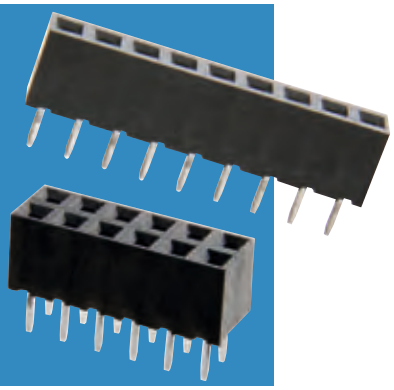
All dimensions in mm.

M22 Connectors

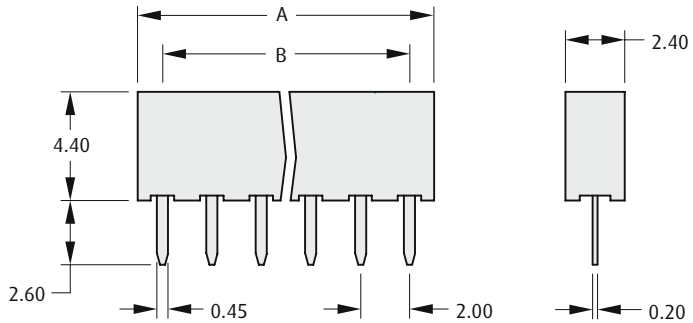
Female Vertical PC Tail

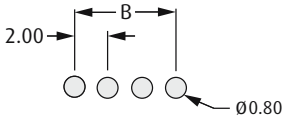
A range of 2mm pitch male and female connectors, with a variety of mating styles and finishes. For cable-to-board and board-to-board applications.

- Twin-leaf phosphor bronze contacts.
- Suitable for use with male connectors shown on pages 129 to 134.
- For polarising key use **order code M22-0340000**.



SINGLE ROW

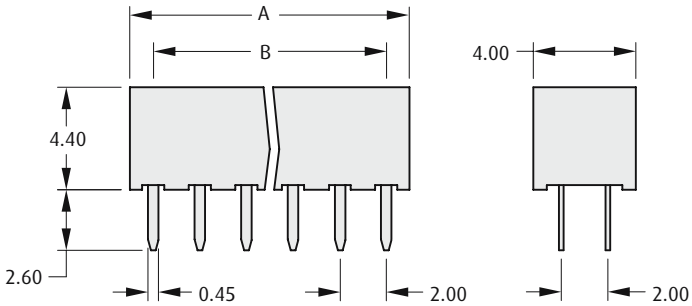


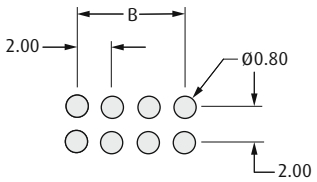


Recommended PC Board Pattern

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M22 - 71 X XX XX

SERIES CODE

NO. OF ROWS	
3	Single Row
4	Double Row

FINISH	
42	Gold + Tin (Pb)

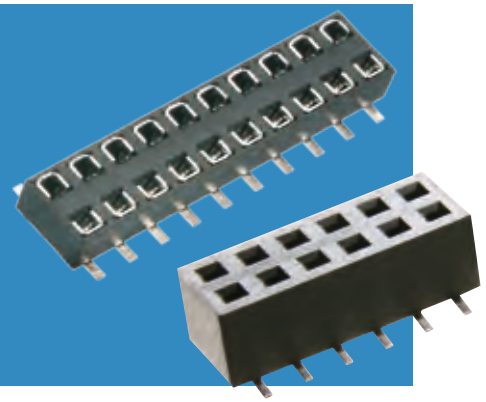
NO. OF CONTACTS PER ROW
03 to 32

All dimensions in mm.

M22 Connectors

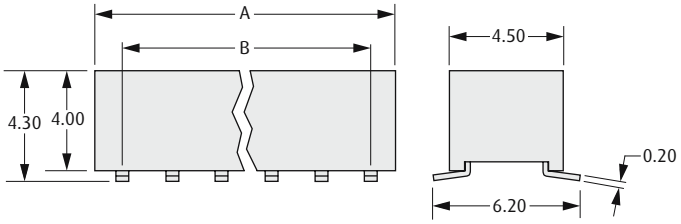
Female Vertical Surface Mount

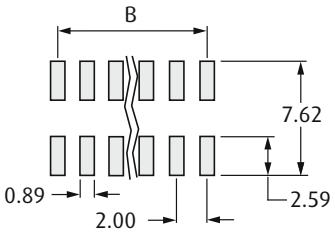
- Dual entry socket can be used in either top or bottom entry applications and has locating pegs to ensure correct positioning onto the board.
- Suitable for use with male connectors shown on pages 129 to 134.
- Twin beam contact for cost-effective reliability.



SMT FEMALE – 4.40mm HEIGHT

CALCULATION	
A	B + 2.50
B	2.00 x (No. of contacts per row - 1)

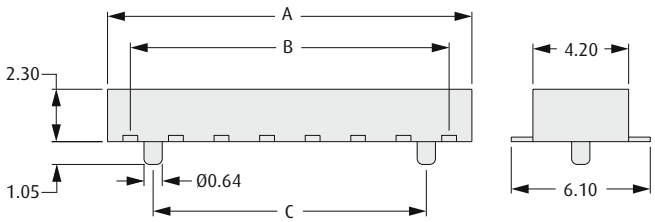


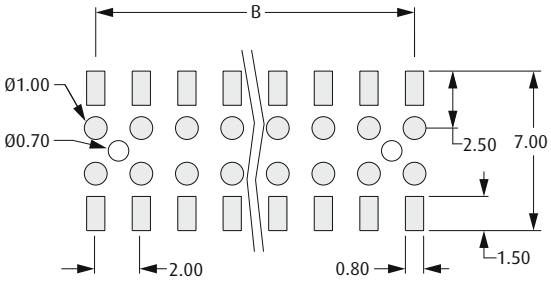


Recommended PC Board Patterns

DUAL ENTRY SMT FEMALE – 2.30mm HEIGHT

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)
C	B – 2.00





Recommended PC Board Patterns

HOW TO ORDER

M22 - 63 X XX XX

SERIES CODE

CONNECTOR TYPE	
4	4.40mm high
6	2.30mm high

FINISH		
42	Gold + Tin	Pb
46	Tin (M22-636 only)	Pb

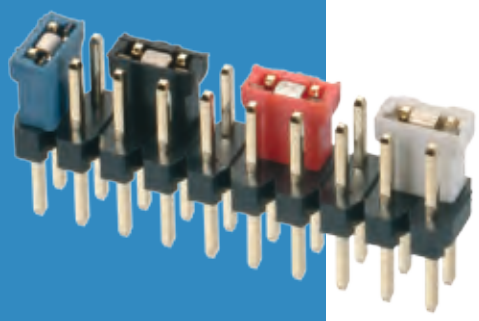
NO. OF CONTACTS PER ROW	
02 to 32	4.40mm high
02 to 40	2.30mm high

All dimensions in mm.

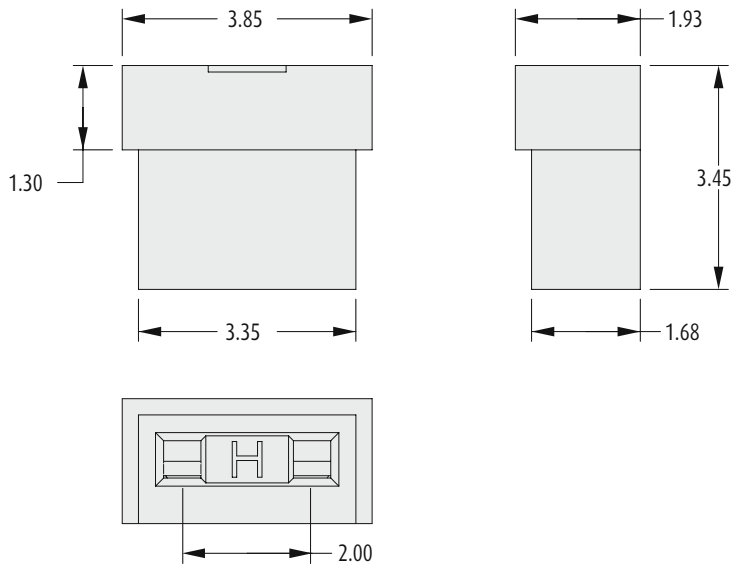
M22 Connectors

Jumper Socket Open Top

- Suitable for use with pin headers shown on pages 129 to 134.
- Can be fitted and removed by hand, giving an alternative on-board programming method to DIP switches.
- Open top for use with test probe.
- End and side stackable.
- Choice of colours available.



JUMPER SOCKET



HOW TO ORDER

M22 - 19 X 00 XX

SERIES CODE

COLOUR	
0	Black
1	Blue
2	Red
3	Grey

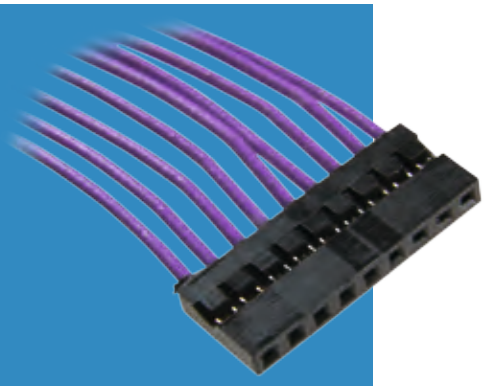
FINISH	
05	Gold
46	Tin

All dimensions in mm.

M22 Connectors

Female Crimp Housings and Contacts

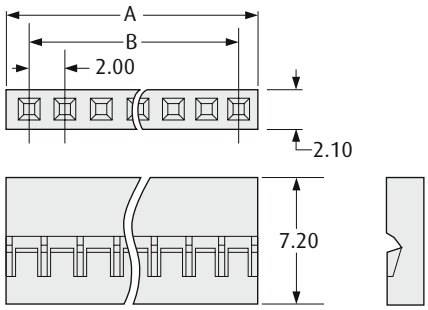
- Suitable for use with male connectors shown on pages 129 to 134.
- Twin-leaf phosphor bronze contacts, supplied loose or on reels, rear insertable into housing.
- For polarising key use **order code M22-0340000.**



2mm (.079") PITCH

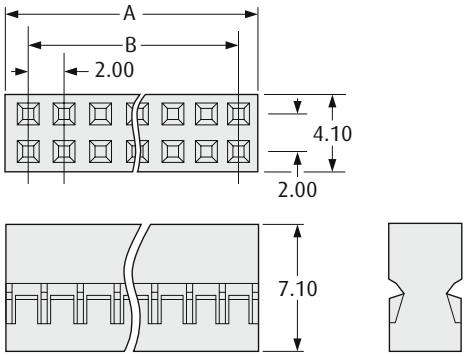
SINGLE ROW

CALCULATION	
A	B + 2.30
B	2.00 x (No. of contacts per row - 1)

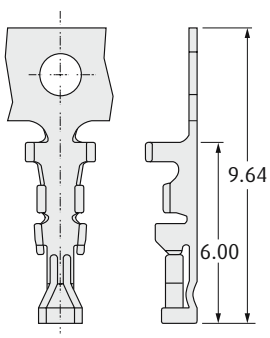


DOUBLE ROW

CALCULATION	
A	B + 2.20
B	2.00 x (No. of contacts per row - 1)

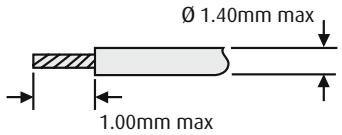


CONTACTS



- Order codes for reeled contacts refer to one reel of 10,000 contacts.
- Order codes for loose contacts refer to one pack of 100 contacts.

WIRE STRIPPING DETAILS



HAND CRIMP TOOL

ORDER CODE
Z22-020

- Instruction sheets available at www.harwin.com/downloads/instructions

HOW TO ORDER

M22 - 30 X XX XX

SERIES CODE

TYPE	
1	Single Row Housing
2	Double Row Housing
4	Reeled Contacts
5	Loose Contacts

NO. OF CONTACTS PER ROW	
02 to 30	Single Row Housing
02 to 40	Double Row Housing
00	Contacts

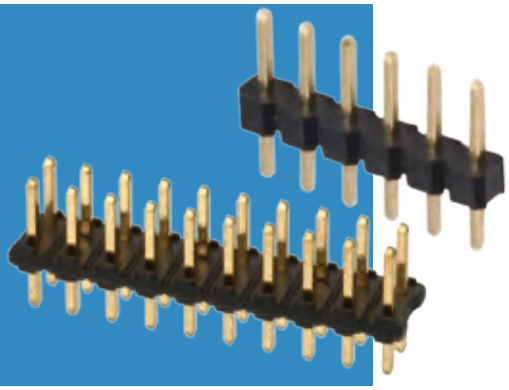
FINISH		
00	Housings	Pb
42	Gold + Tin (Contacts)	Pb
46	Tin (Contacts)	Pb

All dimensions in mm.

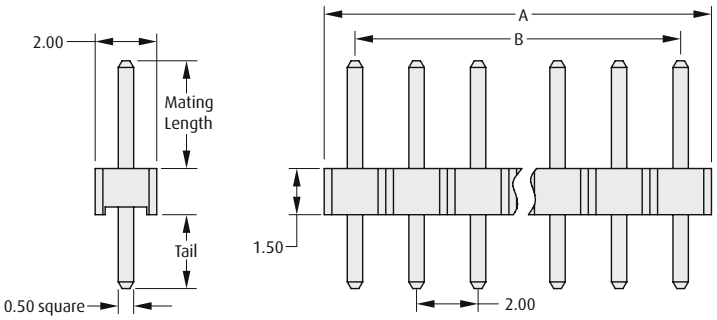
M22 Connectors

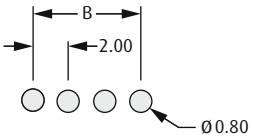
Male Vertical PC Tail

- Suitable for use with female PCB connectors and jumper sockets shown on pages 125 to 127. 4.2mm mating length also suitable for use with female crimp connectors shown on page 128.
- Pin headers can be cut into smaller sizes.
- For alternatives pin lengths, see pin header variants on page 134.



SINGLE ROW

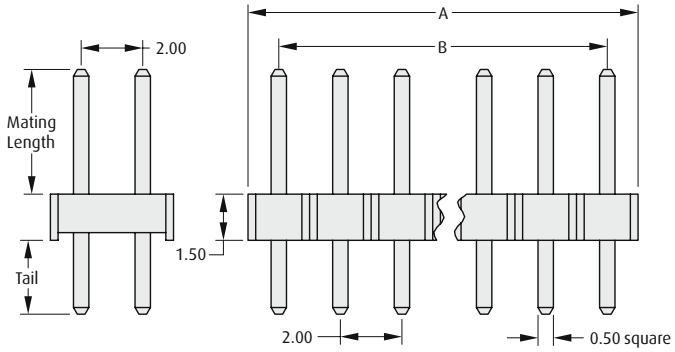


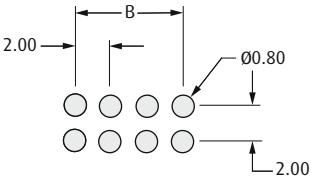


Recommended PC Board Pattern

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M22 - XXX XX XX

SERIES CODE

CONNECTOR TYPE			
Single	Double	Mating Length	Tail
201	202	3.50mm	3.40mm
251	252	3.50mm	2.30mm
271	272	4.20mm	2.30mm

FINISH	
05	Gold
46	Tin

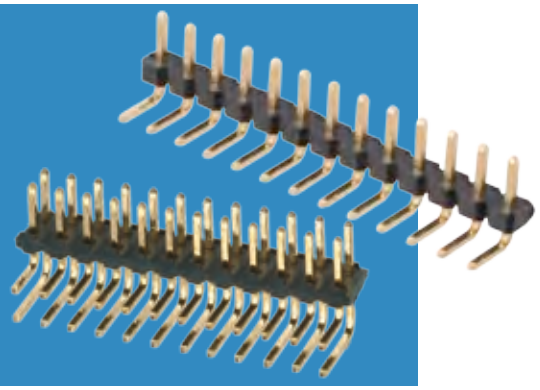
NO. OF CONTACTS PER ROW
02 to 50

All dimensions in mm.

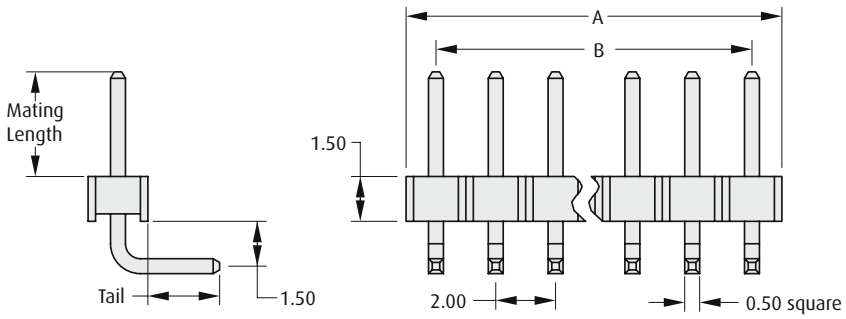
M22 Connectors

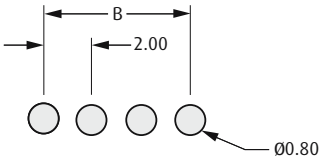
Male Horizontal PC Tail

- Suitable for use with female PCB connectors and jumper sockets shown on pages 125 to 127. 4.2mm mating length also suitable for use with female crimp connectors shown on page 128.
- Pin headers can be cut into smaller sizes.
- For alternative pin lengths, see pin header variants on page 134.



SINGLE ROW

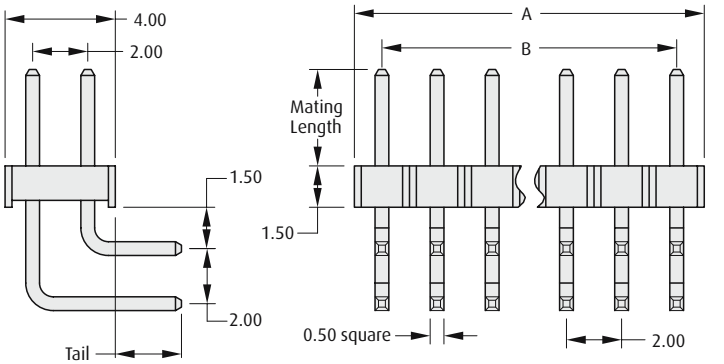


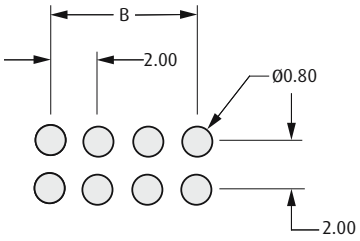


Recommended PC Board Pattern

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M22 - XXX XX XX

SERIES CODE

CONNECTOR TYPE			
Single	Double	Mating Length	Tail
203	204	3.50mm	3.00mm
253	254	3.50mm	2.40mm
273	274	4.20mm	2.40mm

FINISH	
05	Gold (Pb)
46	Tin (Pb)

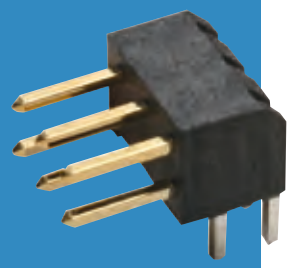
NO. OF CONTACTS PER ROW
02 to 50

All dimensions in mm.

M22 Connectors

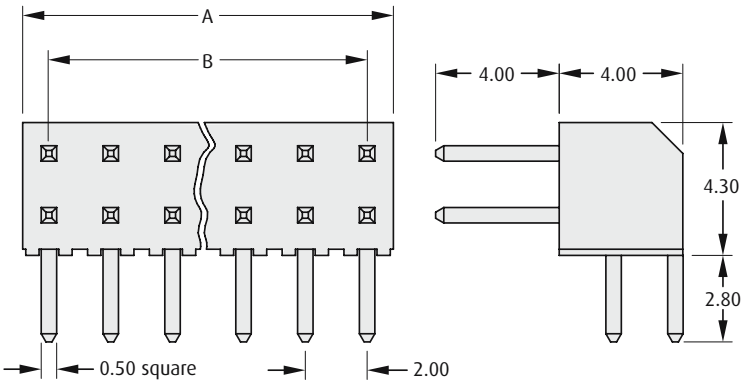
Male Horizontal PC Tail

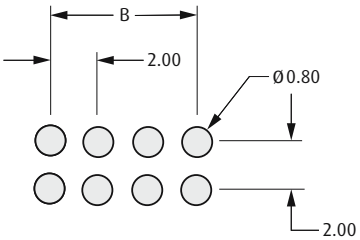
- Suitable for use with female connectors and jumper sockets shown on pages 125 to 128.
- Wide board footprint provides extra stability.



HORIZONTAL

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)





Recommended PC Board Pattern

HOW TO ORDER

M22 - 241 XX XX

SERIES CODE

NO. OF CONTACTS PER ROW
03 to 40

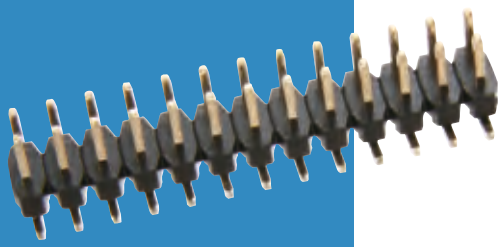
FINISH	
42	Gold & Tin
46	Tin

All dimensions in mm.

M22 Connectors

Male Vertical Surface Mount

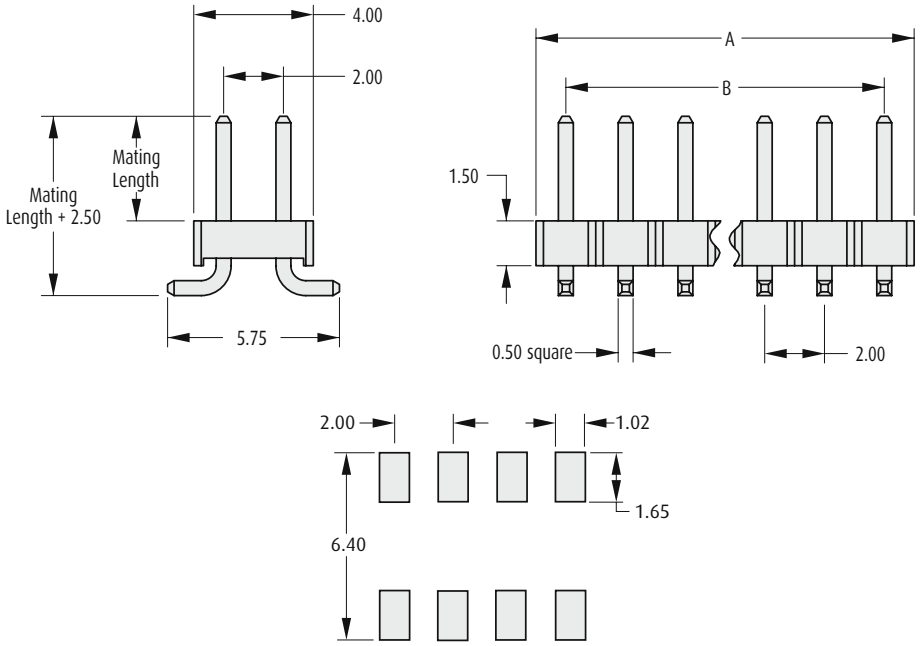
- Suitable for use with female PCB connectors and jumper sockets shown on pages 125 to 127. M22-552 also suitable for use with female crimp connectors shown on page 128.
- Pin headers can be cut into smaller sizes.
- For alternative pin lengths see pin header variants on page 134.



2mm (.079") PITCH

DOUBLE ROW

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)



Recommended PC Board Pattern

HOW TO ORDER

M22 - 5 X 2 XX XX X

SERIES CODE

TYPE	
3	3.50mm Mating Length
5	4.20mm Mating Length

NO. OF CONTACTS PER ROW
02 to 25

PACKAGING	
Blank	Loose
P	Pick & Place Cap, Tube
R	Tape & Reeled

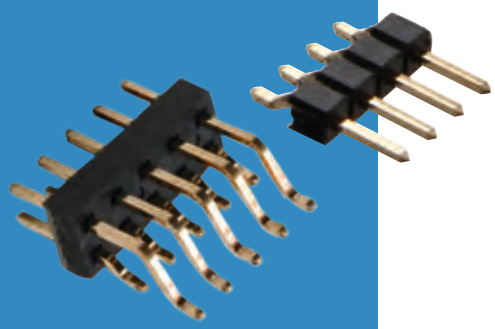
FINISH		
05	Gold	Pb
46	Tin	Pb

All dimensions in mm.

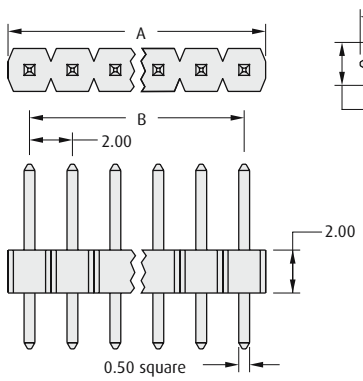
M22 Connectors

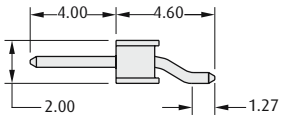
Male Horizontal Surface Mount

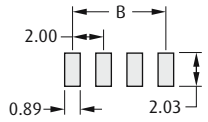
- Suitable for use with female PCB connectors and jumper sockets shown on pages 125 to 127. M22-533 and M22-563 also suitable for use with female crimp connectors shown on page 128.
- Single row pin headers can be cut into smaller sizes.
- Locating pegs on double row, to ensure correct positioning onto the board.
- For tape & reel packaging, contact **technical@harwin.com**.



SINGLE ROW

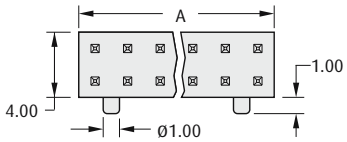


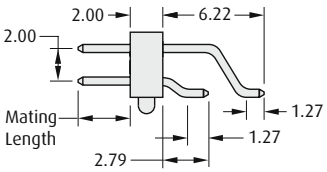


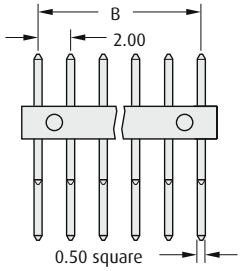


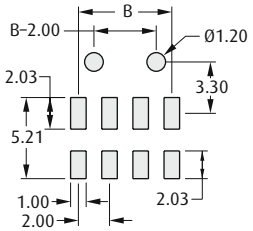
Recommended PC Board Pattern

DOUBLE ROW









Recommended PC Board Pattern

CALCULATION	
A	2.00 x No. of contacts per row
B	2.00 x (No. of contacts per row - 1)

HOW TO ORDER

M22 - 5 X 3 XX 05

SERIES CODE

TYPE	
3	Single Row
4	Double Row, 3.2mm Mating Length
6	Double Row, 4.2mm Mating Length

NO. OF CONTACTS PER ROW
02 to 40

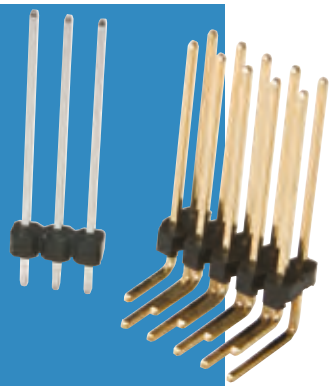
FINISH	
05	Gold (Pb)

All dimensions in mm.

M22 Connectors

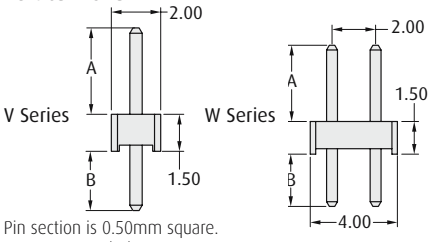
Pin Header Variants

- If you are unable to specify the connector you require from our standard range of M22 connectors (pages 129–133), use the order code below to create an application-specific connector.
- Contact **technical@harwin.com** for further information, or search online for M22-XXX.
- Suitable for use with female connectors and jumper sockets shown on pages 125 to 128.



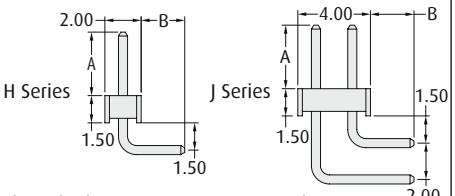
TERMINATION STYLES

Vertical PC Tail



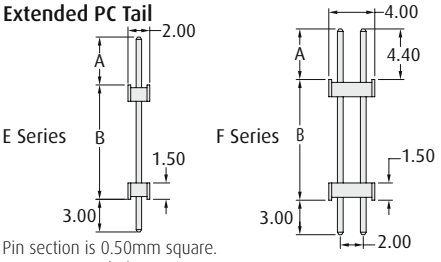
Pin section is 0.50mm square.
PCB mounting hole is Ø0.80mm.

Horizontal PC Tail



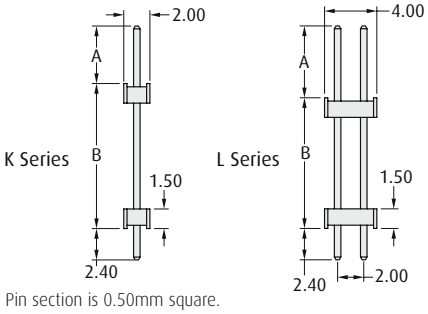
Pin section is 0.50mm square. PCB mounting hole is Ø0.80mm. max. B dimension is 6.00mm.

Extended PC Tail



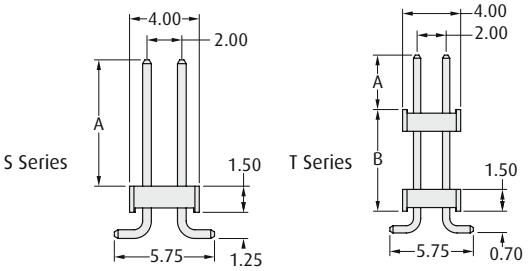
Pin section is 0.50mm square.
PCB mounting hole is Ø0.80mm.

Extended PC Tail (2.4mm tail)



Pin section is 0.50mm square.
PCB mounting hole is Ø0.80mm.

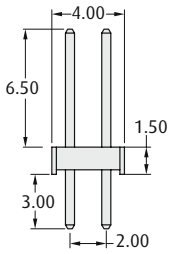
Vertical/Extended SMT



B dimension is 000.
Pin section is 0.50mm square.
PCB pad layout see page 132.

Pin section is 0.50mm square.
PCB pad layout see page 132.

Example: M22-065030W0546



2mm Pitch vertical double row pin header with 5 pins per row. A dimension is 6.5mm and B dimension is 3.0mm, in tin finish.

HOW TO ORDER

M22 - XXX XXX X XX XX

SERIES CODE

DIMENSION A
Example: 7.8mm = 078

DIMENSION B
Example: 5.0mm = 050

FINISH		
05	Gold	Pb
46	Tin	Pb

NO. OF CONTACTS PER ROW
02 to 50

SINGLE ROW	DOUBLE ROW	
V	W	Vertical
H	J	Horizontal
E	F	Extended
K	L	Extended (2.4mm tail)
–	S	Surface Mount
–	T	Extended Surface Mount

All dimensions in mm.

M22 Connectors – Polarised Specification

Materials

Mouldings:	Standard or High Temperature Plastic, UL94V-0
Contacts:	Male: Brass Female: Phosphor Bronze
Finish:	Tin

Environmental

Operating Temperature:	-25°C to +85°C
Solderability:	235°C for 3 seconds
Soldering heat resistance:	245°C for 5 seconds

Electrical

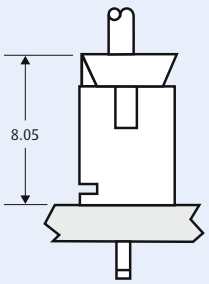
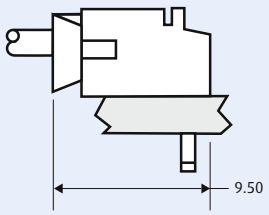
Current rating:	2A
Voltage rating:	100V AC/DC
Voltage proof:	800V AC for 1 minute
Contact resistance:	20 mΩ max
Insulation resistance:	1000 MΩ min

Mechanical

Durability:	100 operations
Insertion force (max):	6.9N
Withdrawal force (min):	1.0N

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

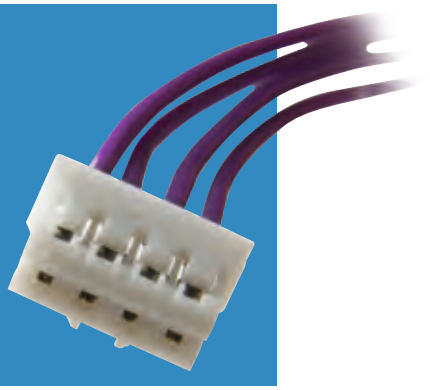
FEMALE / MALE	CRIMP
VERTICAL PC TAIL	M22-307  M22-220
HORIZONTAL PC TAIL	M22-307  M22-221

All dimensions in mm.

M22 Connectors – Polarised

Latched Female Crimp Housing and Contacts

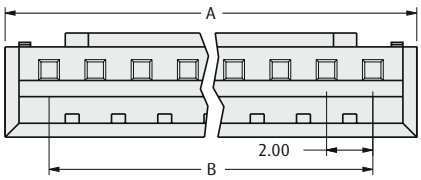
- Female crimp housings latch into male shrouded PC tail connectors.
- Mates with male connectors shown on page 137.

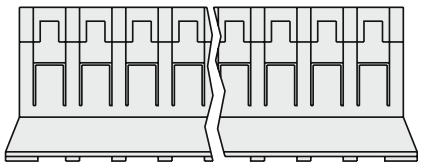


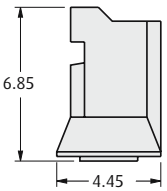
2mm (.079") PITCH

CRIMP HOUSING

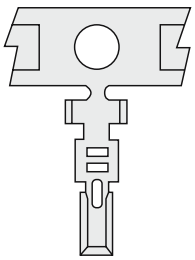
CALCULATION	
A	B + 3.80
B	2.00 x (No. of contacts per row - 1)

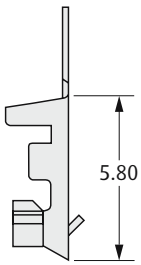




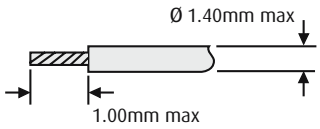


CRIMP CONTACT





- Order codes for reeled contacts refer to one reel of 10,000 contacts.
- Order codes for loose contacts refer to one pack of 100 contacts.
- Crimp contact suitable for 24 to 30 AWG.



Wire stripping details

HAND CRIMP TOOL

ORDER CODE
Z22-020

- Instruction sheets available at www.harwin.com/downloads/instructions

HOW TO ORDER

M22 - 30 X XX XX

SERIES CODE

CONNECTOR TYPE	
6	Reeled Contact
7	Crimp Housing
8	Loose Contact

FINISH		
00	Housing	Pb
46	Tin (Contacts)	Pb

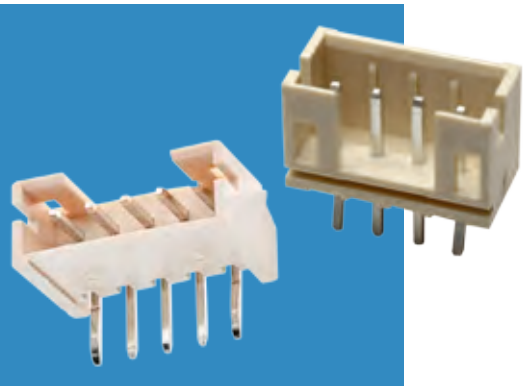
NO. OF CONTACTS PER ROW	
02 to 15	Housing
00	Contacts

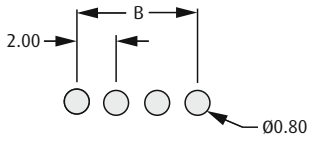
All dimensions in mm.

M22 Connectors – Polarised

Latched Male PC Tail

- Shrouded connectors for added protection of male pins.
- Mates with female connectors shown on page 136.
- Female crimp connector latches into both male connectors.

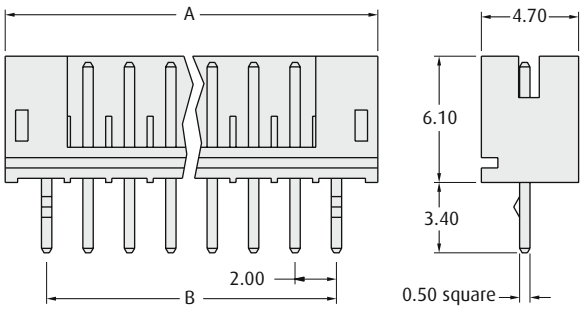




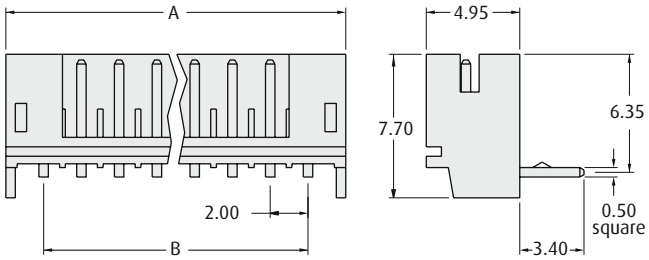
Recommended PC Board Pattern

CALCULATION	
A	B + 4.00
B	2.00 x (No. of contacts per row - 1)

VERTICAL



HORIZONTAL



HOW TO ORDER

M22 - 22 X XX 46

SERIES CODE

TYPE	
0	Vertical
1	Horizontal

FINISH	
46	Tin

NO. OF CONTACTS PER ROW
02 to 15

All dimensions in mm.

M20 Connectors Specification

Materials

Mouldings:	Standard or High Temperature Plastic, UL94V-0
Contacts:	Male: Copper Alloy Female: Phosphor Bronze
Finish:	See individual pages

Electrical

Current rating:	3A per contact
Voltage proof:	800V AC, 500V DC for 1 minute
Contact resistance:	30 mΩ max
Insulation resistance:	1,000 MΩ min

Environmental

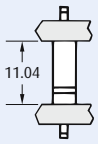
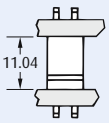
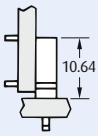
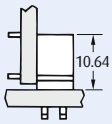
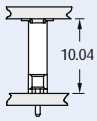
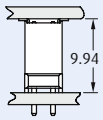
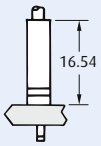
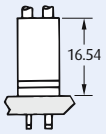
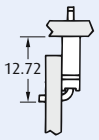
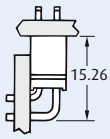
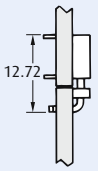
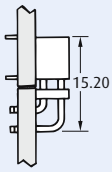
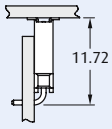
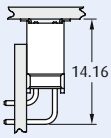
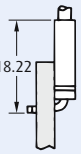
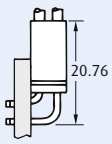
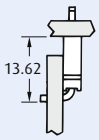
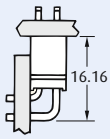
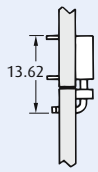
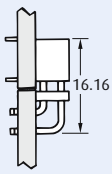
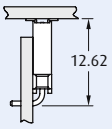
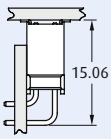
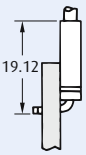
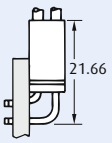
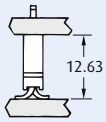
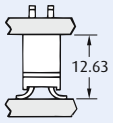
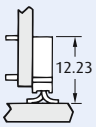
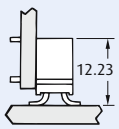
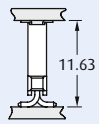
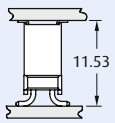
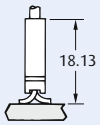
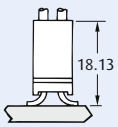
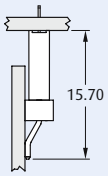
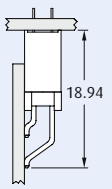
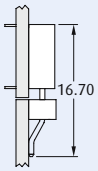
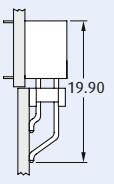
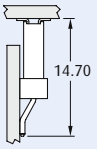
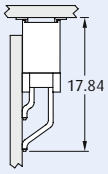
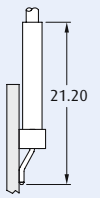
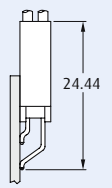
Operating Temperature:	–40ºC to 105ºC
Solderability:	245°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Mechanical

Durability:	Gold finish: 300 operations Tin finish: 50 operations
Insertion force (max):	Female: 2.0N per contact Jumper sockets: 12.5N total
Withdrawal force (min):	Female: 0.3N per contact Jumper sockets: 1.0N total
Vibration sensitivity:	50-2,000Hz, 3.13G, 45 minutes duration
Shock severity:	294m/s^2 (30G) for 11ms

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

M20 Connectors Mating Profiles

MALE \ FEMALE	VERTICAL PC TAIL		HORIZONTAL PC TAIL		VERTICAL SMT		CRIMP	
	SIL	DIL	SIL	DIL	SIL	DIL	SIL	DIL
VERTICAL PC TAIL	M20-782  M20-973 M20-977 M20-999	M20-783  M20-972 M20-976 M20-998	M20-789  M20-973 M20-977 M20-999	M20-788  M20-972 M20-976 M20-998	M20-786  M20-973 M20-977 M20-999	M20-787  M20-972 M20-976 M20-998	M20-106  M20-973 M20-977 M20-999	M20-107  M20-972 M20-976 M20-998
HORIZONTAL PC TAIL	M20-782  M20-971 M20-975	M20-783  M20-970 M20-974	M20-789  M20-971 M20-975	M20-788  M20-970 M20-974	M20-786  M20-971 M20-975	M20-787  M20-970 M20-974	M20-106  M20-971 M20-975	M20-107  M20-970 M20-974
	M20-782  M20-996	M20-783  M20-995	M20-789  M20-996	M20-788  M20-995	M20-786  M20-996	M20-787  M20-995	M20-106  M20-996	M20-107  M20-995
VERTICAL SMT	M20-782  M20-877	M20-783  M20-876	M20-789  M20-877	M20-788  M20-876	M20-786  M20-877	M20-787  M20-876	M20-106  M20-877	M20-107  M20-876
HORIZONTAL SMT	M20-782  M20-890	M20-783  M20-891	M20-789  M20-890	M20-788  M20-891	M20-786  M20-890	M20-787  M20-891	M20-106  M20-890	M20-107  M20-891

All dimensions in mm.

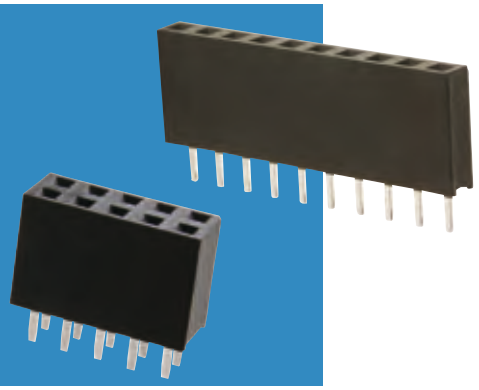
2.54mm (.100") PITCH

M20 Connectors

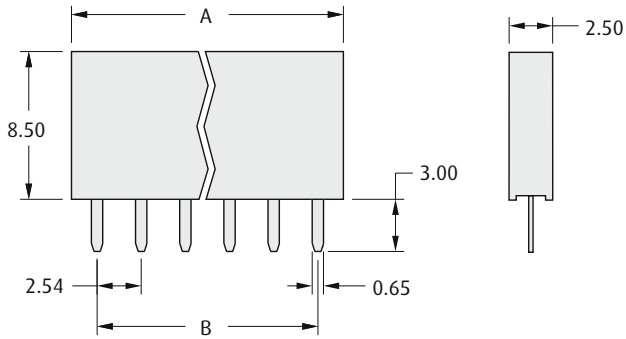
Female Vertical PC Tail

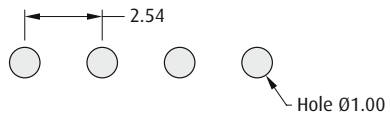
A comprehensive range of 2.54mm pitch connectors for board-to-board and cable-to-board applications.

- Twin-leaf phosphor bronze contacts.
- Suitable for use with male connectors on pages 146 to 152.



SINGLE ROW

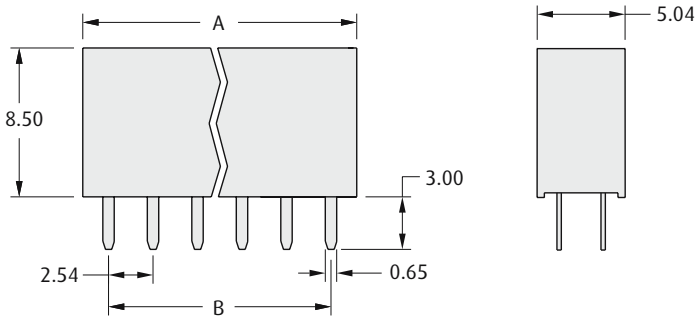


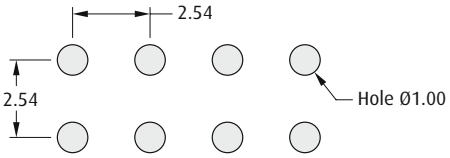


Recommended PC Board Pattern

CALCULATION	
A	B + 2.94
B	2.54 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M20 - 78 X XX XX

SERIES CODE

NO. OF ROWS	
2	Single Row
3	Double Row

FINISH		
42	Gold + Tin	Pb
46	Tin	Pb

NO. OF CONTACTS PER ROW
02 to 40

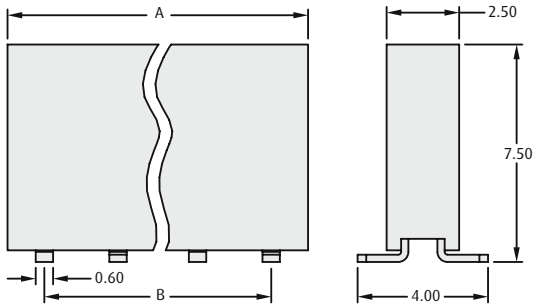
All dimensions in mm.

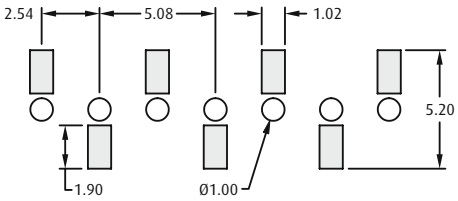
M20 Connectors

Female Vertical Surface Mount

- Suitable for use with male connectors shown on pages 146 to 152.
- Twin beam contact for cost-effective reliability.
- Tape and reel option available – contact **technical@harwin.com**.
- Dual Entry – connectors can be used for both top and bottom entry.

SINGLE ROW

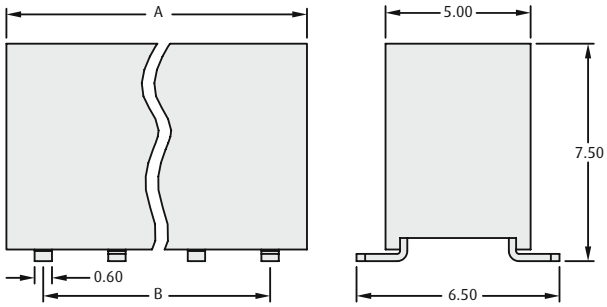


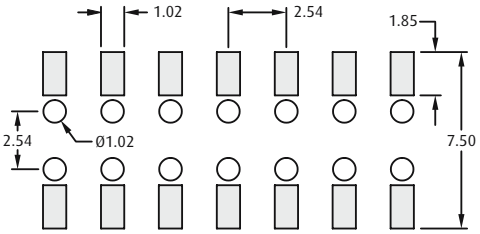


Recommended PC Board Pattern

CALCULATION	
A	B + 2.84
B	2.54 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M20 - 78 X XX XX

SERIES CODE

TYPE	
6	Single Row
7	Double Row

FINISH		
42	Gold + Tin	Pb
46	Tin	Pb

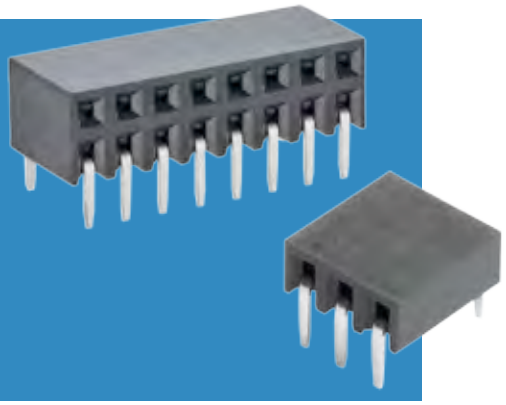
NO. OF CONTACTS PER ROW
02 to 40

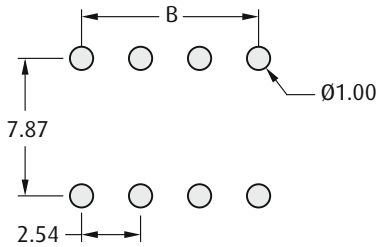
All dimensions in mm.

M20 Connectors

Female Horizontal PC Tail

- Suitable for use with male connectors shown on pages 146 to 152.
- Two point solder fixing for connector rigidity.

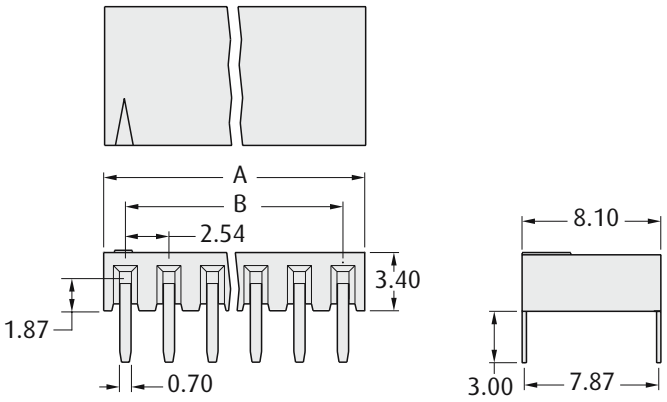




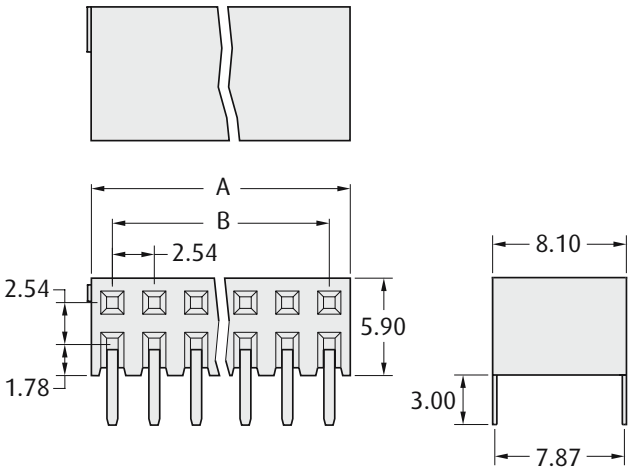
Recommended PC Board Pattern

CALCULATION	
A	B + 2.74
B	2.54 x (No. of contacts per row - 1)

SINGLE ROW



DOUBLE ROW



HOW TO ORDER

M20 - 78 X XX XX

SERIES CODE

NO. OF ROWS	
8	Double Row
9	Single Row

FINISH	
42	Gold + Tin
46	Tin

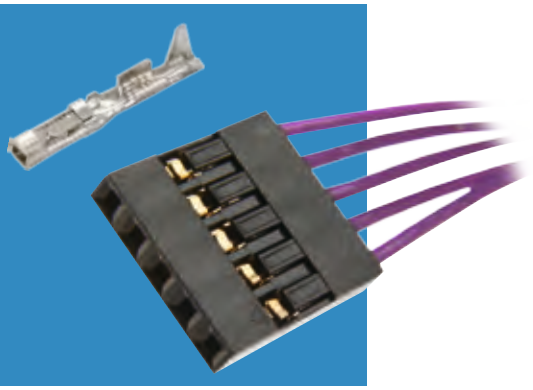
NO. OF CONTACTS PER ROW
02 to 40

All dimensions in mm.

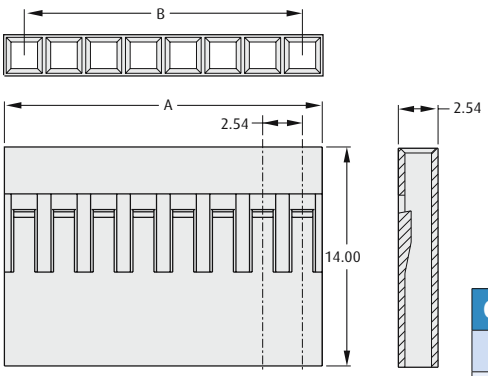
M20 Connectors

Female Crimp Housing and Contacts

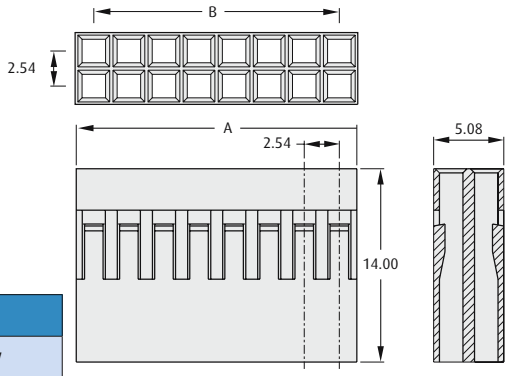
- Suitable for use with male connectors shown on pages 127 to 134.
- Twin-leaf phosphor bronze contacts supplied loose or on reels, rear insertable into housing.
- For Polarising Key use **order code M20-003**.
- Suitable for wire sizes 22 to 30 AWG.



SINGLE ROW

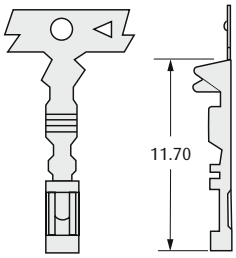


DOUBLE ROW



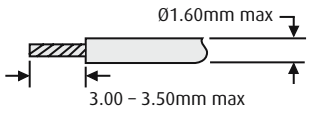
CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

CONTACTS



- Order codes for reeled contacts refer to one reel of 10,000 contacts.
- Order codes for loose contacts refer to one pack of 100 contacts.

WIRE STRIPPING DETAILS



HAND CRIMP TOOL

ORDER CODE
Z20-320

- Instruction sheets available at www.harwin.com/downloads/instructions

HOW TO ORDER

M20 - 1 XX XX XX

SERIES CODE

TYPE	
06	Single Row Housing
07	Double Row Housing
16	Reeled Contacts
18	Loose Contacts

NO. OF CONTACTS PER ROW	
00	Contacts
02 to 12	Housings

FINISH		
00	Housings	Pb
42	Gold + Tin (Contacts)	Pb
46	Tin (Contacts)	Pb

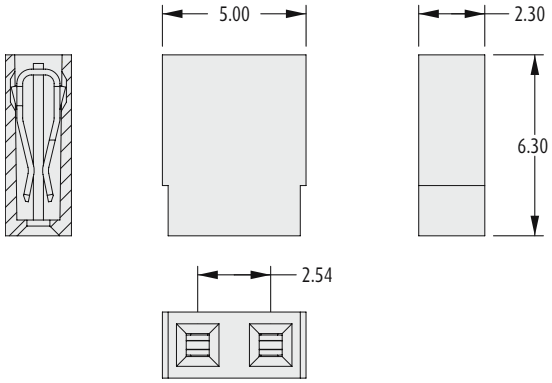
All dimensions in mm.

M20 Connectors

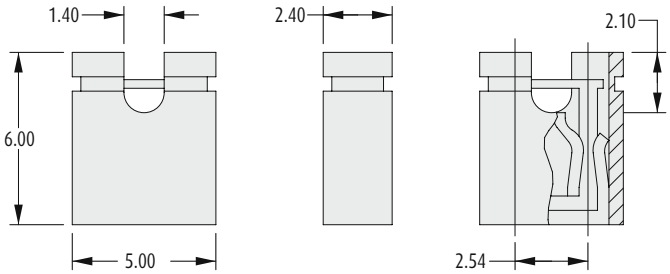
Jumper Sockets

- Suitable for use with pin headers shown on pages 146 to 152.
- Can be fitted by hand, giving an alternative on-board programming method to DIP switches.
- Open top for use with test probes.
- End and side stackable.
- Choice of colours available.
- Multi-usage socket provides up to 300 operations (Gold).
- Twin beam contact for cost-effective reliability.

HIGH REL, MULTI-USAGE



HIGH FORCE, SINGLE OPERATION



HOW TO ORDER

M75 XX - XX

SERIES CODE

HIGH REL		SINGLE OPERATION	
65	Grey	**81**	Red
66	Red	**82**	Black
67	Black	**83**	Blue
71	Blue		

FINISH	
05	Gold
46	Tin

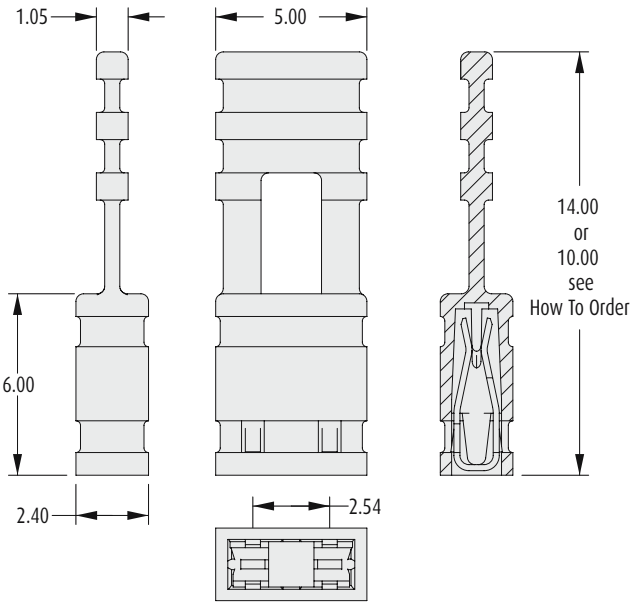
All dimensions in mm.

M20 Connectors

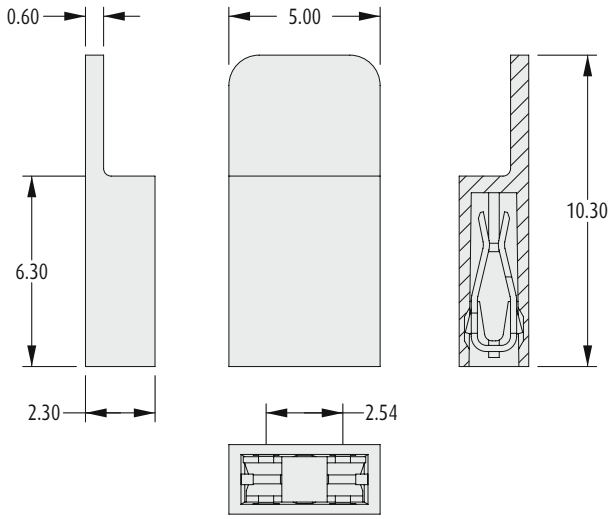
Jumper Sockets

- Flexible handle for ease of location and withdrawal.
- Suitable for use with male connectors on pages 146 to 152.

CLOSED TOP WITH FLEXIBLE HANDLE



CLOSED TOP WITH HANDLE



HOW TO ORDER

M XXXX - XX

SERIES CODE

TYPE

14mm FLEXIBLE HANDLE		10mm FLEXIBLE HANDLE		SOLID HANDLE	
7680	Grey	**7684**	Grey	**7965**	Grey
7681	Red	**7685**	Red	**7966**	Red
7682	Black	**7686**	Black	**7967**	Black
7683	Blue	**7687**	Blue		

FINISH

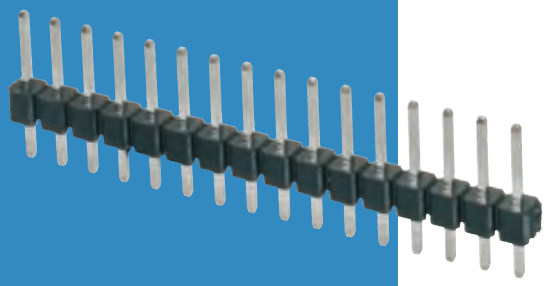
05	Gold (Pb)
46	Tin (Pb)

All dimensions in mm.

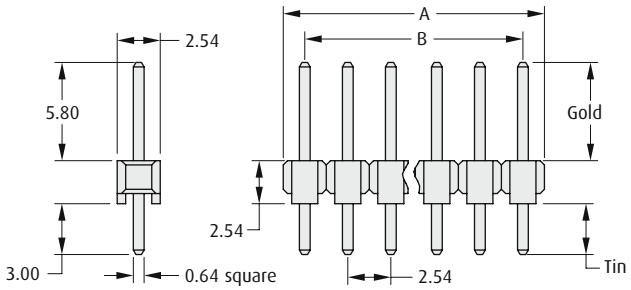
M20 Connectors

Male Vertical Single Row PC Tail

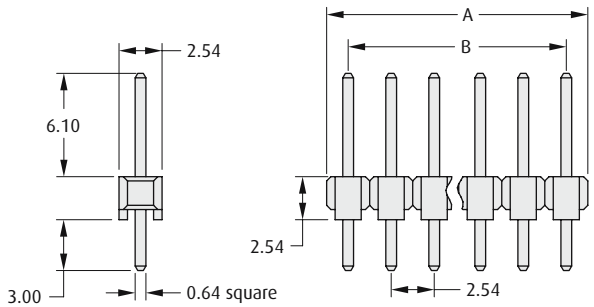
- Suitable for use with female connectors and jumper sockets shown on pages 140 to 145.
- Choice of mating pin lengths or specify your own pin headers (see page 152).
- Pin headers can be cut to smaller sizes.



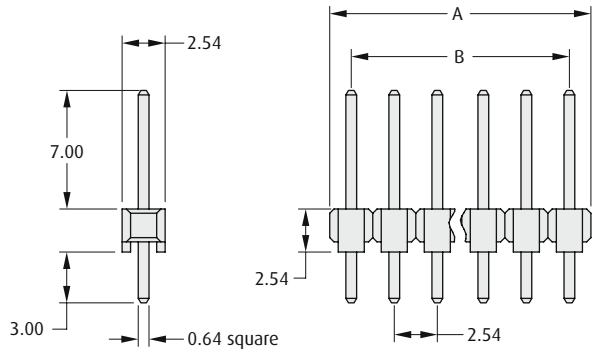
5.8mm

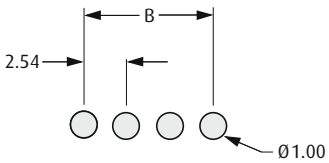


6.1mm



7.0mm





Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

HOW TO ORDER

M20 - 9 XX XX XX

SERIES CODE

SIZE

73	7.0mm Mating Height
77	5.8mm Mating Height
99	6.1mm Mating Height

NO. OF CONTACTS PER ROW

02 to 40

FINISH

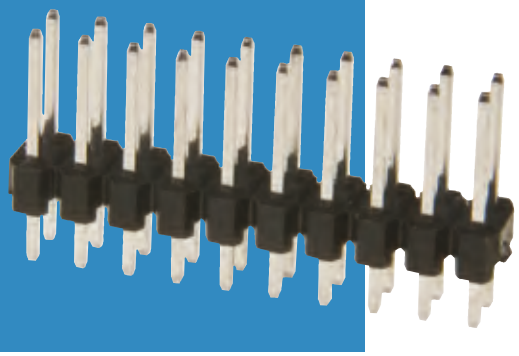
42	Gold + Tin (M20-977)
45	Gold (M20-973, 999)
46	Tin

All dimensions in mm.

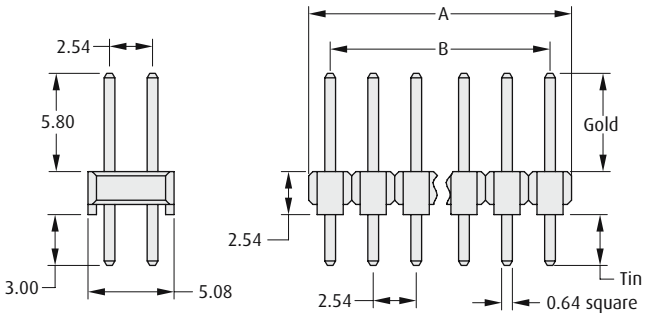
M20 Connectors

Male Vertical Double Row PC Tail

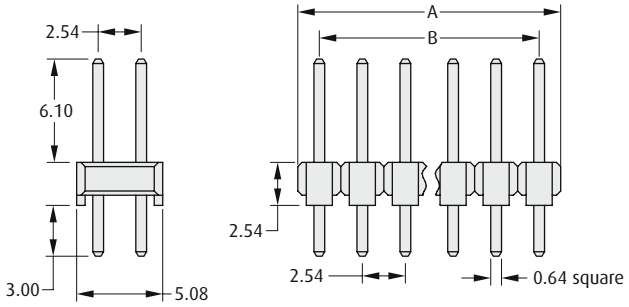
- Suitable for use with female connectors and jumper sockets shown on pages 140 to 145.
- Choice of mating pin lengths – or specify your own pin header (see page 152).
- Pin headers can be cut into smaller sizes.



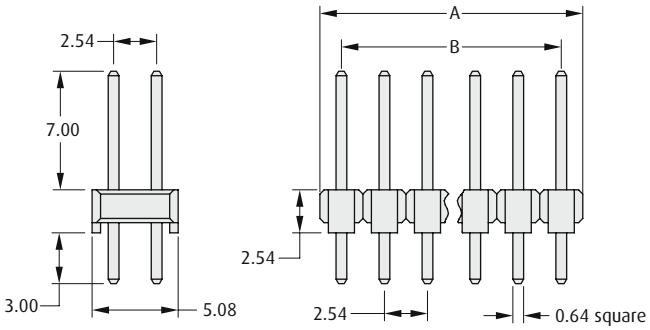
5.8mm

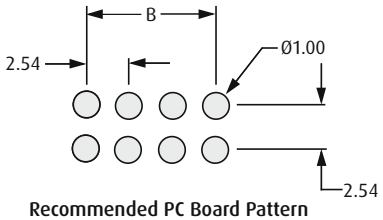


6.1mm



7.0mm





Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

HOW TO ORDER

M20 - 9 XX XX XX

SERIES CODE

SIZE	
72	7.0mm Mating Height
76	5.8mm Mating Height
98	6.1mm Mating Height

NO. OF CONTACTS PER ROW

02 to 40

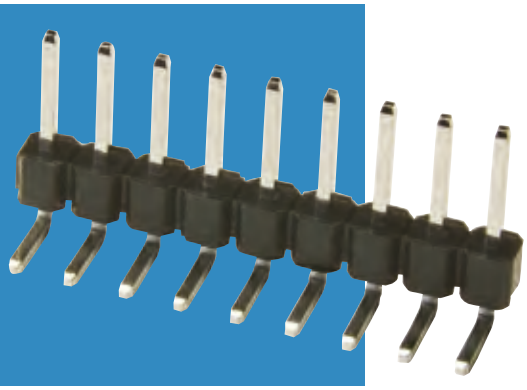
FINISH	
42	Gold + Tin (M20-976)
45	Gold (M20-972, 998)
46	Tin

All dimensions in mm.

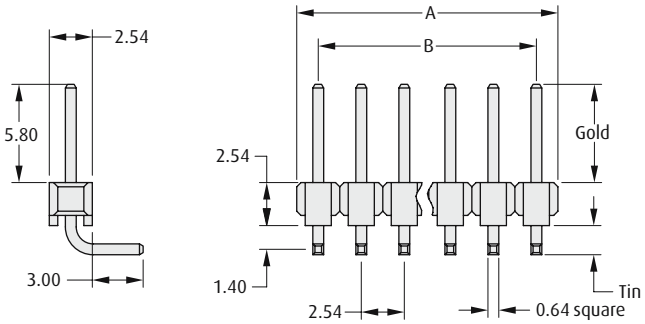
M20 Connectors

Male Horizontal Single Row PC Tail

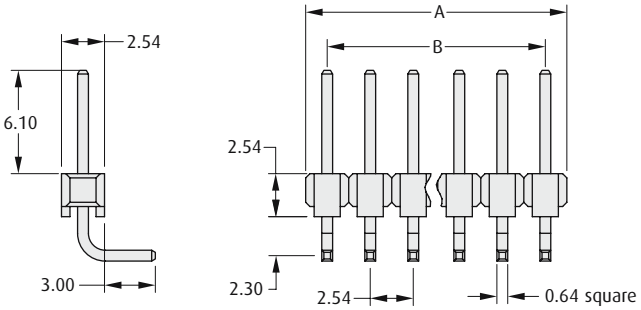
- Horizontal orientation for 90° board-to-board applications.
- Pin headers can be cut into smaller sizes.
- Choice of mating pin lengths or specify your own pin headers (see page 152).
- Suitable for use with female connectors and jumper sockets shown on pages 140 to 145.



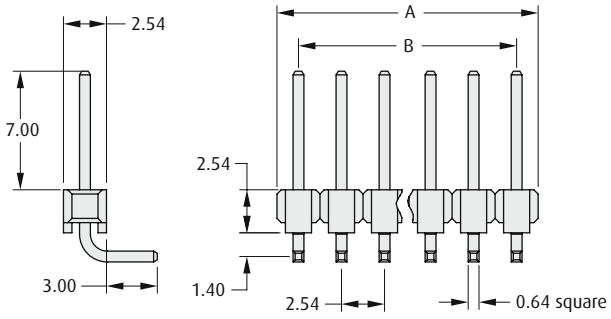
5.8mm

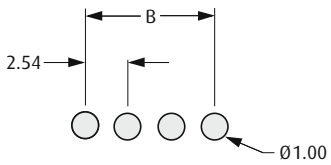


6.1mm



7.0mm





Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

HOW TO ORDER

M20 - 9 XX XX XX

SERIES CODE

SIZE	
71	7.0mm Mating Height
75	5.8mm Mating Height
96	6.1mm Mating Height

NO. OF CONTACTS PER ROW

02 to 40

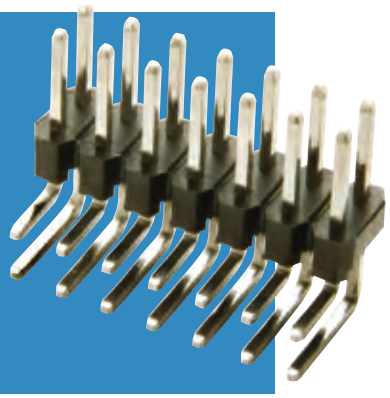
FINISH	
42	Gold + Tin (M20-975)
45	Gold (M20-971, 996)
46	Tin

All dimensions in mm.

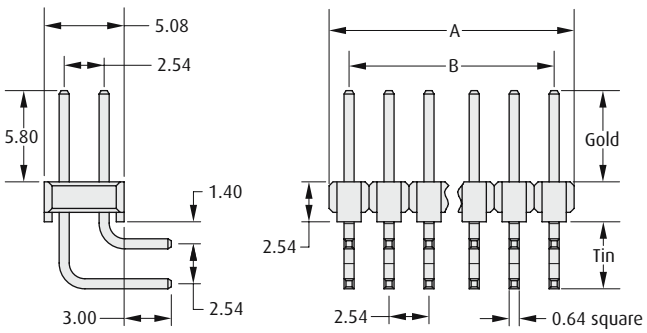
M20 Connectors

Male Horizontal Double Row PC Tail

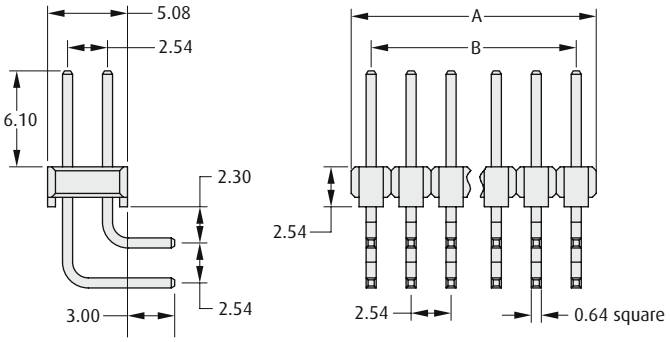
- Horizontal orientation for 90° board-to-board applications.
- Pin headers can be cut into smaller sizes.
- Choice of mating pin lengths or specify your own pin headers (see page 152).
- Suitable for use with female connectors and jumper sockets shown on pages 140 to 145.



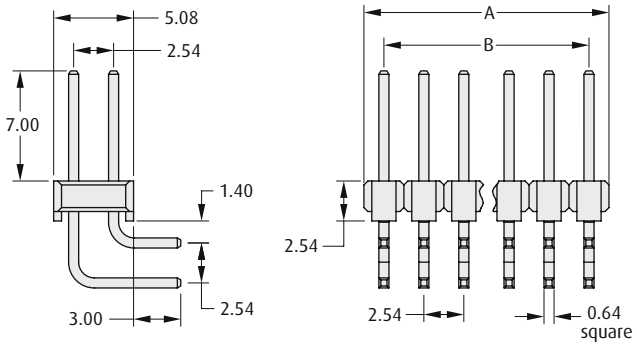
5.8mm

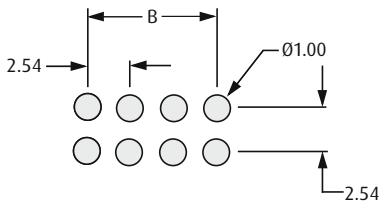


6.1mm



7.0mm





Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

HOW TO ORDER

M20 - 9 XX XX XX

SERIES CODE

SIZE	
70	7.0mm Mating Height
74	5.8mm Mating Height
95	6.1mm Mating Height

NO. OF CONTACTS PER ROW

02 to 40

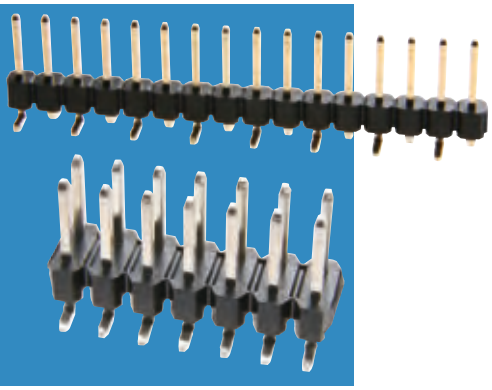
FINISH		
42	Gold + Tin (M20-974)	Pb
45	Gold (M20-970, 995)	Pb
46	Tin	Pb

All dimensions in mm.

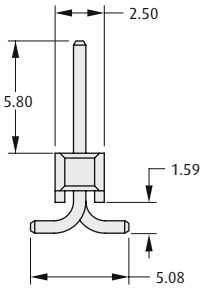
M20 Connectors

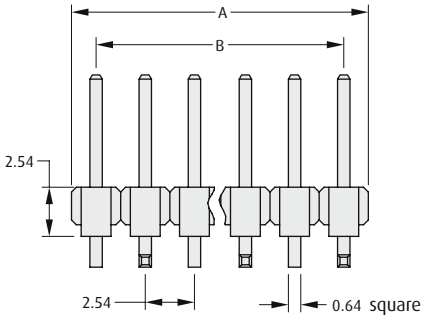
Male Vertical Surface Mount

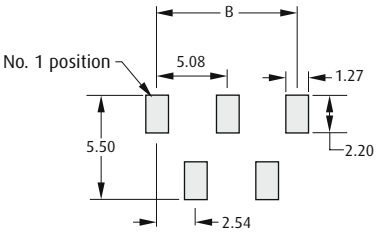
- For alternative pin lengths, see pin header variants on page 152.
- Suitable for use with female connectors and jumper sockets shown on pages 140 to 145.



SINGLE ROW



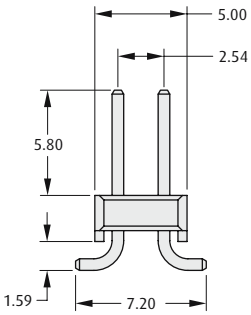


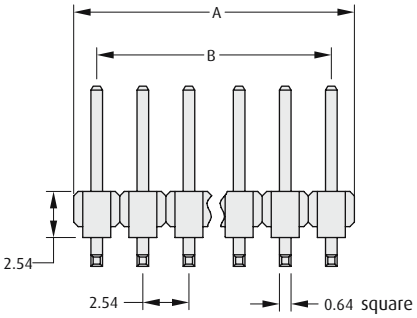


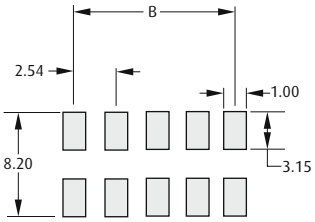
Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

DOUBLE ROW







Recommended PC Board Pattern

HOW TO ORDER

M20 - 87 X XX XX X

SERIES CODE

TAIL SPACING

6	Double Row
7	Single Row

NO. OF CONTACTS PER ROW

02 to 40

PACKAGING

Blank	Loose
P	Pick & Place Cap, Tube
R	Tape & Reeled

FINISH

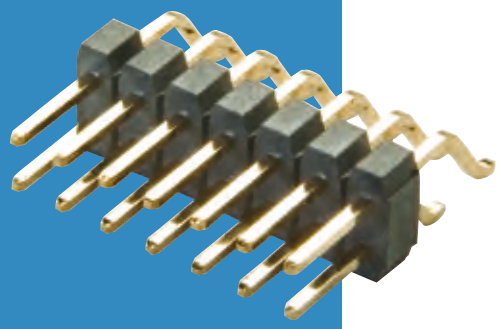
42	Gold + Tin
46	Tin

All dimensions in mm.

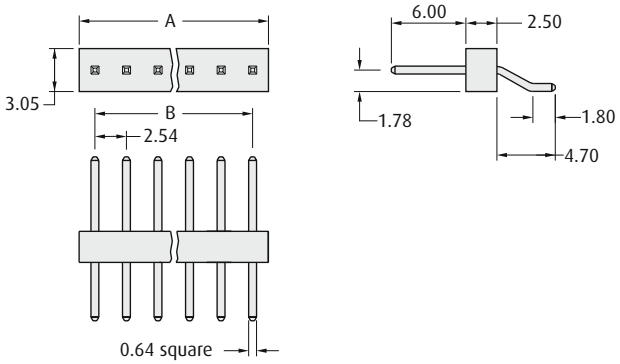
M20 Connectors

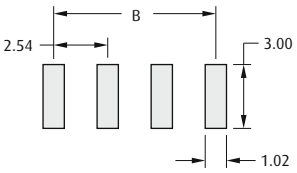
Male Horizontal Surface Mount

- Double row pin headers can be cut into smaller sizes.
- For tape and reel packaging, contact **technical@harwin.com**.
- Suitable for use with female connectors shown on pages 140 to 145.



SINGLE ROW

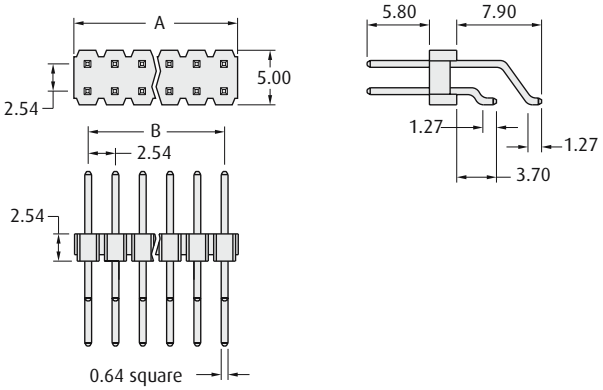


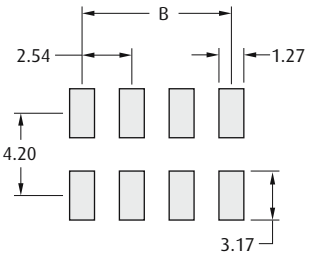


Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts per row
B	2.54 x (No. of contacts per row - 1)

DOUBLE ROW





Recommended PC Board Pattern

HOW TO ORDER

M20 - 89 X XX 05

SERIES CODE

TAIL SPACING	
0	Single Row
1	Double Row

FINISH	
05	Gold (Pb)

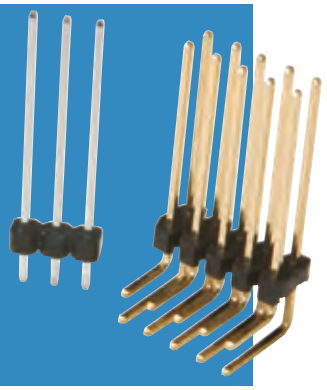
NO. OF CONTACTS PER ROW
02 to 40

All dimensions in mm.

M20 Connectors

Pin Header Variants

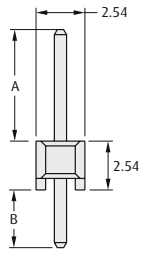
- If you are unable to specify the connector you require from our standard range of M20 connectors (pages 146–151), use the order code below to create an application-specific connector.
- Contact **technical@harwin.com** for further information, or search online for M20-XXX.
- Suitable for use with female connectors on pages 140 to 145.



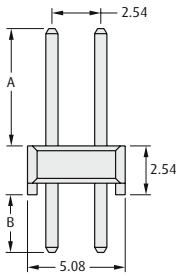
TERMINATION STYLES

Vertical PC Tail

V Series



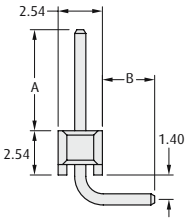
W Series



Pin section is 0.64mm square.
PCB mounting hole is Ø1.00mm.

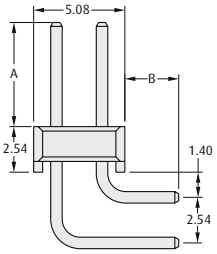
Horizontal PC Tail

H Series



Pin section is 0.64mm square.
PCB mounting hole is Ø1.00mm.

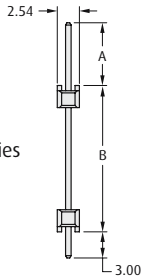
J Series



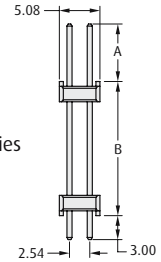
Max. B dimension is 6.00mm.

Extended PC Tail

E Series



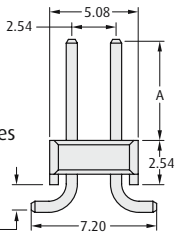
F Series



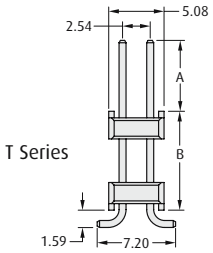
Pin section is 0.64mm square.
PCB mounting hole is Ø1.00mm.

Vertical SMT

S Series

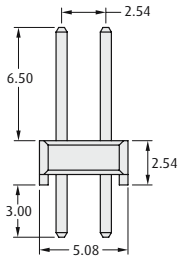


T Series



Pin section is 0.64mm square. For PCB pad layout see page 150.
S style only, B dimension is "000".

Example: M20-065030W0546



2.54mm Pitch vertical double row pin header with 5 pins per row and A dimension is 6.5mm and B dimension is 3.0mm in tin finish.

HOW TO ORDER

M20 - XXX XXX X XX XX

SERIES CODE

DIMENSION A
Example: 7.8mm = 078

DIMENSION B
Example: 5.0mm = 050

SINGLE ROW	DOUBLE ROW	
V	W	Vertical
H	J	Horizontal
E	F	Extended
–	S	Surface Mount
–	T	Extended Surface Mount

FINISH

45	Gold
46	Tin

NO. OF CONTACTS PER ROW
02 to 40

All dimensions in mm.

PC/104, PC/104 Plus Specification

PC/104 Connectors – 2.54mm pitch (M20)

Materials

Mouldings:	High Temperature Plastic, UL94V-0
Contacts:	Phosphor Bronze
Finish:	Gold

Electrical

Current rating:	Solder Tail: 3A max Press-Fit Tail: 1A max
Voltage rating:	12V DC
Voltage proof:	1,000V AC
Contact resistance:	30 mΩ max
Insulation resistance:	5,000 MΩ min

Environmental

Temperature Range:	-55°C to +105°C

Mechanical

Durability:	Mating: 10 operations Press-fit: 3 operations
Insertion force (max):	2.0N per contact
Withdrawal force (min):	0.25N per contact
Insertion force to board (max):	Press-Fit: 80N per contact

PC/104 Plus – 2.00mm pitch (M22)

Materials

Mouldings:	High Temperature Plastic, UL94V-0
Contacts:	M22-602: Brass Others: Phosphor Bronze
Finish:	See order code

Electrical

Current rating:	1A max
Voltage rating:	12V DC
Voltage proof:	800V AC
Contact resistance:	30 mΩ max
Insulation resistance:	5,000 MΩ min

Environmental

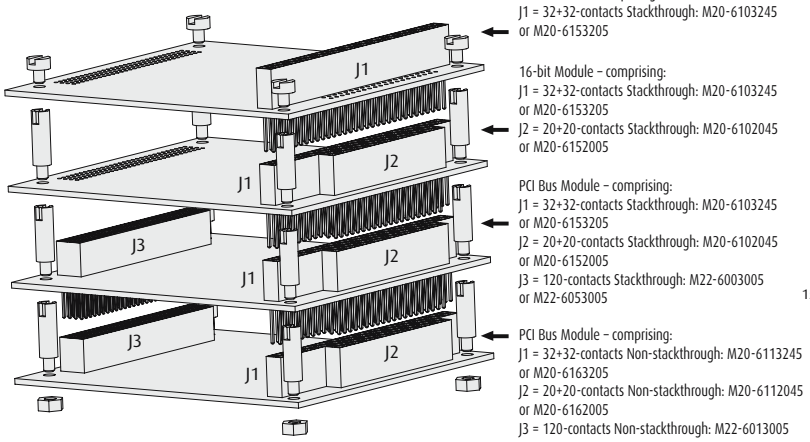
Temperature Range:	M22-605/606: -40°C to +85°C Others: -55°C to +105°C

Mechanical

Durability:	Mating: 10 operations Press-fit: 3 operations
Insertion force (max):	M22-605/606: 1.2N per contact Others: 2.0N per contact
Withdrawal force (min):	M22-605/606: 0.2N per contact Others: 0.3N per contact
Insertion force to board (max):	Press-Fit: 60N per contact

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Typical PC/104 & PC/104-Plus Module Stack



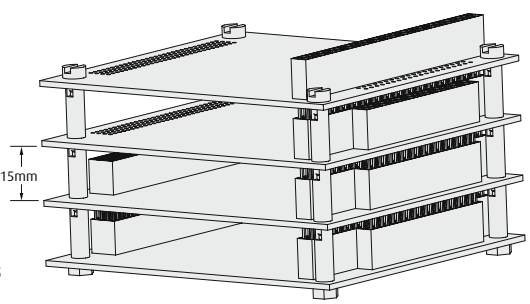
8-bit Module – comprising:
J1 = 32+32-contacts Stackthrough: M20-6103245
or M20-6153205

16-bit Module – comprising:
J1 = 32+32-contacts Stackthrough: M20-6103245
or M20-6153205
J2 = 20+20-contacts Stackthrough: M20-6102045
or M20-6152005

PCI Bus Module – comprising:
J1 = 32+32-contacts Stackthrough: M20-6103245
or M20-6153205
J2 = 20+20-contacts Stackthrough: M20-6102045
or M20-6152005
J3 = 120-contacts Stackthrough: M22-6003005
or M22-6053005

PCI Bus Module – comprising:
J1 = 32+32-contacts Non-stackthrough: M20-6113245
or M20-6163205
J2 = 20+20-contacts Non-stackthrough: M20-6112045
or M20-6162005
J3 = 120-contacts Non-stackthrough: M22-6013005

Assembled PC/104 stack (4 Modules)

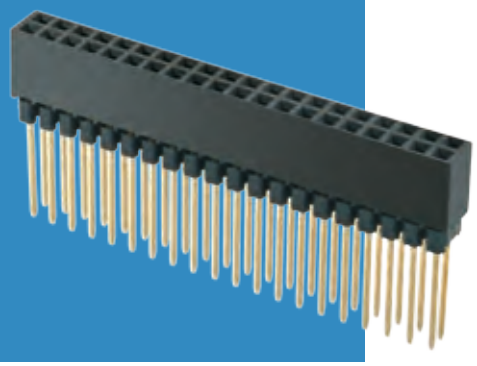


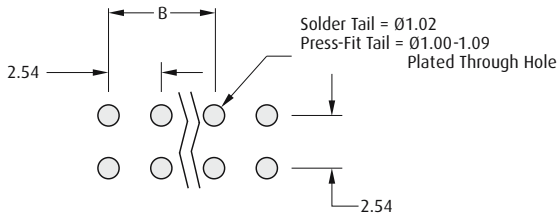
All dimensions in mm.

PC/104 Connectors

A range of bus connectors compatible with the PC/104 industry standard for embedded PC applications, designed for stacking boards with a common bus.

- 32+32 contacts supports an 8-bit system.
- 20+20 contacts combined with 32+32 contacts supports a 16-bit system.

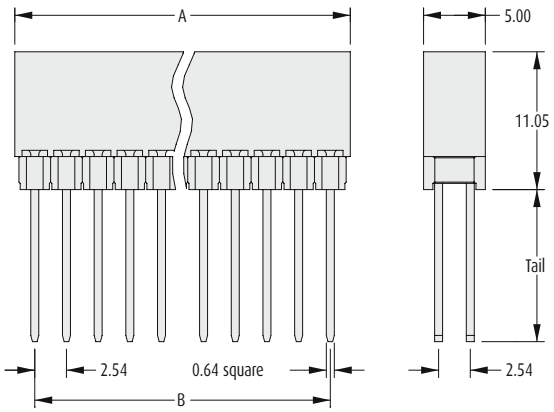




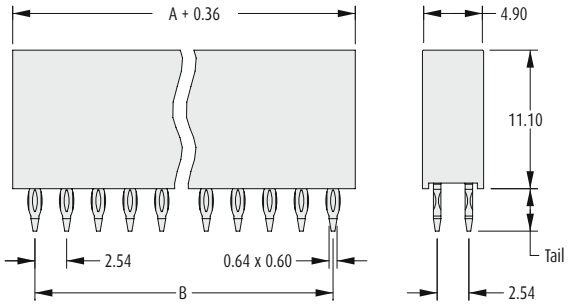
Recommended PC Board Pattern

CALCULATION	
A	B + 3.20
B	2.54 x (No. of contacts per row - 1)
C	2.54 x No. of contacts per row

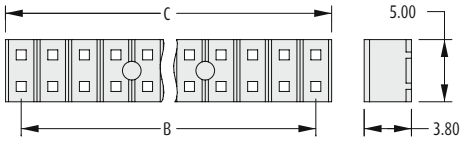
SOLDER TAIL



PRESS-FIT TAIL



Press-Fit connector M20-615 supplied with spacer moulding



HOW TO ORDER

M20 - 61 X XX XX

SERIES CODE

CONNECTOR TYPE	
0	Stackthrough, 12.20mm Solder Tail
1	Non-Stackthrough, 2.30mm Solder Tail
5	Stackthrough, 12.10mm Press-Fit Tail
6	Non-Stackthrough, 3.40mm Press-Fit Tail

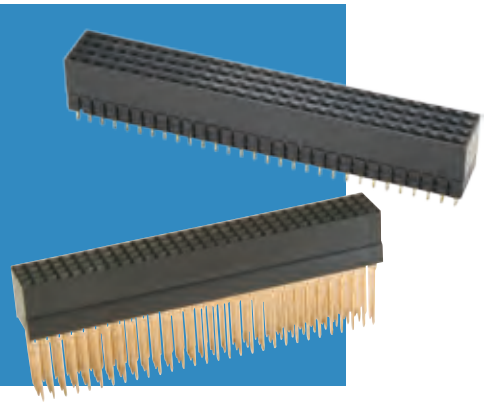
FINISH	
05	Gold (M20-615, 616)
45	Gold (M20-610, 611)

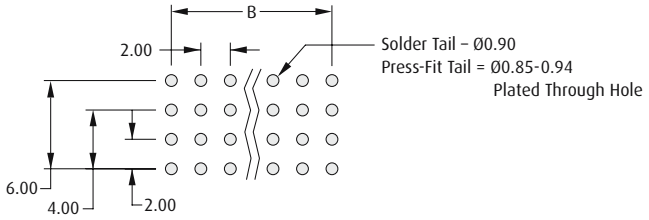
NO. OF CONTACTS PER ROW
20, 32

All dimensions in mm.

PC/104 Plus Connectors

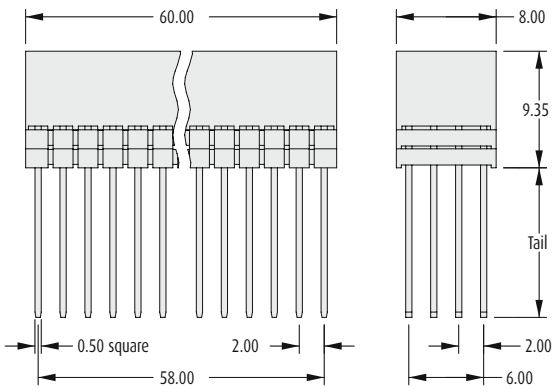
- Supports PCI bus.
- Available in Press-Fit or Solder Tails.



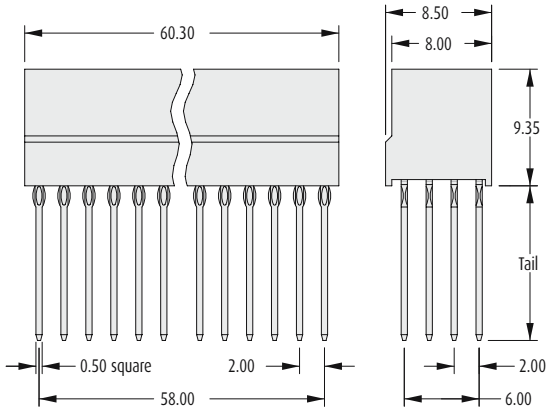


Recommended PC Board Pattern

SOLDER TAIL



PRESS-FIT TAIL



HOW TO ORDER

M22 - 60 X 30 05

SERIES CODE

CONNECTOR TYPE

0	Stackthrough, 12.00mm Solder Tail
1	Non-Stackthrough, 2.30mm Solder Tail
*5	Stackthrough, 12.40mm Press-Fit Tail
*6	Non-Stackthrough, 2.90mm Press-Fit Tail

FINISH

05	Gold

NO. OF CONTACTS PER ROW

30

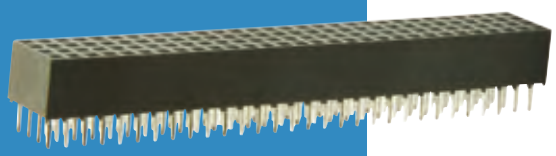
All dimensions in mm.

* No longer available from Sept 2014

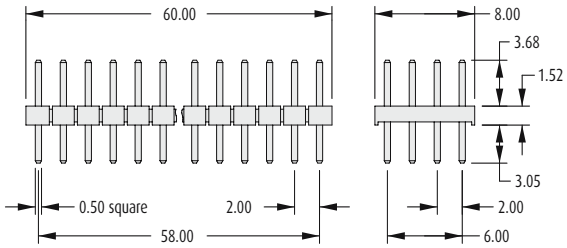
PC/104 Plus Connectors

Accessories

- Accessory connectors and components for use with the PC/104 Plus range.
- Shroud M22-604 is used to protect the long tails of the Stackthrough connectors from page 155, and ensures alignment with a mating receptacle. It self retains on the underside of the PCB following soldering/fitting the Stackthrough connector, by latching into the four mounting holes.

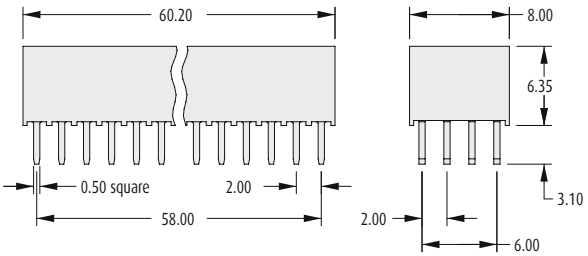


PC/104 PLUS POST HEADER



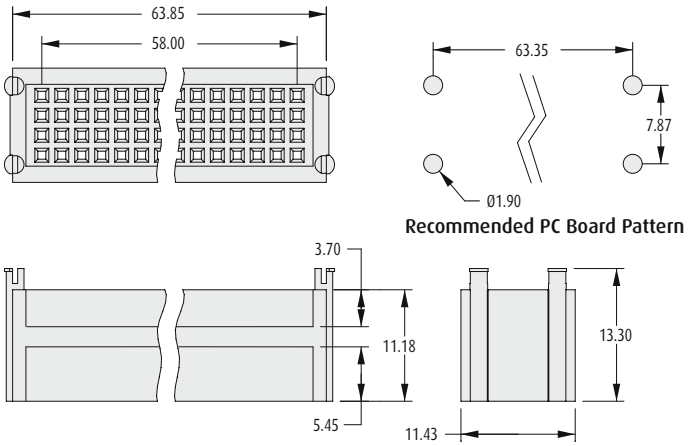
See previous page for Recommended PC Board Pattern

PC/104 PLUS POST HEADER RECEPTACLE



See previous page for Recommended PC Board Pattern

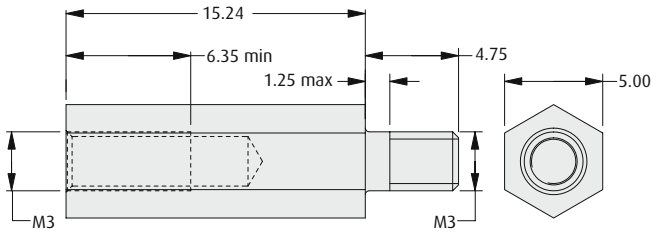
PC/104 PLUS SHROUD



Recommended PC Board Pattern

PC/104 SPACER

ORDER CODE
R6104-02



HOW TO ORDER

M22 - 60 X 30 XX

SERIES CODE

CONNECTOR TYPE

2	Post Header
3	Post Receptacle
4	Shroud

FINISH

42	Gold + Tin (M22-602, 603) Pb
98	Shroud (M22-604) Pb

NO. OF CONTACTS PER ROW

30

All dimensions in mm.

Spring Contact & Circular Connectors

CONTENTS

HARWiN

HotShoe Connectors Specification

Features and Benefits

- Constructed using spring loaded contacts, maintaining a positive force against the mating connector.
- Low mating force enables rapid and effortless connection for a user-friendly connection system.
- Rugged and robust, made from highly durable mould materials and designed to withstand a high level of dust, water and chemical agent ingress to IP68 – ensuring continued reliability throughout the product's lifecycle.
- Tolerant to mating misalignment.
- Ideal for use in portable equipment where separate battery modules are used, and for data transfer docking stations.

Typical Applications

- Military radio systems
- Thermal imaging cameras
- Hand-held scanners
- Docking stations
- Hand-held commercial radios
- Portable datacoms equipment
- Powerboat gantry connection system

Specifications

Materials

Mouldings:	High Temperature Plastic, UL94V-0
Seals:	Thermoplastic Elastomer or Nitrile
Contacts:	Brass
Threaded Inserts, Springs:	Stainless Steel
Finish:	Gold

Environmental

Temperature range:	-40°C to +100°C

Electrical

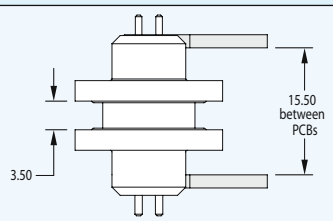
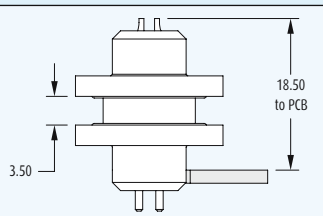
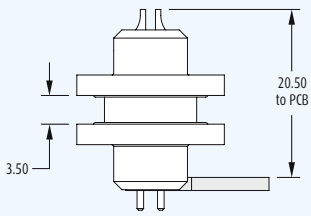
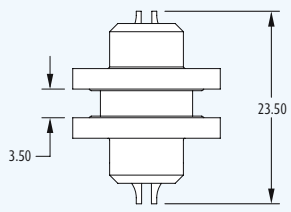
Current rating:	1A per contact
Voltage rating:	240V DC
Contact resistance:	Male: 10 mΩ max Female: 30 mΩ max
Insulation resistance:	1,000 MΩ min

Mechanical

Durability:	10,000 cycles
Environmental seal:	IP68 at 1.5m for 2 hours

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

Mating Profiles

MALE \ FEMALE	PC TAIL	SOLDER
PC TAIL	M90-604 M90-605  M90-704	M90-606  M90-704
SOLDER	M90-706  M90-604 M90-605	M90-606  M90-706

All dimensions in mm.

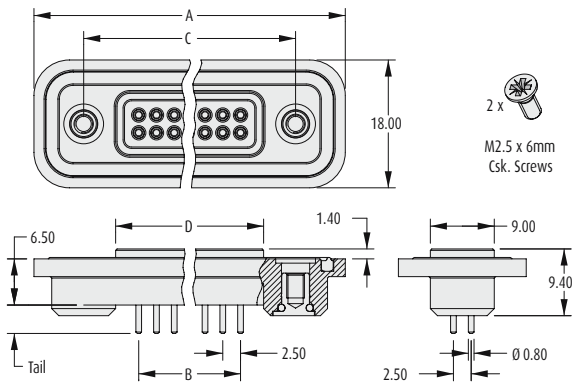
HotShoe Connectors

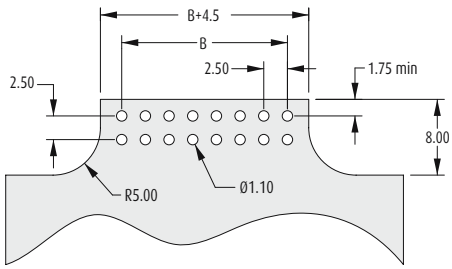
HotShoe

Female Connector

- Sealed to IP68 at 1.5m.
- Spring probe design for maintaining a positive force against the mating connector – see page 160.
- Solder cup Tail suitable for 26 AWG cable.
- Recommended panel/bulkhead thickness is 1.5mm.

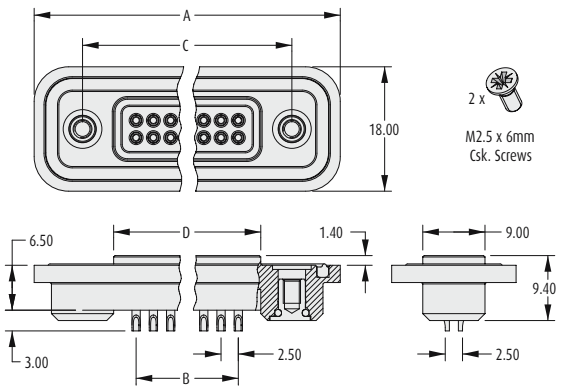
PC TAIL



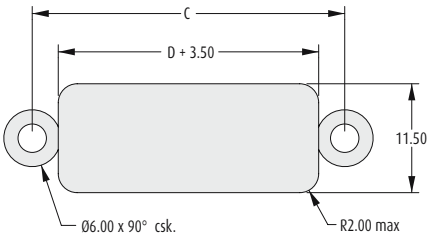


Recommended PC Board Pattern

SOLDER TAIL



CALCULATION	
A	B + 29.50
B	1.25 x (Total no. of contacts - 2)
C	B + 15.50
D	B + 6.50



Recommended Panel Cut-out

HOW TO ORDER

M90 - 60X XX 45

SERIES CODE

TYPE

604	4mm PC Tail
605	3mm PC Tail
606	Solder Cup Tail

FINISH

45	Gold (Pb)

TOTAL NO. OF CONTACTS

08, 12, 16

All dimensions in mm.

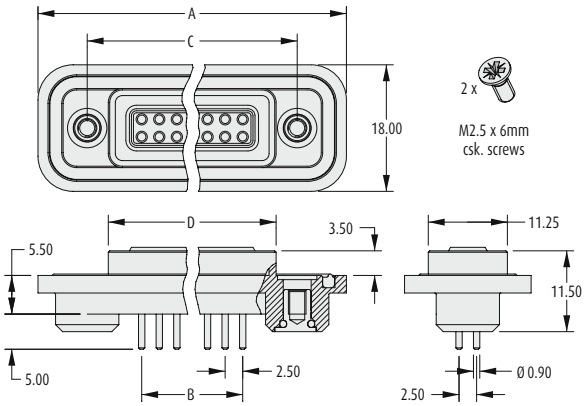
HotShoe Connectors

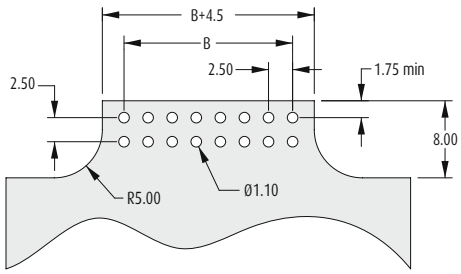
HotShoe

Male Connector

- Sealed to IP68 at 1.5m.
- Designed to mate with a spring probe connector – see page 159.
- Solder Cup Tail suitable for 26 AWG cable.
- Recommended panel/bulkhead thickness is 1.5mm.

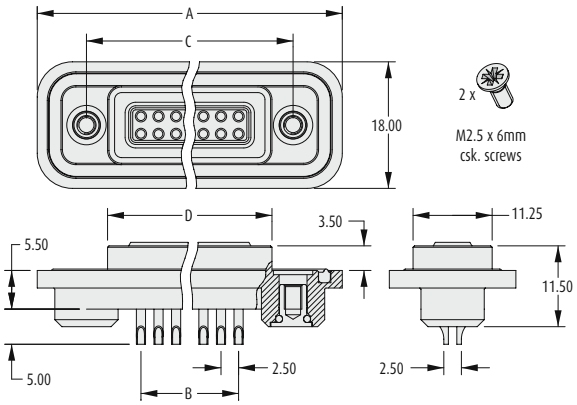
PC TAIL



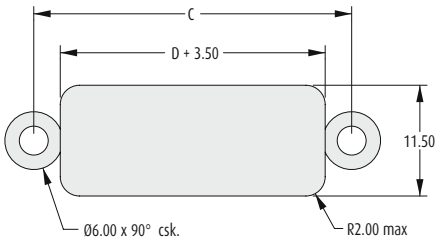


Recommended PC Board Pattern

SOLDER TAIL



CALCULATION	
A	B + 29.50
B	1.25 x (Total no. of contacts - 2)
C	B + 15.50
D	B + 9.50



Recommended Panel Cut-out

HOW TO ORDER

M90 - 70X XX 45

SERIES CODE

TYPE	
704	PC Tail
706	Solder Cup Tail

FINISH	
45	Gold

TOTAL NO. OF CONTACTS
08, 12, 16

All dimensions in mm.

Spring Contact Connectors Specification

Materials

Mouldings:	High Temperature Plastic, UL94V-0	
Contacts:	Plunger:	Brass
	Barrel:	Brass
	Spring:	Stainless Steel or Gold-plated Steel
Finish:	Plunger:	Gold
	Barrel:	Gold

Environmental

Operating temperature:	-40°C to +85°C
Solderability:	235°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Electrical

Current rating:	1.0A max
Voltage rating:	12V DC
Contact resistance:	50 mΩ max
Insulation resistance:	100 MΩ min

Mechanical

Durability:	10,000 operations
Working height:	
2-way	3.9mm
3-way, 4-way	3.4mm
5-way	4.5mm
Spring force at working height:	
2-way	1.1N ±20%
3-way, 4-way	1.2N ±20%
5-way	0.8N ±20%

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

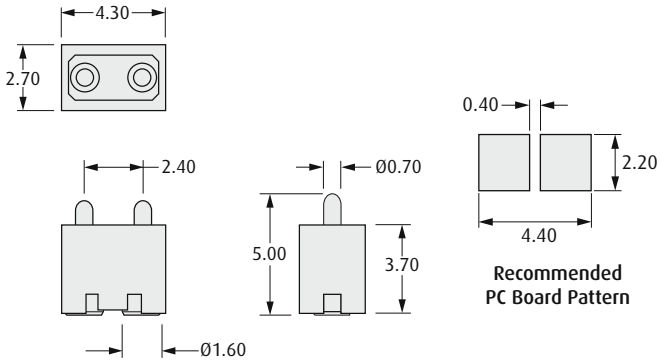
Spring Contact Connectors

HotShoe

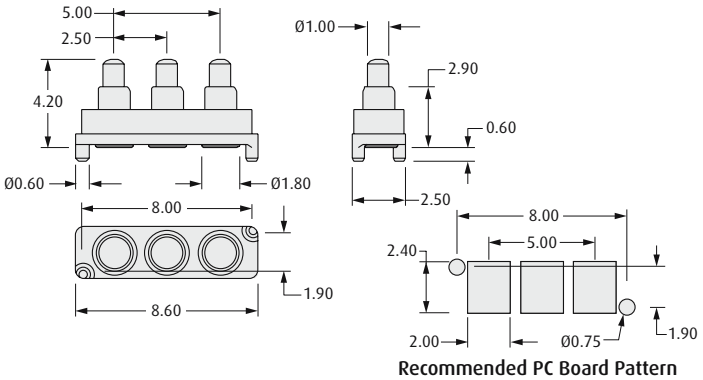
A range of spring contact connectors for maintaining a positive force against a mating surface.

- Low mating force enables rapid and effortless connection for a user friendly system.
- Tolerates significant mating misalignment.
- Ideal for use in portable equipment where separate battery modules are used and for data transfer docking stations.

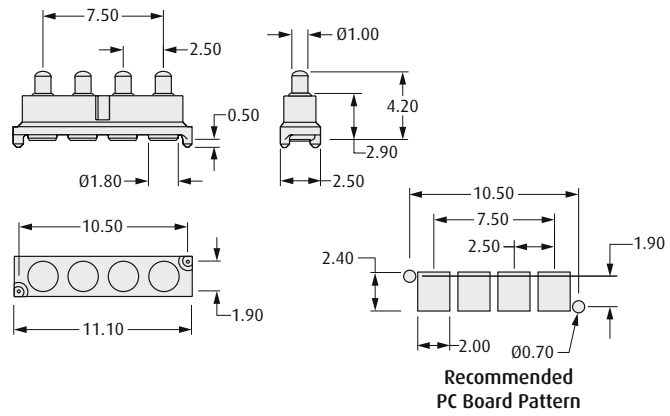
2 CONTACTS



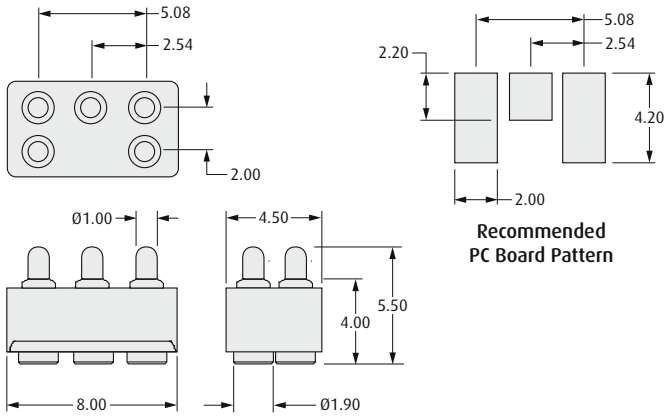
3 CONTACTS



4 CONTACTS



5 CONTACTS



HOW TO ORDER

P20 - XX 45 R

SERIES CODE	
TOTAL NO. OF CONTACTS	02 to 05
TAPE AND REEL	
FINISH	45 Gold

All dimensions in mm.

Commercial MIL-DTL-5015 Specification

A range of high reliability, rugged, RoHS-compliant Circular Connectors to meet the high standards of MIL-DTL-5015, priced to be cost-effective for commercial and industrial applications.

Designed for use in harsh and demanding environments, the high specification, cadmium- and hexavalent chromium-free range features free plug, panel mount and cable connector orientations in a number of popular shell and layout options.

Features

- **Intermateable with MIL-DTL-5015**
- **Low cost, highly durable & rugged connector system**
- **Solder termination**
- **Full environmental sealing with the use of backshells and sealing gaskets, exceeds IP67**
- **Threaded and polarised coupling**
- **Zinc & Black Chromate-plated shells**
- **COTS applications where MIL spec is not mandatory**

Materials

Outer shell:	Aluminium Alloy, Zinc with Black Chromate finish
Inner contacts:	Copper Alloy, Silver finish
Insulator, Grommet:	Synthetic Rubber

Environmental

Operating temperature:	-55°C to +125°C
Vibration sensitivity:	10Hz to 500Hz, 98mm/s² (10G)
Shock severity:	490m/s² (50G) for 11ms
Water resistance (sealing):	1.8m for 48 hours – exceeds IP67

Electrical

Current rating:	13A
Voltage rating:	10SL shell: 500V AC, 700V DC 12S shell: 500V AC, 700V DC 14S shell: 200V AC, 250V DC
Voltage proof:	10SL shell: 2,000V AC 12S shell: 2,000V AC 14S shell: 1,000V AC
Insulation resistance:	5,000 MΩ min

Mechanical

Durability:	500 operations
Wire size:	16 to 22 AWG

All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

HOW TO ORDER

C90 - 310X# XXXX-X X

CONTACT GENDER

P	Male
S	Female

SERIES CODE

TYPE

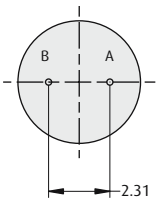
3101F	Cable connector with backshell
3102R	Panel mount connector with gasket
3106F	Straight plug with backshell

SHELL SIZE

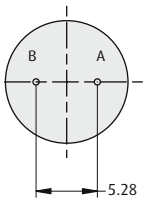
10SL-3	Thread 5/8-24UNEF, 3 contacts
10SL-4	Thread 5/8-24UNEF, 2 contacts
12S-3	Thread 3/4-20UNEF, 2 contacts
14S-2	Thread 7/8-20UNEF, 4 contacts
14S-6	Thread 7/8-20UNEF, 6 contacts

Contact Configuration

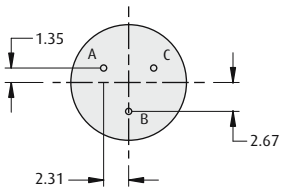
Contact numbering is shown looking onto the mating face of the male connector.



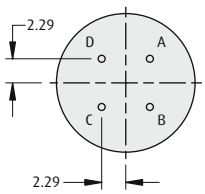
10SL-4 Shell



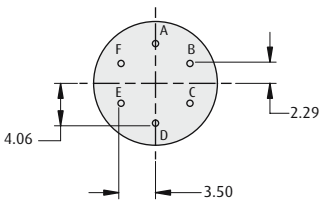
12S-3 Shell



10SL-3 Shell



14S-2 Shell



14S-6 Shell

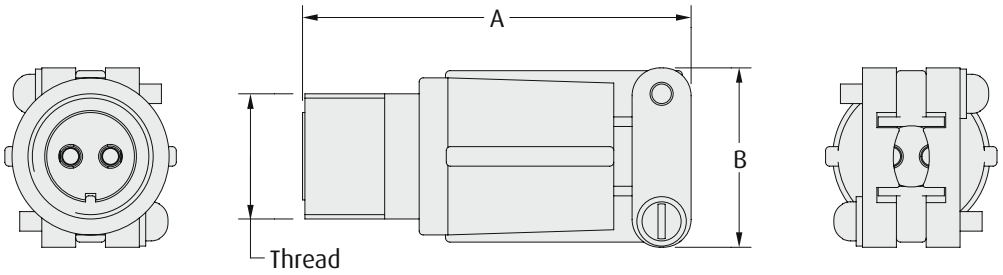
All dimensions in mm.

Commercial MIL-DTL-5015

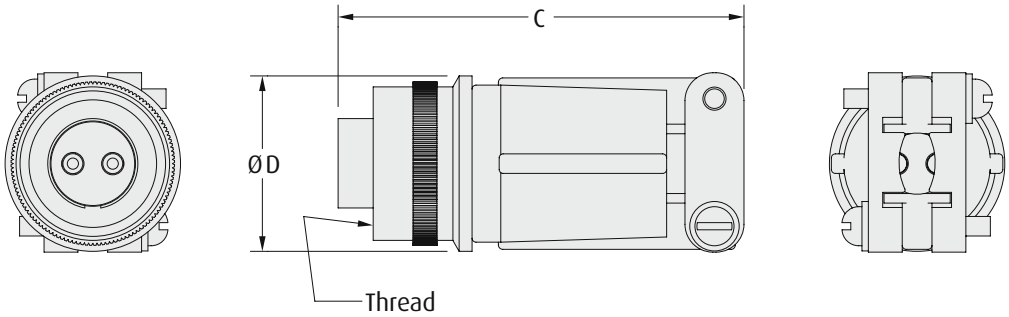
Cable Connector & Straight Plug

- Male & female circular connectors intermateable with MIL-DTL-5015.
- Rugged connector system for harsh environments.
- Exceeds IP67.
- Recommended wire strip length is 7.5mm.

CABLE CONNECTOR



STRAIGHT PLUG



CALCULATION

SHELL SIZE	THREAD*	DIMENSIONS			
		A max	B max	C max	ØD max
10SL-3	5/8-24UNEF-2A/2B	54.10	22.76	54.10	24.10
10SL-4	5/8-24UNEF-2A/2B	54.10	22.76	54.10	24.10
12S-3	3/4-20UNEF-2A/2B	54.10	22.76	54.10	25.30
14S-2	7/8-20UNEF-2A/2B	54.10	25.94	55.91	28.53
14S-6	7/8-20UNEF-2A/2B	54.10	25.94	55.91	28.53

*2A class for external threads, 2B class for internal threads.

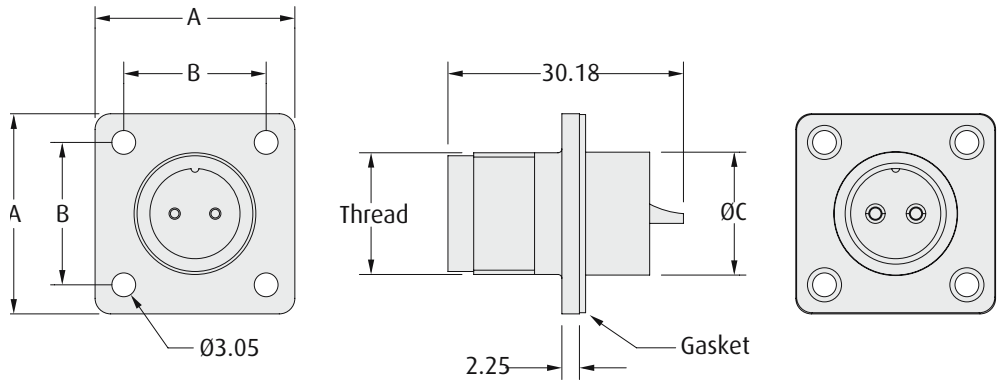
All dimensions in mm.

Commercial MIL-DTL-5015

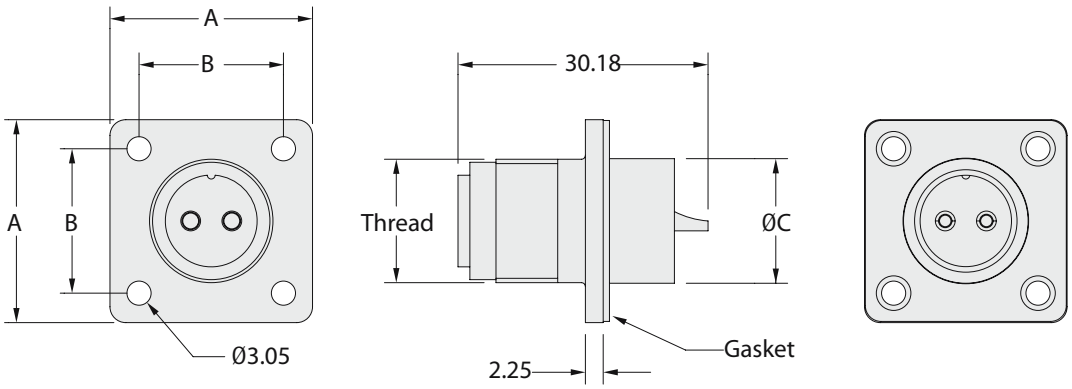
Panel Mount Connector, Receptacle Style

- Male & female circular connectors intermateable with MIL-DTL-5015.
- Features screw holes for panel mounting.
- Gaskets provide additional sealing.
- Recommended wire strip length is 7.5mm.
- Mates with C90-3106F Straight Plug connectors shown on previous page.

MALE



FEMALE



CALCULATION

SHELL SIZE	THREAD	DIMENSIONS		
		A	B	ØC
10SL-3	5/8-24UNEF-2A	25.65	18.25	15.75
10SL-4	5/8-24UNEF-2A	25.65	18.25	15.75
12S-3	3/4-20UNEF-2A	28.02	20.62	17.17
14S-2	7/8-20UNEF-2A	30.40	23.02	18.92
14S-6	7/8-20UNEF-2A	30.40	23.02	18.92

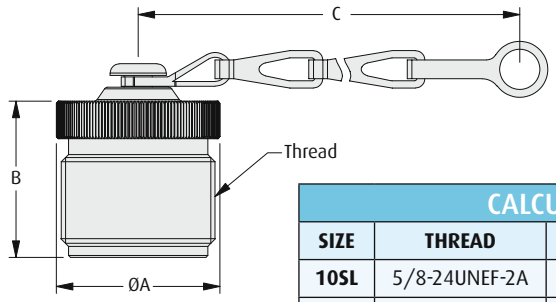
All dimensions in mm.

Commercial MIL-DTL-5015

Dust Caps & Rubber Bushing

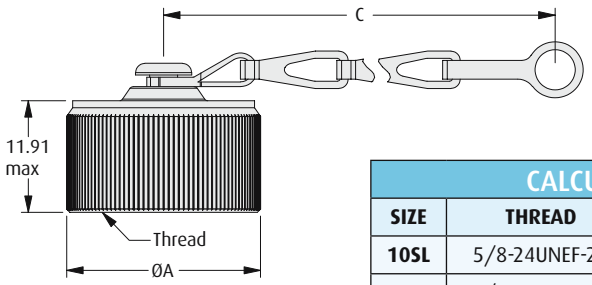
- Dust cap with external thread for use with Straight Plugs (M90-3106F).
- Dust cap with internal thread for use with Cable connectors (M90-3101F) and Panel Mount connectors (M90-3102R).
- Dust caps supplied fitted with chain.
- Rubber Bushing for use with Cable connectors (M90-3101F).

DUST CAP – EXTERNAL THREAD



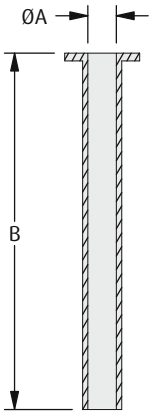
CALCULATION				
SIZE	**THREAD**	**ØA max**	**B max**	**C**
10SL	5/8-24UNEF-2A	17.45	16.66	101.60
12S	3/4-20UNEF-2A	20.62	21.44	114.30
14S	7/8-20UNEF-2A	23.80	21.44	114.30

DUST CAP – INTERNAL THREAD



CALCULATION			
SIZE	**THREAD**	**ØA max**	**C**
10SL	5/8-24UNEF-2B	20.70	101.60
12S	3/4-20UNEF-2B	25.40	114.30
14S	7/8-20UNEF-2B	28.57	114.30

RUBBER BUSHING



CALCULATION		
SIZE	**ØA**	**B**
4	5.59	69.85
6	7.92	66.68

HOW TO ORDER

C90 - XXXXX - XXXX

SERIES CODE

TYPE	
25042	Dust Cap – External thread
25043	Dust Cap – Internal thread
3420	Rubber Bushing

SIZE	
10SL	For use with 10SL shell size (Dust caps)
12S	For use with 12S shell size (Dust caps)
14S	For use with 14S shell size (Dust caps)
4	For use with 10SL & 12S shell sizes (Bushing)
6	For use with 14S shell size (Bushing)

All dimensions in mm.

Sockets

CONTENTS

HARWiN

PC Board Sockets

A range of 4-beam and 6-beam sockets, designed for robustness and reliability, and based on the same design as the Datamate four finger Beryllium Copper contact.

The socket design is a two-part construction comprising of a contact clip retained in a precision-turned outer shell.

Options for the shell include closed or open-ended, with or without a knurled section for added board retention.

- **High reliability contacts.**
- **Proven history in high end Industrial and Mil/Aero applications.**
- **Suited for use in environments where high vibration, shock and extremes of temperature are a consideration.**
- **Gives the added flexibility of custom board layouts.**

Specifications

Materials

Outer shell:	Brass
Inner contact:	Beryllium Copper
Finish:	See Order Code

Electrical

Current rating (single contact):	
Ø0.50mm	2A max
Ø0.80mm	10A max
Ø1.00mm	10A max
Ø2.00mm	20A max
Contact resistance:	25 mΩ max

Environmental

Operating temperature:	-55°C to +125°C
Solderability:	235°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

Mechanical

Durability:	
Ø0.50mm	500 operations
Ø0.80mm	1000 operations
Ø1.00mm	1000 operations
Ø2.00mm	500 operations
Insertion force (max):	
Ø0.50mm	6.0N
Ø0.80mm	5.0N
Ø1.00mm	9.0N
Ø2.00mm	6.0N
Withdrawal force (min):	
Ø0.50mm	0.5N
Ø0.80mm	1.0N
Ø1.00mm	1.0N
Ø2.00mm	1.0N
Vibration sensitivity:	10 – 2000Hz, 0.75mm, 98m/s² (10G), 6 hours duration

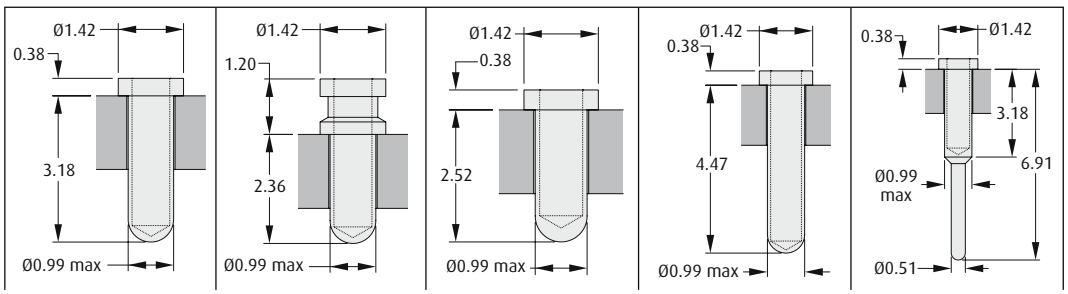
All preferred sizes of this range are held in stock.
Check www.harwin.com for availability.

PC Board Sockets

Sub-Miniature – Ø0.50mm Mating Pin

- Compatible with Ø0.50mm mating pins – see table below.
- Suitable for a variety of mating pin lengths.
- Utilises the Datamate four finger Beryllium Copper contact clip – see page 14.
- See page 170 for alternative packing methods, and pages 171 to 173 for larger mating pin sizes.

SUB-MINIATURE



ORDER CODE	H3153-XX	H3155-XX	H3190-XX	H3191-XX	H3192-XX
Contact Depth	2.30mm	2.30mm	2.30mm	2.30mm	2.30mm
Max Pin Length	3.15mm	3.15mm	2.40mm	4.50mm	3.15mm
Mounting Hole	Ø1.00-1.10mm	Ø1.00-1.10mm	Ø1.00-1.10mm	Ø1.00-1.10mm	Ø1.00-1.10mm
Mating Pin Size	Ø0.46-0.51mm	Ø0.46-0.51mm	Ø0.46-0.51mm	Ø0.46-0.51mm	Ø0.46-0.51mm

HOW TO ORDER

H31 XX - XX

SERIES CODE	
SEE TABLE ABOVE	

FINISH	
01	Gold contact, Tin shell
05	Gold contact, Gold shell

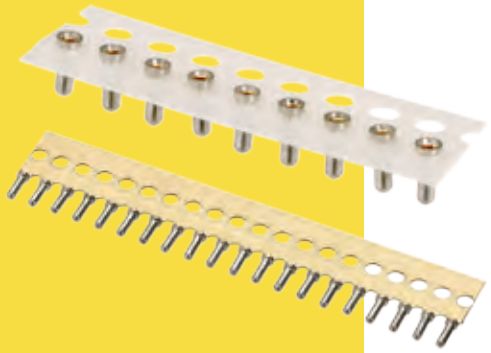
All dimensions in mm.

SOCKETS

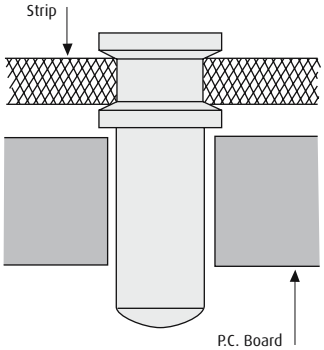
PC Board Sockets

Strips of Sub-Miniature Sockets

- Sub-miniature sockets using the four finger Beryllium Copper contact, mounted on carrier strips for ease of production use.
- Choice of carrier styles available.
- See page 169 for information on the individual sockets.

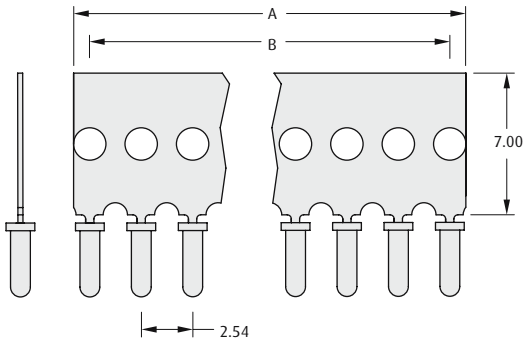


FLAT POLYESTER STRIP



- 100 contacts on a polyester strip, packed in a tube, ideal for multiple loading.
- Strip can be easily cut into any length and left in place, or removed after soldering.

SINGLE-IN-LINE SOCKET CARRIERS



- Brass carriers are supplied fitted with the sub-miniature socket shown in the tables below.
- Stocked in standard lengths.

CALCULATION	
A	B + 1.8
B	2.54 x (No. of sockets - 1)

HOW TO ORDER

D01 - XXX XX 01

SERIES CODE

TYPE	
602	100 contact polyester strip of H3155-01
979	Single-in-line Socket Carrier with H3192-01
982	Single-in-line Socket Carrier with H3191-01
984	Single-in-line Socket Carrier with H3155-01
990	Single-in-line Socket Carrier with H3153-01

NO. OF CONTACTS PER STRIP	
00	100 contacts (D01-602)
04 to 10, 12, 14, 16, 20, 32	Others

FINISH	
01	Gold contact, Tin shell

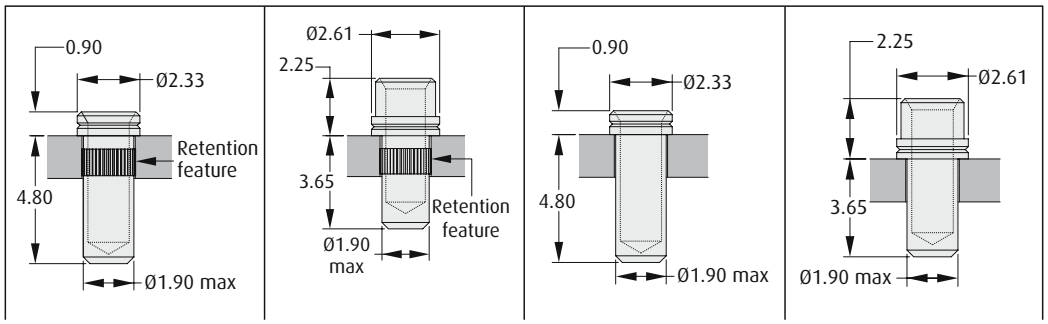
All dimensions in mm.

PC Board Sockets

Ø0.80mm Mating Pin

- Compatible with Ø0.80mm mating pins – see table below.
- Knurled option available for added board retention.
- See the next page for sockets compatible with Ø1.00mm mating pins, and page 173 for sockets compatible with Ø2.00mm mating pins.

PCB SOCKETS



ORDER CODE	H8501-XX	H8502-XX	H8504-XX	H8505-XX
Contact Depth	3.30mm	3.30mm	3.30mm	3.30mm
Max Pin Length	4.65mm	4.85mm	4.65mm	4.85mm
Mounting Hole	Ø1.91-1.96mm	Ø1.91-1.96mm	Ø1.91-2.01mm	Ø1.91-2.01mm
Mating Pin Size	Ø0.60-0.85mm	Ø0.60-0.85mm	Ø0.60-0.85mm	Ø0.60-0.85mm

HOW TO ORDER

H85 XX - XX

SERIES CODE

SEE TABLE ABOVE

FINISH	
01	Gold contact, Tin shell
05	Gold contact, Gold shell

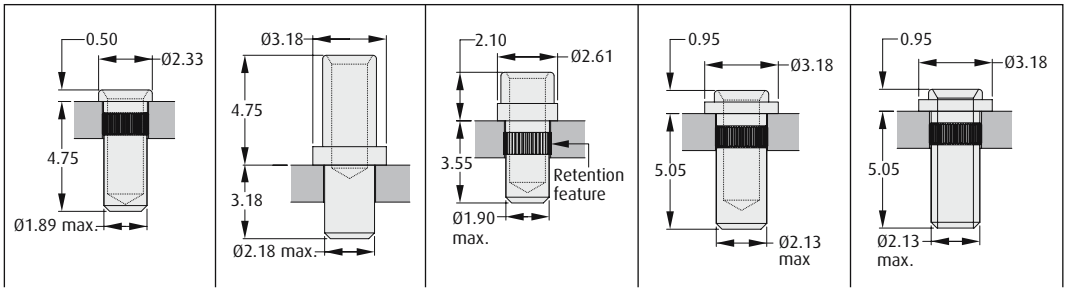
All dimensions in mm.

PC Board Sockets

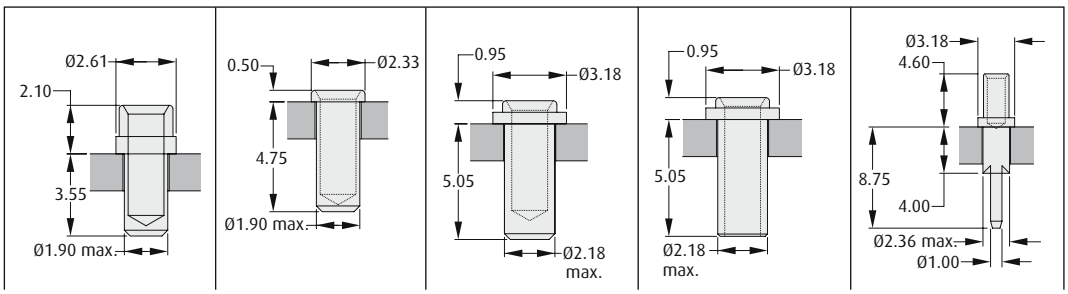
Ø1.00mm Mating Pin

- Compatible with Ø1.00mm mating pins – see table below.
- Knurled option available for added pin retention.

PCB SOCKETS



ORDER CODE	H3161-XX	H3163-XX	H3165-XX	H3167-XX	H3169-XX
Contact Depth	3.55mm	3.55mm	3.55mm	3.55mm	3.55mm
Max Pin Length	4.60mm	5.00mm	4.85mm	4.75mm	Through hole
Mounting Hole	Ø1.91-1.96mm	Ø2.19-2.29mm	Ø1.91-1.96mm	Ø2.19-2.24mm	Ø2.19-2.24mm
Mating Pin Size	Ø0.90-1.05mm	Ø0.90-1.05mm	Ø0.90-1.05mm	Ø0.90-1.05mm	Ø0.90-1.05mm



ORDER CODE	H3182-XX	H3183-XX	H3184-XX	H3185-XX	H3194-XX
Contact Depth	3.55mm	3.55mm	3.70mm	3.55mm	3.55mm
Max Pin Length	4.85mm	4.54mm	4.75mm	Through Hole	4.30mm
Mounting Hole	Ø1.91-2.01mm	Ø1.91-2.01mm	Ø2.19-2.24mm	Ø2.19-2.29mm	Ø2.37-2.47mm
Mating Pin Size	Ø0.90-1.05mm	Ø0.90-1.05mm	Ø0.90-1.05mm	Ø0.90-1.05mm	Ø0.90-1.05mm

Panel thickness = 3.2mm

HOW TO ORDER

H31 XX - XX

SERIES CODE	
SEE TABLE ABOVE	

FINISH	
01	Gold contact, Tin shell
05	Gold contact, Gold shell

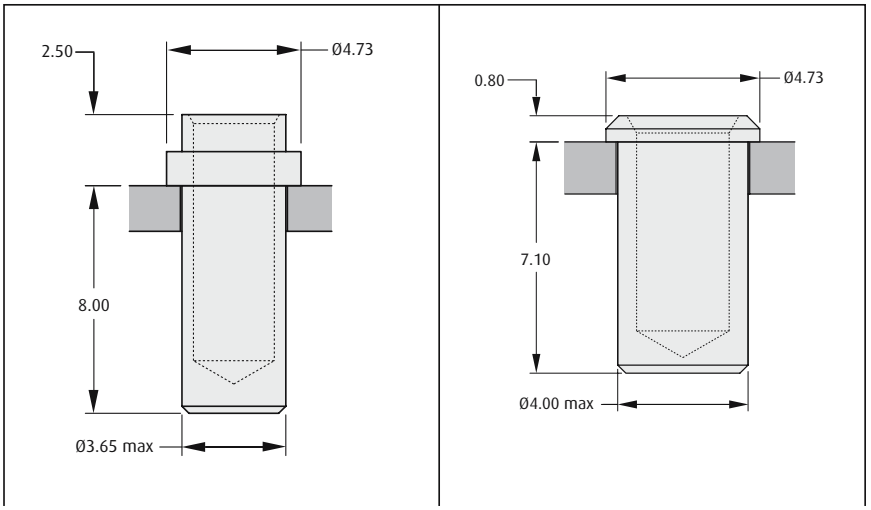
All dimensions in mm.

PC Board Sockets

Ø2.00mm Mating Pin

- Compatible with Ø2.00mm mating pins – see table below.

PCB SOCKETS



ORDER CODE	H3490-XX	H3492-XX
Contact Depth	4.10mm	4.10mm
Max Pin Length	8.50mm	6.30mm
Mounting Hole	Ø3.67-3.77mm	Ø4.02-4.12mm
Mating Pin Size	Ø2.00-2.30mm	Ø2.00-2.30mm

HOW TO ORDER

H34 XX - XX

SERIES CODE

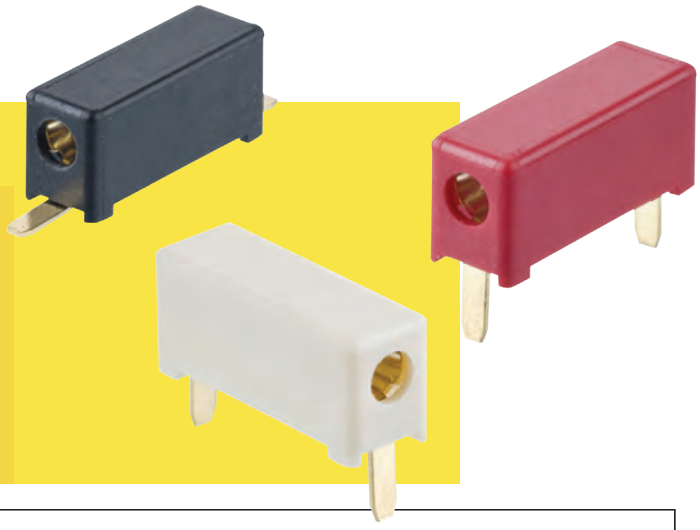
SEE TABLE ABOVE

FINISH	
01	Gold contact, Tin shell
05	Gold contact, Gold shell

All dimensions in mm.

SOCKETS

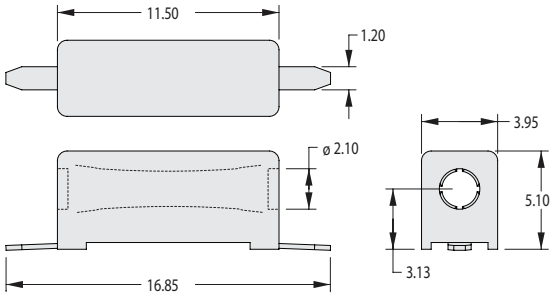
Test Sockets

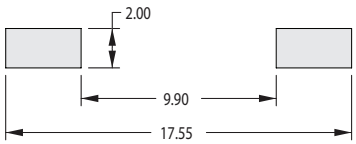


Ø2mm Mating Pin

- Dual entry horizontal sockets with gold plated contacts.
- Colour coded options available.
- Surface Mount product features a flat top area, and is available in tape and reel packaging for automated assembly, using standard pick and place machines.
- 5A current rating and 1,500V voltage rating.
- Please consult drawings for further specifications.

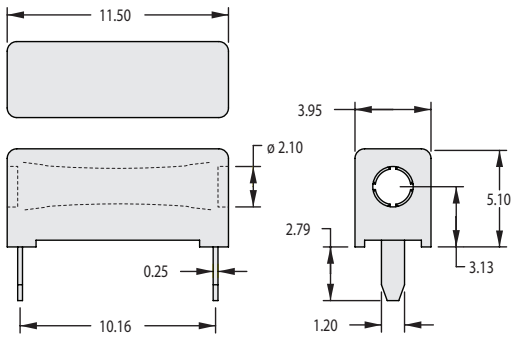
SURFACE MOUNT

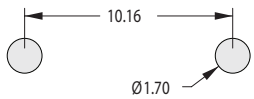




Recommended PC Board Pattern

PC TAIL / THROUGHBOARD





Recommended PC Board Pattern

HOW TO ORDER

M349 X - XX X

SERIES CODE

TYPE	
7	Surface Mount
8	PC Tail / Throughboard

PACKAGING	
Blank	Loose
R	Tape & Reeled (M3497 only)

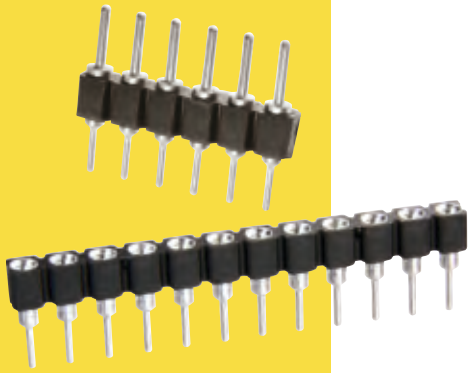
BODY COLOUR	
94	White (M3498 only)
98	Black
99	Red (M3498 only)

All dimensions in mm.

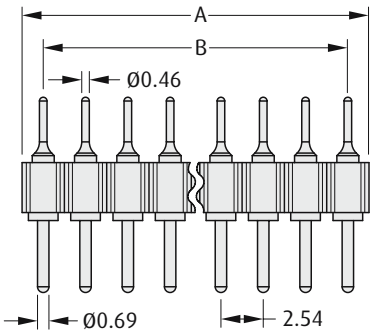
IC Sockets

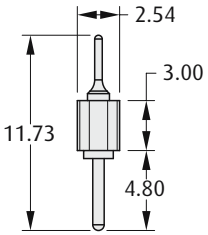
Modular Single Row Male & Female

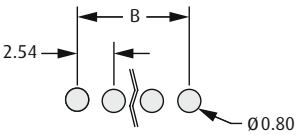
- Connectors can be cut to smaller sizes.
- Socket accepts mating pin Ø0.40 to 0.56mm, using four finger Beryllium Copper contact technology (see the Datamate range for more detail).
- Please consult drawings for specification.



MALE



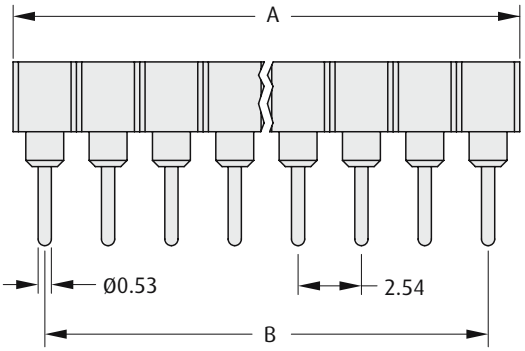


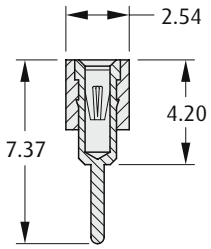


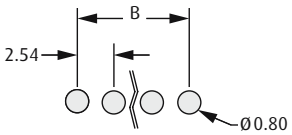
Recommended PC Board Pattern

CALCULATION	
A	2.54 x No. of contacts
B	2.54 x (No. of contacts - 1)

FEMALE







Recommended PC Board Pattern

HOW TO ORDER

D01 - 99 X XX XX

SERIES CODE

TYPE	
2	Male
7	Female

FINISH		
42	Gold + Tin (Female)	Pb
46	Tin (Male)	Pb

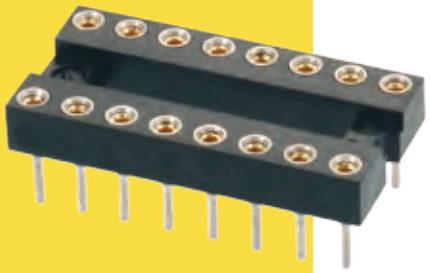
NO. OF CONTACTS
20, 32

All dimensions in mm.

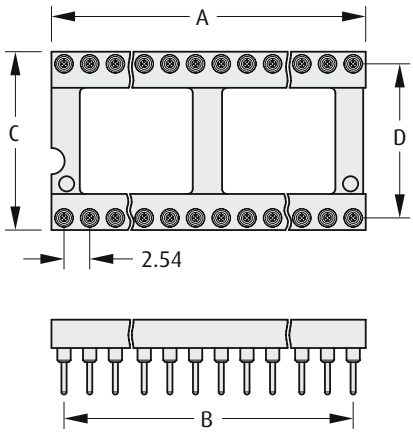
IC Sockets

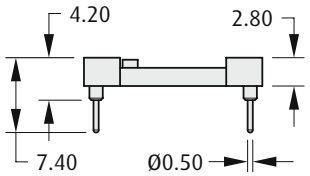
Dual Row IC Socket

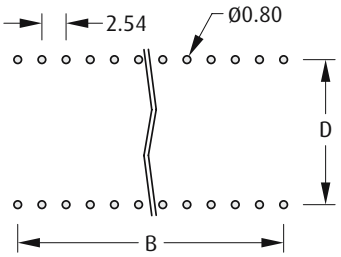
- Socket accepts IC leads Ø0.41 to 0.56mm.
- End and side stackable.
- Utilises four finger Beryllium Copper contact technology (see the Datamate range for more detail).
- Please consult drawings for specifications.



IC SOCKET







Recommended PC Board Pattern

A	B	C	D	No. OF CONTACTS	ORDER CODE
7.60	5.08	10.02	7.62 (0.3")	6	**D2806-42**
10.10	7.62	10.02	7.62 (0.3")	8	**D2808-42**
17.70	15.24	10.02	7.62 (0.3")	14	**D2814-42**
20.30	17.78	10.02	7.62 (0.3")	16	**D2816-42**
22.80	20.32	10.02	7.62 (0.3")	18	**D2818-42**
25.30	22.86	10.02	7.62 (0.3")	20	**D2820-42**
27.80	25.40	10.02	7.62 (0.3")	22	**D2922-42**
27.80	25.40	12.60	10.16 (0.4")	22	**D2822-42**

A	B	C	D	No. OF CONTACTS	ORDER CODE
30.40	27.94	10.02	7.62 (0.3")	24	**D2924-42**
30.40	27.94	12.60	10.16 (0.4")	24	**D2724-42**
30.40	27.94	17.64	15.24 (0.6")	24	**D2824-42**
35.50	33.02	10.02	7.62 (0.3")	28	**D2928-42**
35.50	33.02	17.64	15.24 (0.6")	28	**D2828-42**
40.60	38.10	17.64	15.24 (0.6")	32	**D2832-42**
50.80	48.26	17.64	15.24 (0.6")	40	**D2840-42**
60.90	58.42	17.64	15.24 (0.6")	48	**D2948-42**
81.2	78.74	25.4	22.86 (0.9")	64	**D2864-42**

HOW TO ORDER

D2 XXX - 42

SERIES CODE

TYPE
See table above

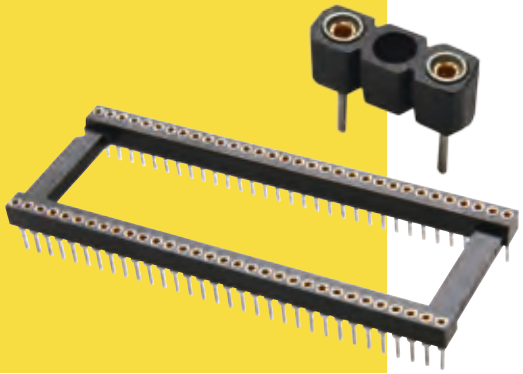
FINISH	
42	Gold + Tin

All dimensions in mm.

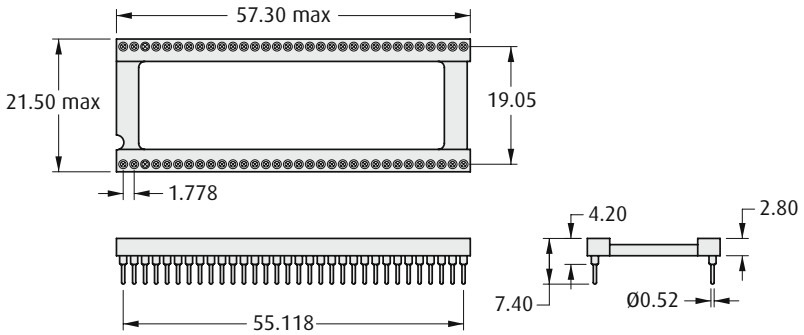
IC Sockets

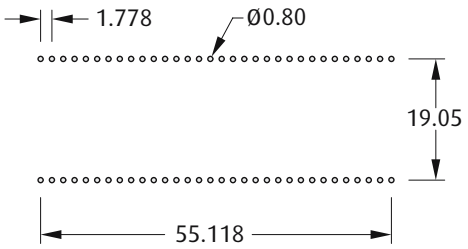
Special Purpose Connectors

- "Shrink Dip" socket for high density IC leads – 1.778mm pitch, Ø0.40 to 0.56mm.
- Fuse socket accepts leads of Ø0.41 to 0.53mm.
- Please consult drawings for specifications.



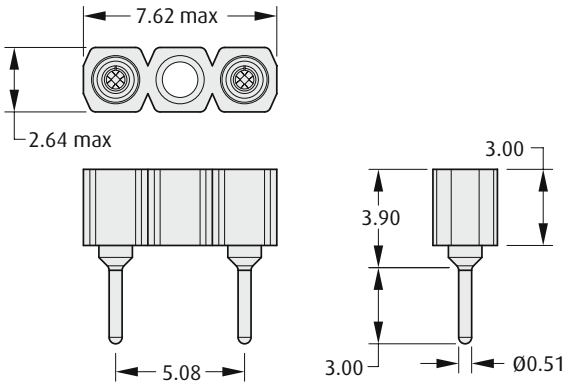
SHRINK DIP IC SOCKET

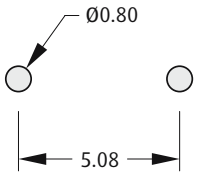




Recommended PC Board Pattern

FUSE SOCKET





Recommended PC Board Pattern

HOW TO ORDER

D XXXX - 42

SERIES CODE

TYPE	
8864	Shrink Dip
2899	Fuse Socket

FINISH	
42	Gold + Tin

All dimensions in mm.

EZ–BoardWare

CONTENTS

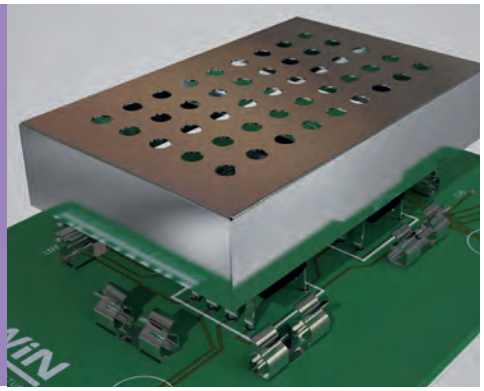
HARWiN

RFI Shield Clips

EZ BoardWare
PICK & PLACE READY BY DESIGN

Shield Clips for EMI/RFI Shields

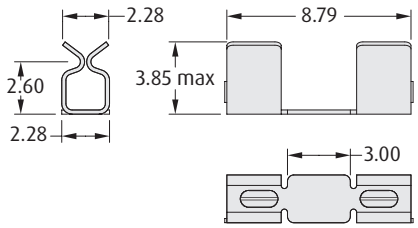
- SMT devices offering a fast solution for assembling RFI shields to PCBs.
- Eliminates the need for through holes and post reflow operations.
- Saves PCB real estate.
- Facilitates easy removal of the can for maintenance and repair.
- Substantial improvement in time and simplicity of assembly tuning and re-work.

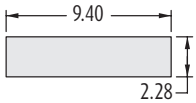


SPECIFICATION

Part No.	Type	Shield Thickness	Material	Finish	Pack Qty. on Ø330mm reel	Insertion Force (max)	Withdrawal Force (min)
S1411-46R	Maxi	0.70-1.00mm	Beryllium Copper	Tin Pb	1,900	7N	0.8N
S1711-46R	Midi	0.17-0.30mm	Beryllium Copper	Tin Pb	1,900	4N	0.5N
S2711-46R	Midi	0.17-0.30mm	Cupro-Nickel (Beryllium-free)	Tin Pb	1,900	4N	0.5N
S0971-46R	Mini	0.20-0.30mm	Stainless Steel	Tin Pb	5,000	19.6N	0.98N
S1721-46R	Mini	0.13-0.23mm	Beryllium Copper	Tin Pb	5,000	5N	0.35N
S0941-46R	Micro	0.15-0.20mm	Stainless Steel	Tin Pb	10,000	9.8N	0.69N
S0951-46R	Micro	0.20mm	Stainless Steel	Tin Pb	10,000	9.8N	0.69N
S0961-46R	Micro	0.15-0.20mm	Stainless Steel	Tin Pb	10,000	24.5N	0.98N
S0991-46R	Micro	0.20-0.25mm	Stainless Steel	Tin Pb	15,000	19.6N	0.98N
S1001-46R	Micro	0.15-0.20mm	Stainless Steel	Tin Pb	20,000	19.6N	0.98N
S0981-46R	Corner	0.20-0.25mm	Stainless Steel	Tin Pb	6,000	19.6N	0.98N

MAXI & MIDI

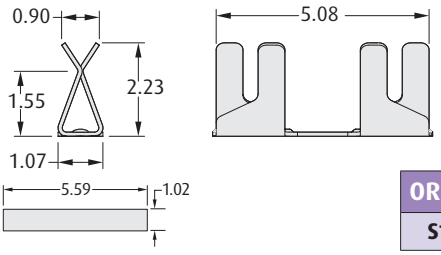




Recommended PC Board Pattern

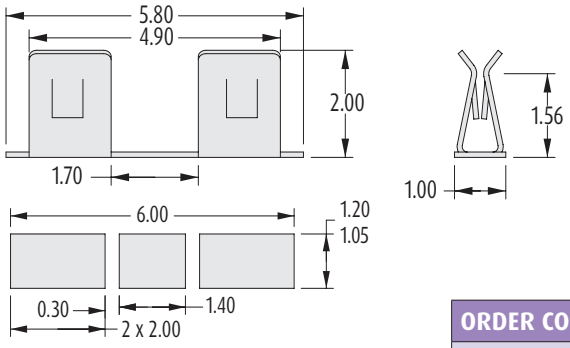
ORDER CODE	TYPE	MATERIAL
S1411-46R	Maxi	Beryllium Copper
S1711-46R	Midi	Beryllium Copper
S2711-46R	Midi	Cupro-Nickel

MINI



Recommended PC Board Pattern

ORDER CODE
S1721-46R



Recommended PC Board Pattern

ORDER CODE
S0971-46R

All dimensions in mm.

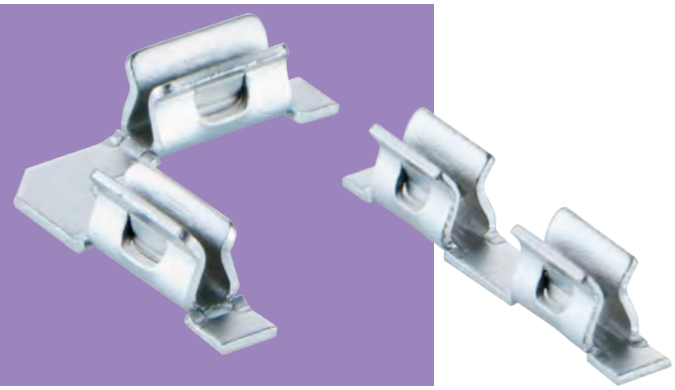
EZ-BOARDWARE

RFI Shield Clips

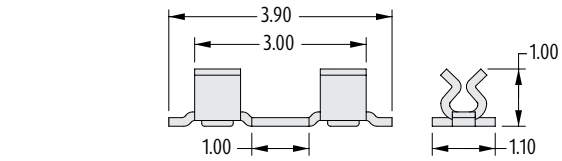
EZ BoardWare
PICK & PLACE READY BY DESIGN

Shield Clips for EMI/RFI Shields

- Compatible with industry standard placement machines.
- Packaged in standard (EIA 481) Tape & Reel format.
- Spring contact design provides secure retention.
- Ideally suited to miniature electronics.
- Low profile and right angle clips offer design flexibility.



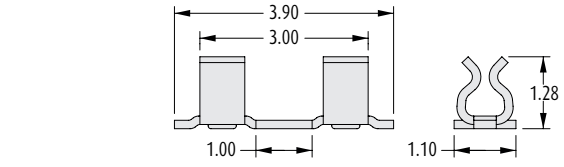
MICRO



Recommended PC Board Pattern

ORDER CODE	FINISH
S0941-46R	Tin

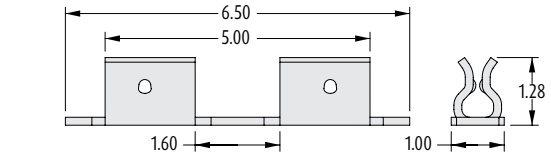
MICRO



Recommended PC Board Pattern

ORDER CODE	FINISH
S0951-46R	Tin

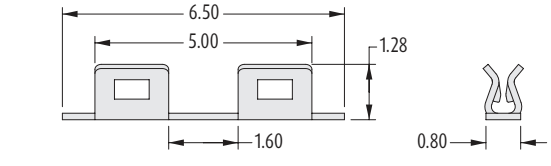
MICRO



Recommended PC Board Pattern

ORDER CODE	FINISH
S0961-46R	Tin

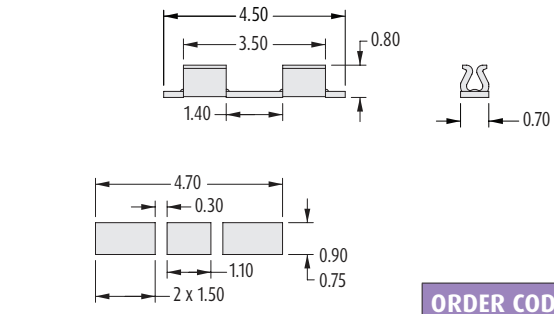
MICRO



Recommended PC Board Pattern

ORDER CODE	FINISH
S0991-46R	Tin

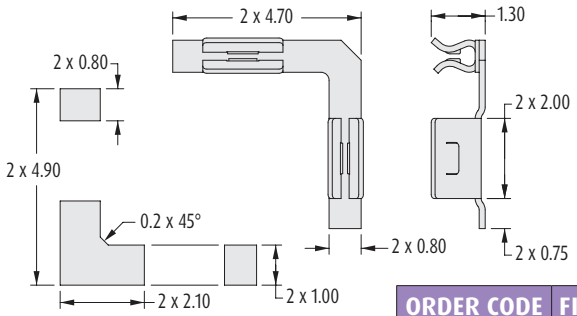
MICRO



Recommended PC Board Pattern

ORDER CODE	FINISH
S1001-46R	Tin

CORNER



Recommended PC Board Pattern

ORDER CODE	FINISH
S0981-46R	Tin

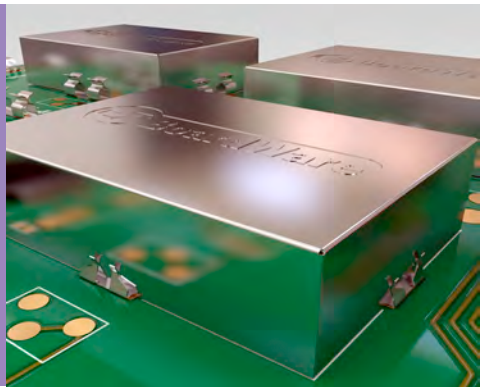
All dimensions in mm.

EZ-BOARDWARE

RFI Shield Cans

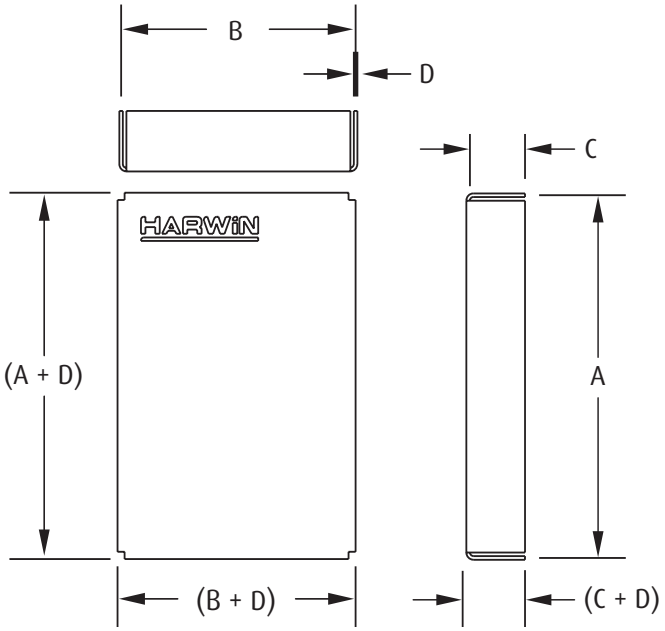
EMI/RFI Shielding

- 0.3mm thickness Shield Cans suitable for use with S1711 and S2711 Shield Clips (see page 178).
- 0.2mm thickness Shield Cans suitable for use with S0971, S0981, S0991, S1001 and S1721 Shield Clips (see pages 178, 178a).
- Provides excellent RFI and EMI protection to sensitive circuitry at the PCB level.
- Standard can sizes available from stock.



Materials

Material: Nickel Silver
Finish: Unplated



Standard Sizes

ORDER CODE	DIM A	DIM B	DIM C	DIM D
S01-30200500	30mm	20mm	5mm	0.3mm
S01-30300500	30mm	30mm	5mm	0.3mm
S01-50250500	50mm	25mm	5mm	0.3mm
S02-20150300	20mm	15mm	3mm	0.2mm
S02-25200300	25mm	20mm	3mm	0.2mm
S02-30200250	30mm	20mm	2.5mm	0.2mm

- Dimensions A and B are measured from the centre of the material thickness.
- Dimension C is measured from the bottom edge to the inside of the top face.

HOW TO ORDER

S0X XX XX XXX 0

SERIES CODE	
S01	Thickness (Dim D) = 0.3mm
S02	Thickness (Dim D) = 0.2mm

DIMENSION A
Example: 30mm = 30

FINISH	
0	Unplated

DIMENSION C
Example: 5mm = 050

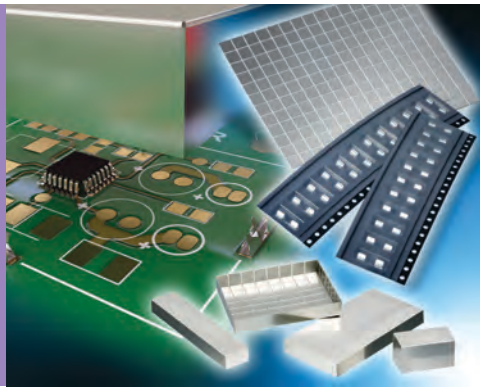
DIMENSION B
Example: 30mm = 30

All dimensions in mm.

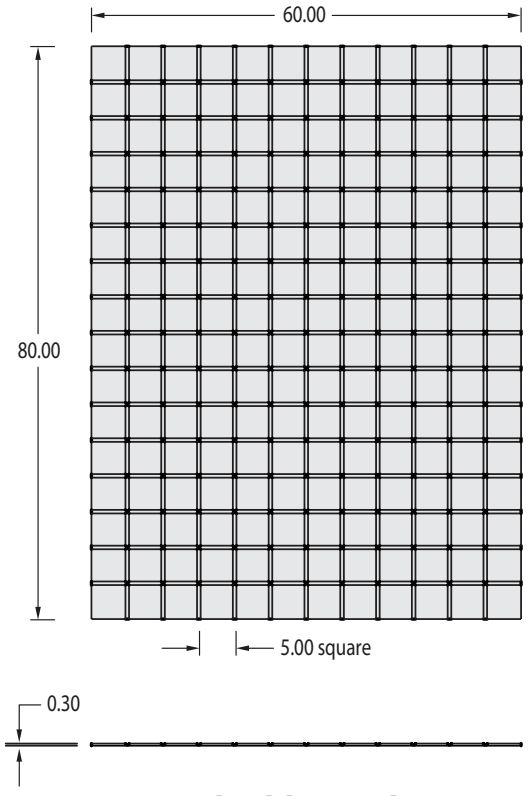
RFI Shield Can Kit

EMI/RFI Shielding

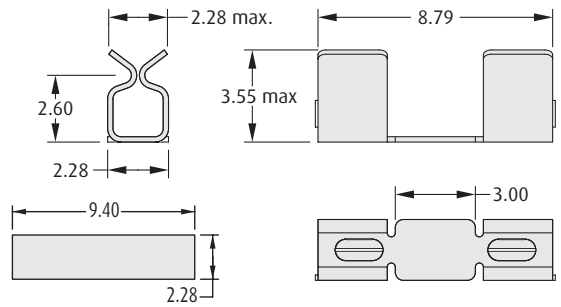
- Make your own EZ-Shield Cans in minutes, ideal for fast prototyping.
- Kit contains DIY Shield Can blanks, Shield retention clips and full instructions.
- Nickel Silver material for effective & useable shielding: up to 24dB attenuation achieved (frequency/configuration dependent).
- Shield Can is removable for adjustment.



SHIELD CAN KIT



2 x Shield Can Sheets
5mm pitch score lines, for folding



Recommended PC Board Pattern

24 x Shield Clip S1711-46R
(see page 178 for more information)

Instruction Sheet
(available from www.harwin.com/instructions)

ORDER CODE
S01-806005KIT

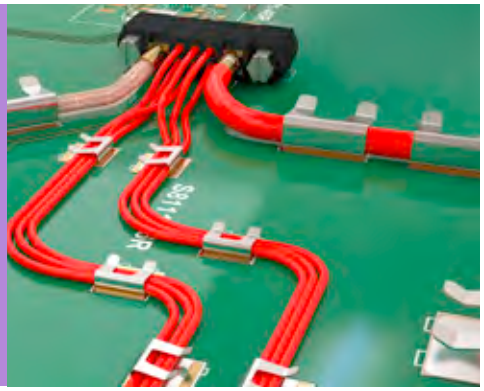
All dimensions in mm.

SMT Cable Clip

EZ BoardWare
PICK & PLACE READY BY DESIGN

Cable Management & Grounding

- Suitable for use with insulated cables with outer diameters Ø0.9 to Ø3mm and grounding braided coax cables.
- Cable clip can be soldered at same time as rest of board, reducing additional operation time required for mounting plastic clip types.
- Low profile & small footprint saves PCB space.



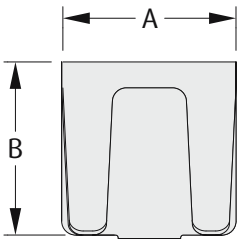
Materials

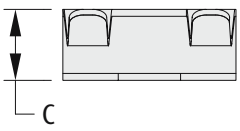
Material:	Copper Alloy
Finish:	Tin

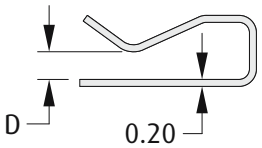
Packaging

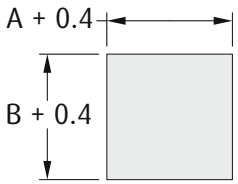
Format:	Tape & Reel or Loose
Reel quantity:	Ø330mm reel, see table

CALCULATION							
Part No.	A	B	C	D	Coax Grounding	Cable Retention	Reel Quantity
S8091-46R	5.00	4.00	1.35	0.70	Ø1.12mm	2 x Ø0.9mm	3,000
S8101-46R	5.00	4.00	1.50	0.80	RG178, RG179, RG316	2 x Ø1.0mm	3,000
S8111-46R	5.00	5.00	2.05	0.80	RG174, RG179, RG316	3 x Ø1.0mm, 2 x Ø1.5mm	1,500
S8121-46R	7.00	5.50	2.55	1.30		2 x Ø1.5mm, 1 x Ø2.0mm	1,300
S8131-46R	10.00	8.00	3.55	1.80	RG58	3 x Ø2.0mm, 1 x Ø3.0mm	800









Recommended PC Board Pattern

HOW TO ORDER

S8XX1 - 46 R

SERIES CODE
See Table

FINISH	
46	Tin (Pb)

PACKAGING	
R	Tape & Reeled
Blank	Loose

All dimensions in mm.

EZ-BOARDWARE

Spring Contacts

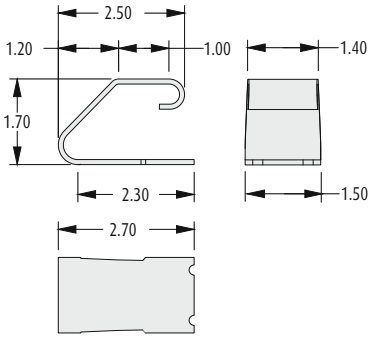
EZ BoardWare
PICK & PLACE READY BY DESIGN

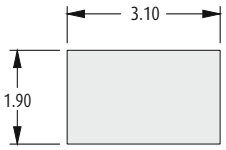
Grounding/RFI Contacts

- SMT devices for use in shielding and grounding applications.
- For use on surface mount PCBs, in contact with metal shields or frames.
- Suitable for both wiping and sliding actions.
- Ideal for automated requirements, using standard placement equipment.

1.7mm HIGH

ORDER CODE	FINISH
S7121-42R	Sel. Gold

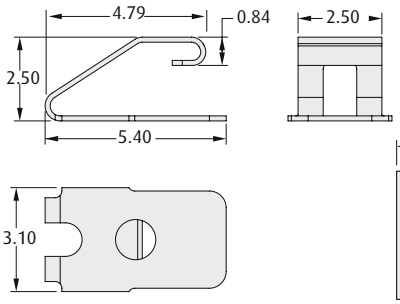


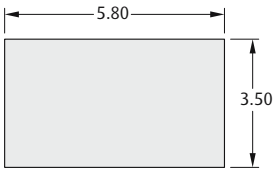


Recommended PC Board Pattern

2.5mm HIGH

ORDER CODE	FINISH
S1741-46R	Tin

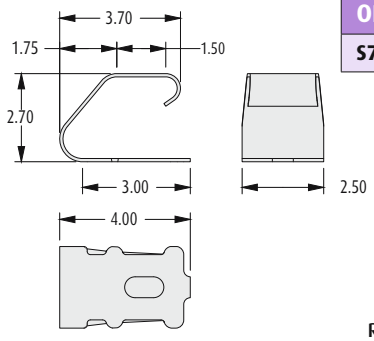


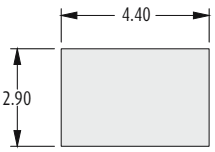


Recommended PC Board Pattern

2.7mm HIGH

ORDER CODE	FINISH
S7091-42R	Gold + Tin

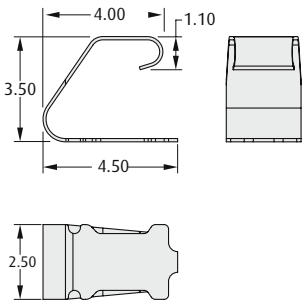


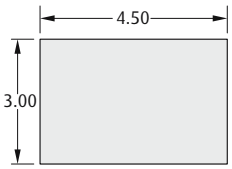


Recommended PC Board Pattern

3.5mm HIGH

ORDER CODE	FINISH
S1761-42R	Gold + Tin
S1761-46R	Tin

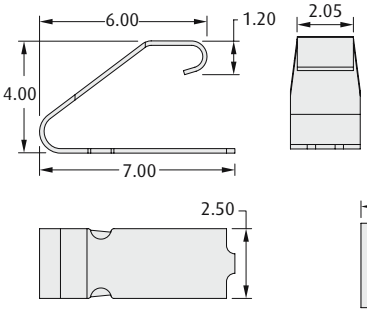


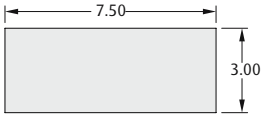


Recommended PC Board Pattern

4.0mm HIGH

ORDER CODE	FINISH
S1791-42R	Sel. Gold

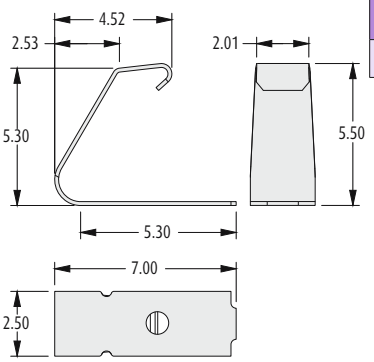


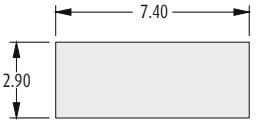


Recommended PC Board Pattern

5.5mm HIGH

ORDER CODE	FINISH
S7061-42R	Gold + Tin





Recommended PC Board Pattern

All dimensions in mm.

EZ-BOARDWARE

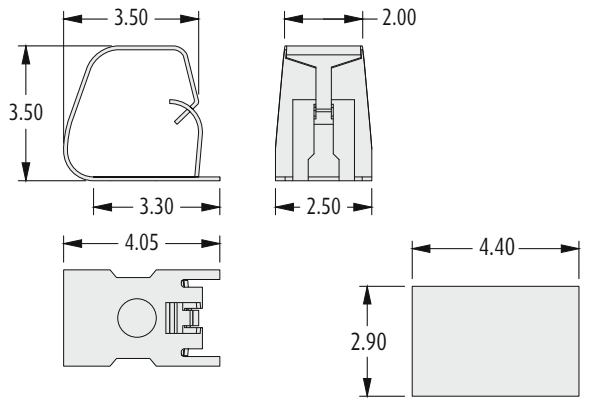
Spring Contacts

Grounding/RFI Contacts

- Prevents EMC noise and static.
- Simple and effective method for connecting multiple PCBs.
- No special tooling required, uses standard pick & place equipment.
- Protected tips prevent product from hooking.

3.5mm HIGH

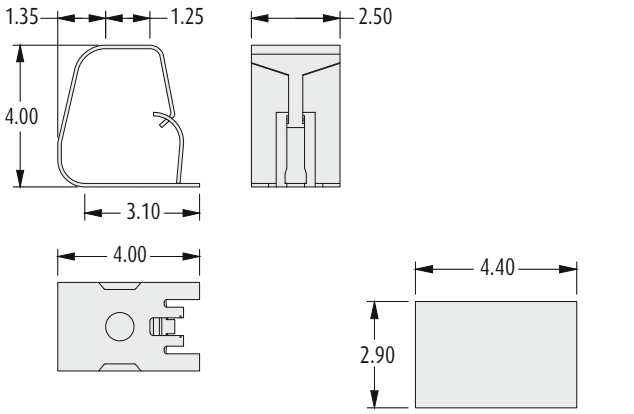
ORDER CODE	FINISH
S7101-42R	Gold + Tin



Recommended PC Board Pattern

4.0mm HIGH

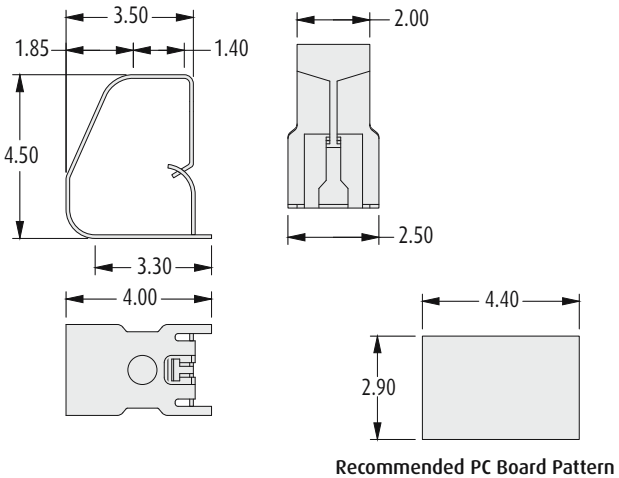
ORDER CODE	FINISH
S7041-42R	Gold + Tin



Recommended PC Board Pattern

4.5mm HIGH

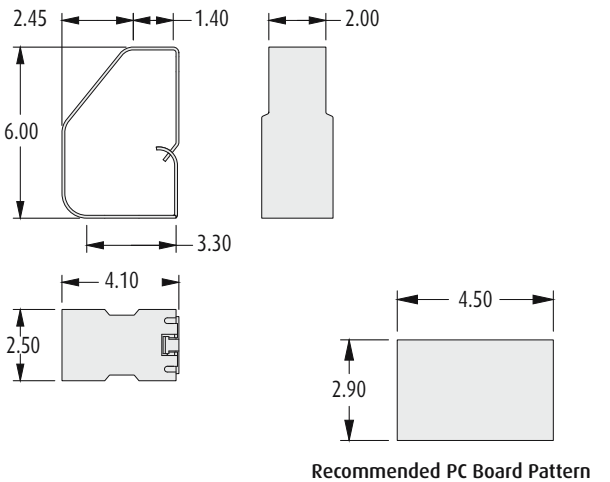
ORDER CODE	FINISH
S7111-42R	Gold + Tin



Recommended PC Board Pattern

6.0mm HIGH

ORDER CODE	FINISH
S7051-42R	Gold + Tin



Recommended PC Board Pattern

All dimensions in mm.

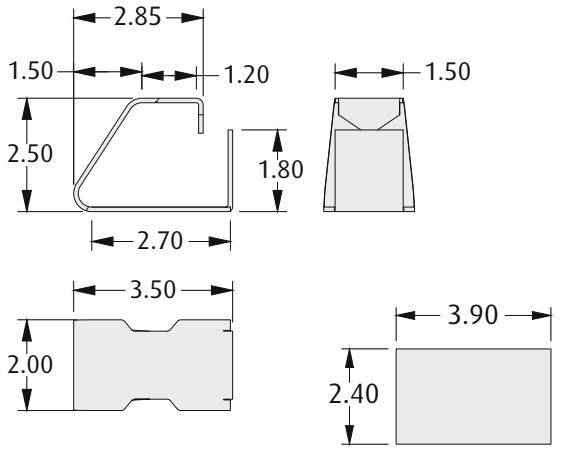
Spring Contacts

Grounding/RFI Contacts

- Packaged in EIA-481-2 compliant tape and reel.
- 'S' shaped contact for multi directional contact points.
- Spring loaded contacts maintain a positive force and stable electrical contact.
- Small PCB footprint.

2.5mm HIGH

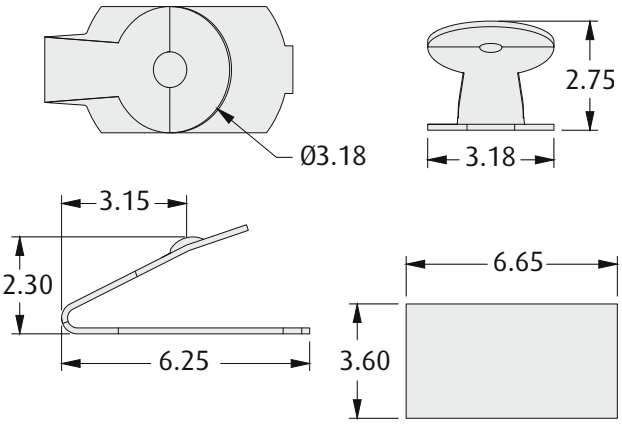
ORDER CODE	FINISH
S7071-42R	Tin



Recommended PC Board Pattern

2.75mm HIGH

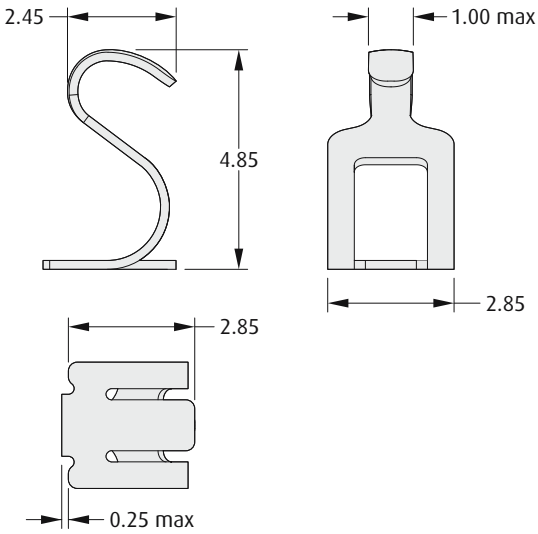
ORDER CODE	FINISH
S7081-42R	Gold + Tin

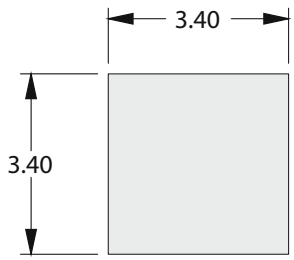


Recommended PC Board Pattern

4.85mm HIGH

ORDER CODE	FINISH
S9001-05R	Gold
S9001-46R	Tin





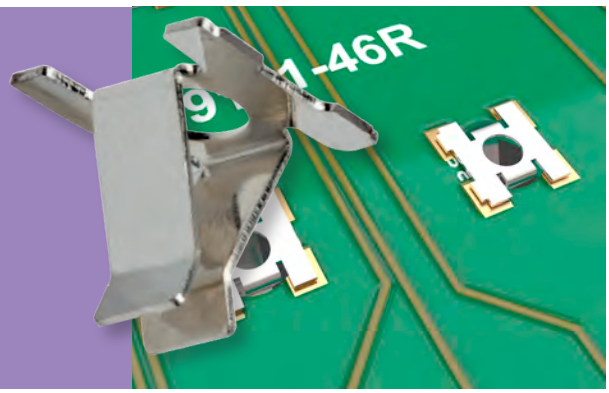
Recommended PC Board Pattern

All dimensions in mm.

SMT PC Board Sockets

EZ BoardWare
PICK & PLACE READY BY DESIGN

- Accepts pins between 0.8mm and 1.8mm diameter.
- SMT product is pick and place-able using standard assembly machines.
- Rated to 5 Amps and 9 Amps electrical current.
- Greatly reduces process costs by removing the need for secondary operations.
- Reduced component costs.



0.8mm TO 1.5mm MATING PIN

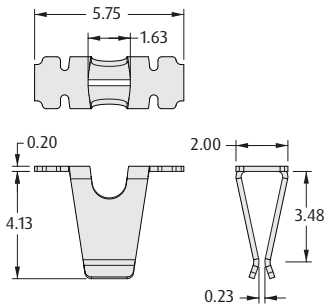
Electrical

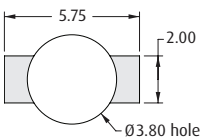
Current Rating: 5A max.

Packaging

Format: Tape & Reel

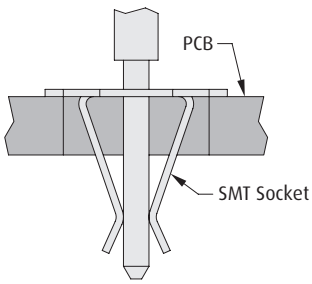
Reel quantity: 900 on a Ø330mm reel





Recommended PC Board Pattern

Orientation of SMT Socket in PCB



1.1mm TO 1.8mm MATING PIN

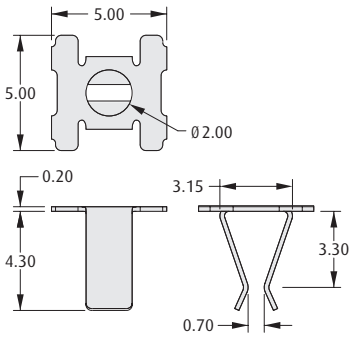
Electrical

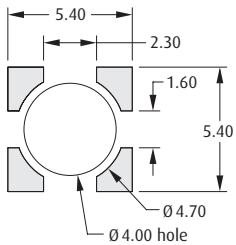
Current Rating: 9A max.

Packaging

Format: Tape & Reel

Reel quantity: 800 on a Ø330mm reel





Recommended PC Board Pattern

HOW TO ORDER

S9XX1 - 46 R

SERIES CODE	
S9091	0.8 to 1.5mm Mating pin
S9101	1.1 to 1.8mm Mating pin

PACKAGING	
R	Tape & Reeled

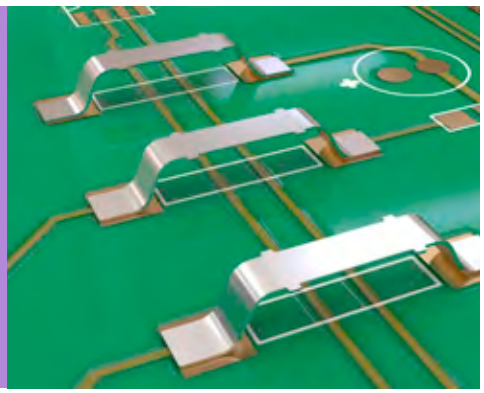
FINISH	
46	Tin

All dimensions in mm.

SMT Jumper Link

EZ BoardWare
PICK & PLACE READY BY DESIGN

- Designed to link PCB tracks where through hole links are not possible.
- Typical applications include use on aluminium backplanes in power applications.
- High current.
- Small footprint.
- Low profile options available for space saving design.



SPECIFICATION

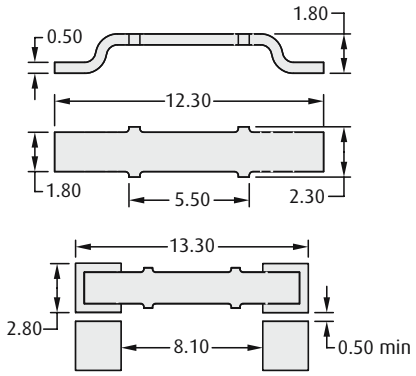
Materials

Material:	Copper Alloy (S1621, S1911) Copper (S1731)
Finish:	See Order Code

Packaging

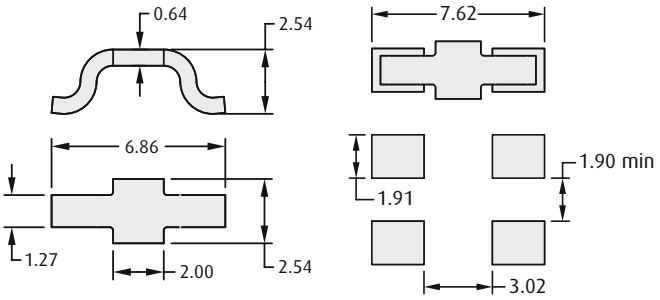
Packaging format:	Tape & Reel or Loose
Reel quantity:	S1621: 5,000 on a Ø330mm reel S1731: 2,500 on a Ø330mm reel S1911: 4,000 on a Ø330mm reel

12.3mm LONG



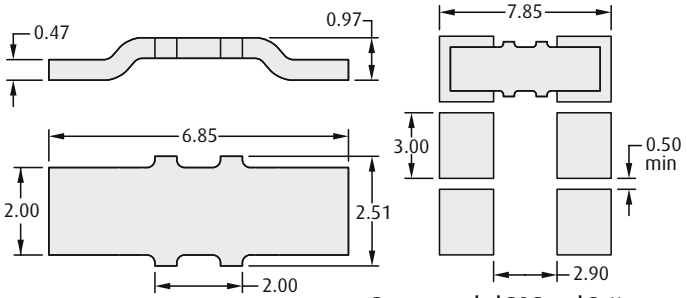
Recommended PC Board Pattern

6.86mm LONG, 2.54mm HIGH



Recommended PC Board Pattern

6.85mm LONG, 0.97mm HIGH



Recommended PC Board Pattern

HOW TO ORDER

S1 XX 1 - 46 R

SERIES CODE

TYPE	
62	12.3mm long
73	6.86mm long, 2.54mm high
91	6.85mm long, 0.97mm high

PACKAGING	
R	Tape & Reeled
Blank	Loose

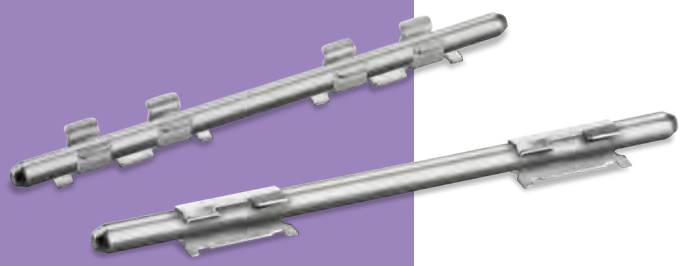
FINISH	
46	Tin

All dimensions in mm.

Removable Jumper Link

SMT Clip and Removable Bar

- Simple & effective method for connecting across LED arrays and PCBs.
- Vertical and horizontal configurations available.
- Connecting bars available in two lengths.
- SMT clips packaged in Tape & Reel to suit automated placement.
- Allows easy replacement of defective arrays and PCBs without the need to de-solder.
- SMT clips and bars ordered separately.

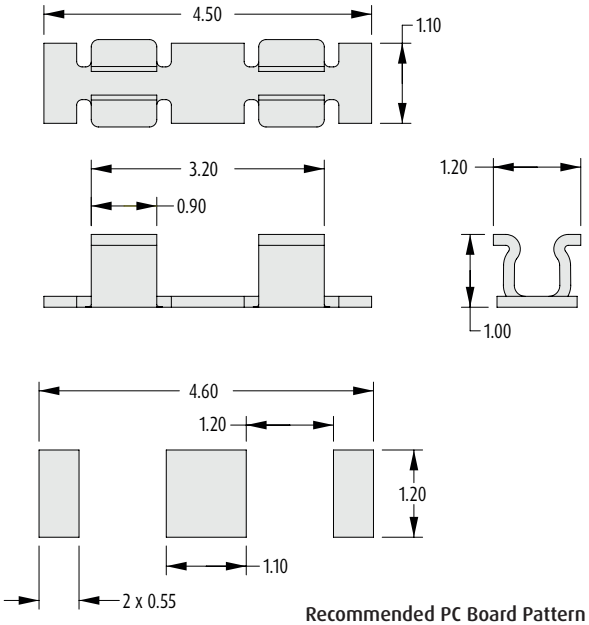


VERTICAL CLIP

Specification

ORDER CODE: **S8071-46R**

Material:	Stainless Steel
Finish:	Tin
Packaging Format:	Tape & Reel (10,000 on a Ø330mm reel)



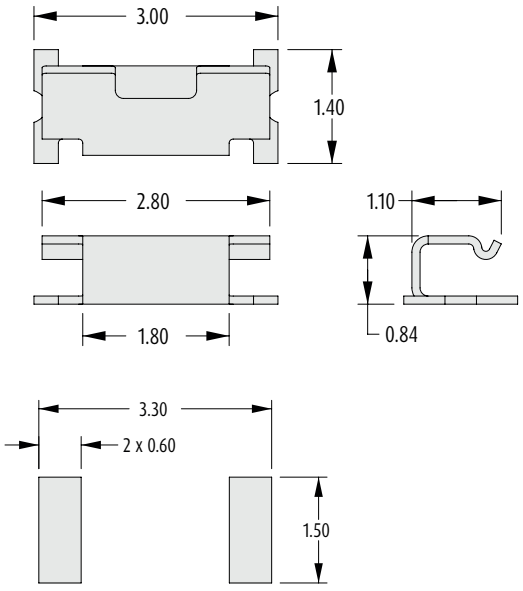
Recommended PC Board Pattern

HORIZONTAL CLIP

Specification

ORDER CODE: **S8081-46R**

Material:	Stainless Steel
Finish:	Tin
Packaging Format:	Tape & Reel (10,000 on a Ø330mm reel)



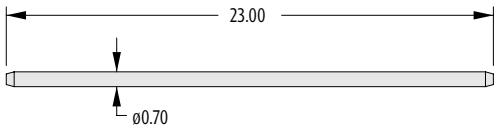
Recommended PC Board Pattern

23mm LONG REMOVABLE BAR

Specification

ORDER CODE: **S07-46**

Material:	Phosphor Bronze
Finish:	Tin
Packaging Format:	Loose

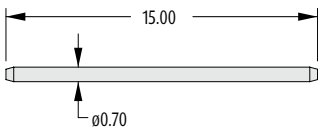


15mm LONG REMOVABLE BAR

Specification

ORDER CODE: **S08-46**

Material:	Phosphor Bronze
Finish:	Tin
Packaging Format:	Loose



All dimensions in mm.

SMT Coin Cell Holder

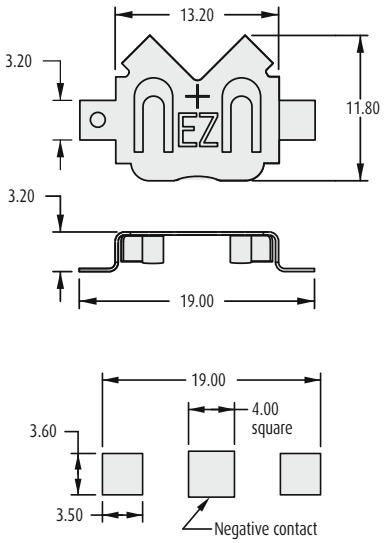
Battery Retainer for Ø12mm Coin Cell

- Tape & reel packaged for auto-placement to PCB.
- Highly effective retention of coin cell batteries.
- Eliminates the need for soldered-in coin cells.
- Low profile design available with dual independent contact points for enhanced electrical reliability.
- Accommodates CR1220, CR1225 and similar coin cell batteries.

LOW PROFILE

Packaging

Format:	Tape & Reel
Reel quantity:	1,000 on a Ø330mm reel
Suitable for battery size:	BR1225, CR1216, CR1220, CR1225

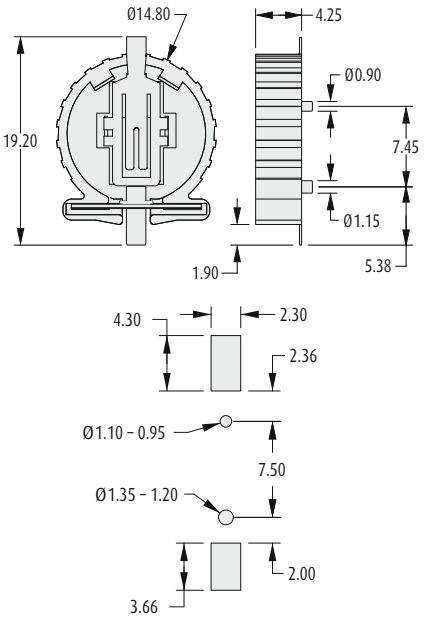


Recommended PC Board Pattern

STANDARD

Packaging

Format:	Tape & Reel
Reel quantity:	500 on a Ø330mm reel
Suitable for battery size:	CR1220



Recommended PC Board Pattern

HOW TO ORDER

S8 XX1 - XX R

SERIES CODE

TYPE	
201	Low Profile
411	Standard

PACKAGING	
R	Tape & Reeled

FINISH	
45	Gold (S8411) Pb
46	Tin (S8201) Pb

All dimensions in mm.

Coin Cell Holder

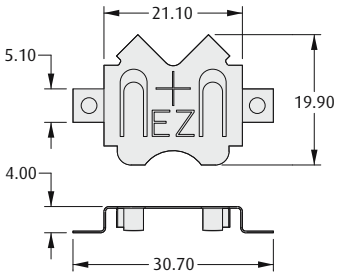
Battery Retainer for Ø20mm Coin Cell

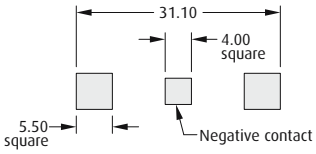
- Horizontal designs are tape & reel packaged for auto placement.
- Highly effective retention of coin cell batteries.
- Eliminates the need for soldered-in cells.
- Vertical mount minimises PCB real estate usage.
- Low profile design available with dual independent contact points for enhanced electrical reliability.
- Accomodates CR2032 and similar coin cell batteries.

LOW PROFILE

Packaging

Format: Tape & Reel
Reel quantity: 550 on a Ø330mm reel
Suitable for battery size: CR2016, CR2025, CR2032



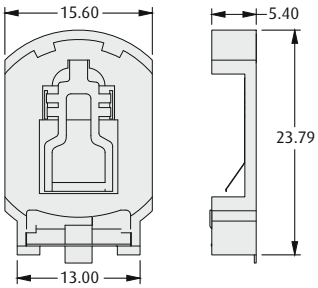


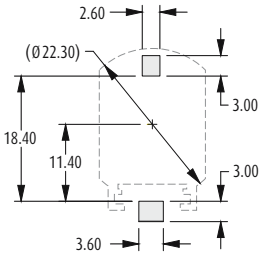
Recommended PC Board Pattern

STANDARD

Packaging

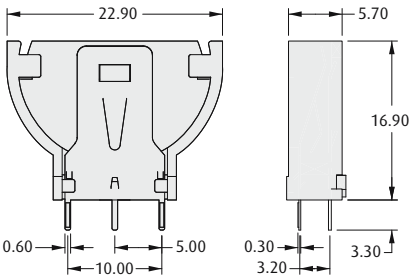
Format: Tape & Reel
Reel quantity: 500 on a Ø330mm reel
Suitable for battery size: CR2032





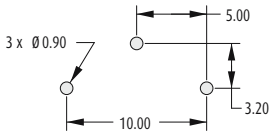
Recommended PC Board Pattern

VERTICAL



Packaging

Format: Loose (Tray)
Suitable for battery size: CR2032



Recommended PC Board Pattern

HOW TO ORDER

S8 XXX - XX R

SERIES CODE

TYPE	
211	Low Profile
401	Vertical
421	Standard

PACKAGING	
R	Tape & Reeled
Blank	Loose (S8401)

FINISH	
45	Gold (S8421)
46	Tin (S8201, S8401)

All dimensions in mm.

SMT Test Point

EZ BoardWare
PICK & PLACE READY BY DESIGN

- Ideal for use with standard probes, clips and hooks.
- Can be placed using industry standard equipment.
- Suitable for automatic or manual test.
- High speed placement.
- Industry standard Tape & Reel packaging.
- Strong and durable.

SPECIFICATION

Materials

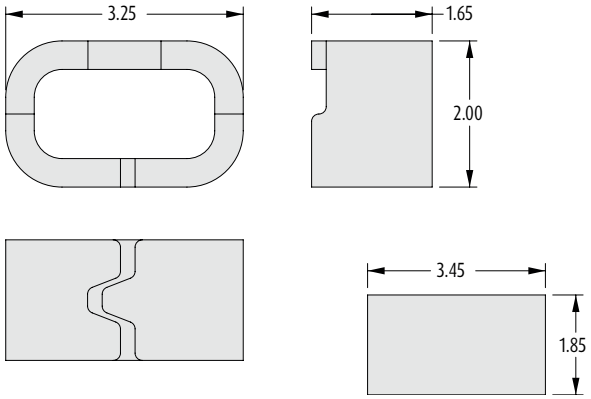
Material:	Copper Alloy
Finish:	Tin

Packaging

Format:	Tape & Reel or Loose
Reel quantity:	S1751: 2,500 on a Ø330mm reel
	S2751: 2,500 on a Ø178mm reel
	S2761: 3,000 on a Ø178mm reel

2.00mm HIGH

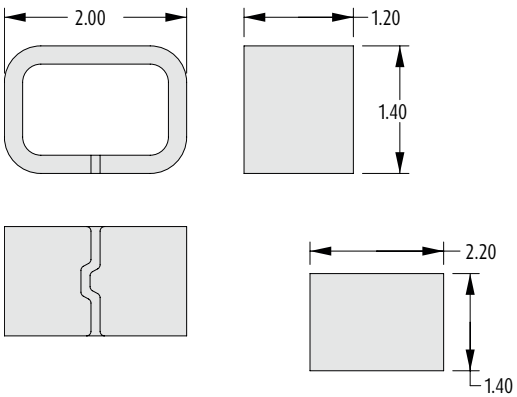
ORDER CODE	PACKAGING
S1751-46R	Tape & Reeled
S1751-46	Loose



Recommended PC Board Pattern

1.40mm HIGH

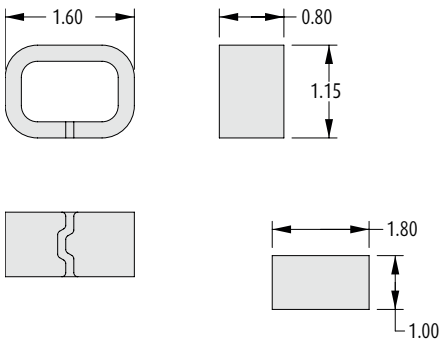
ORDER CODE	PACKAGING
S2751-46R	Tape & Reeled



Recommended PC Board Pattern

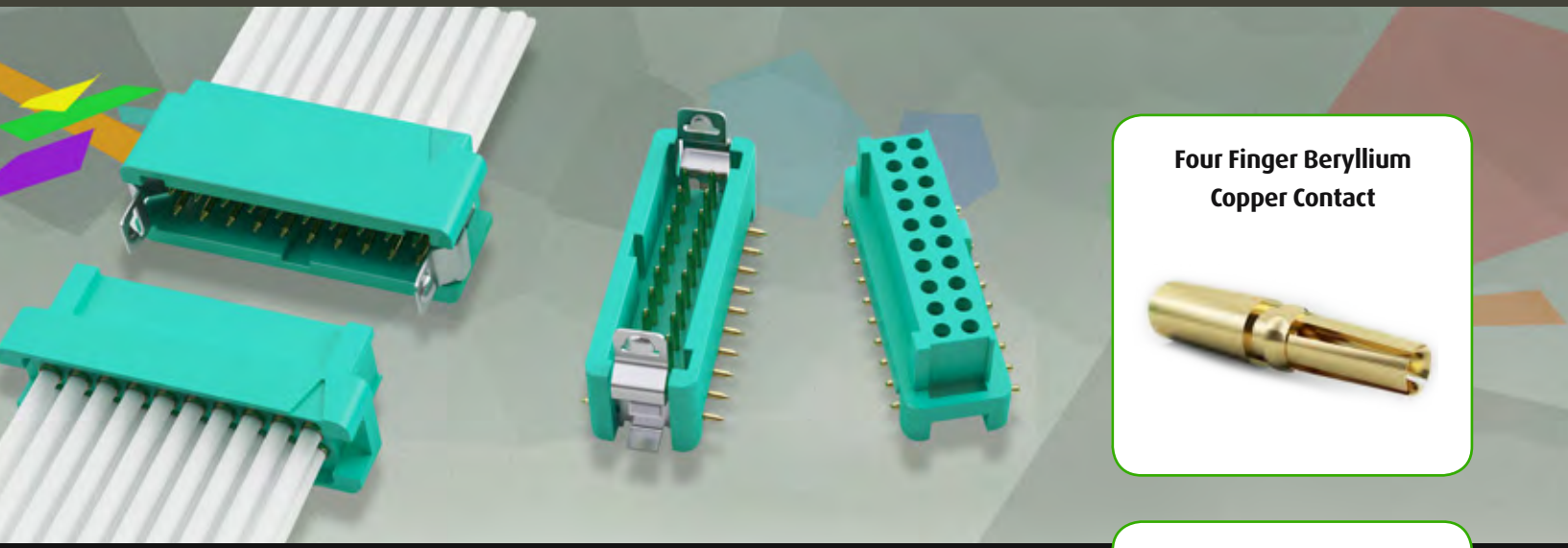
1.15mm HIGH

ORDER CODE	PACKAGING
S2761-46R	Tape & Reeled



Recommended PC Board Pattern

All dimensions in mm.



RELIABILITY JUST GOT SMALLER

Harwin's Gecko connectors provide high reliability under extreme conditions and are ideally suited for stacking and cable mating in areas where PCB real estate is at a premium.

- **35% space saving over other high-performance connectors**
- **Pin spacing of 1.25mm**
- **Up to 50 contacts per connector**
- **2A per contact**

Four Finger Beryllium Copper Contact

Pre-assembled cable configurations

Combined Latching & PCB retention system

Potting Wall

HARWiN gecko

For evaluation samples, CAD models and technical specifications go to:

www.harwin-**gecko**.com

Terminals & Spacers

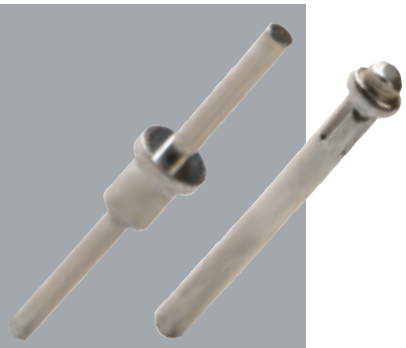
CONTENTS

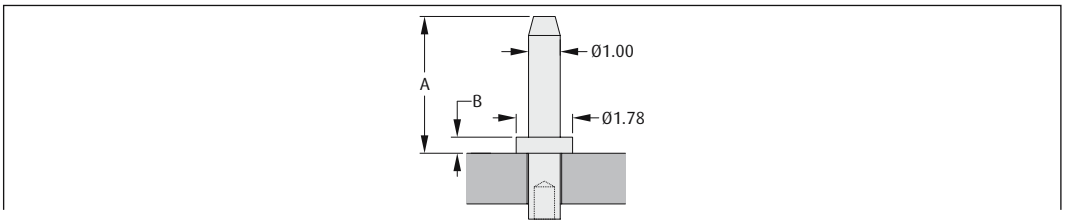
HARWiN

PCB Terminals

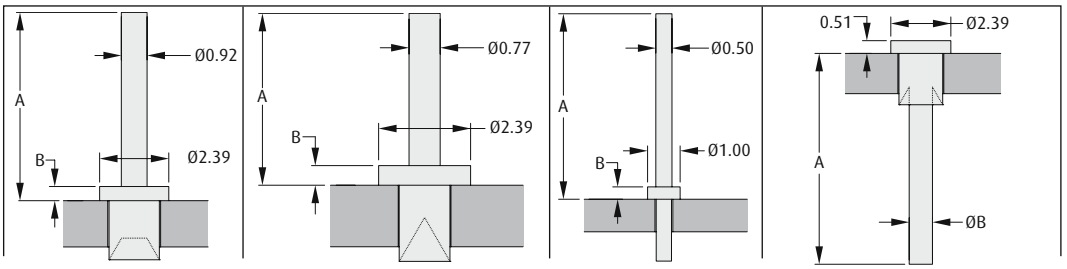
Turned Terminals

- Material: brass with tin plating.
- Retention by swaging or "star" feature available.
- For swaging tool, change order code prefix to Z, and suffix to 00 (example Z2174-00).
- Suitable for a variety of PCB thicknesses from 1mm to 2.4mm.

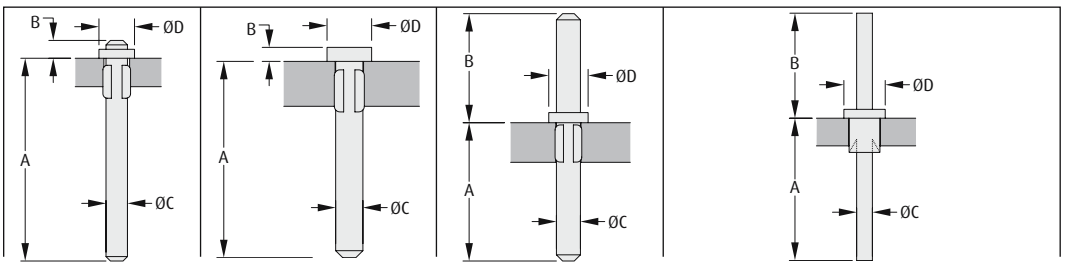




ORDER CODE	H2174-01	H2175-01	H2173-01	H2176-01	H2170-01
A	4.32mm	4.90mm	8.13mm	9.53mm	13.21mm
B	0.51mm	0.35mm	0.51mm	0.51mm	0.51mm
PANEL THICKNESS	1.6mm	1.6mm	1.6mm	1.6mm	1.6mm
MOUNTING HOLE Ø	Ø1.04-1.14mm	Ø1.04-1.14mm	Ø1.04-1.14mm	Ø1.04-1.14mm	Ø1.04-1.14mm



ORDER CODE	H2101A01	H2105A01	H2106A01	H3108-01	H2101B01	H2105B01
A	6.47mm	4.47mm	4.47mm	5.70mm	8.39mm	6.37mm
B	0.51mm	0.51mm	0.51mm	0.38mm	Ø0.93mm	Ø0.77mm
PANEL THICKNESS	1.6mm	1.6mm	2.4mm	1.0mm	1.6mm	1.6mm
MOUNTING HOLE Ø	Ø1.79-1.87mm	Ø1.33-1.41mm	Ø1.33-1.41mm	Ø0.50-0.55mm	Ø1.79-1.87mm	Ø1.33-1.41mm



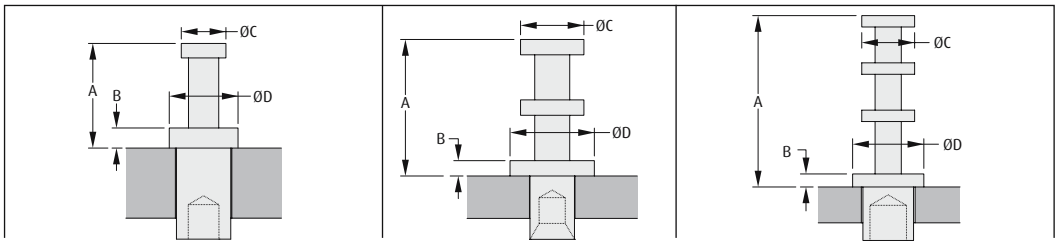
ORDER CODE	H2157-01	H3150-01	H3151-01	H2101-01	H2105-01
A	11.40mm	7.00mm	5.59mm	8.23mm	5.05mm
B	1.00mm	0.50mm	4.41mm	6.07mm	4.48mm
C	Ø1.21mm	Ø0.97mm	Ø0.93mm	Ø0.87mm	Ø0.77mm
D	Ø2.00mm	Ø1.59mm	Ø1.59mm	Ø2.39mm	Ø2.39mm
PANEL THICKNESS	1.6mm min	1.6mm min	1.6mm min	1.6mm	1.6mm
MOUNTING HOLE Ø	Ø1.40-1.50mm	Ø0.99-1.04mm	Ø0.99-1.04mm	Ø1.79-1.87mm	Ø1.33-1.41mm

All dimensions in mm.

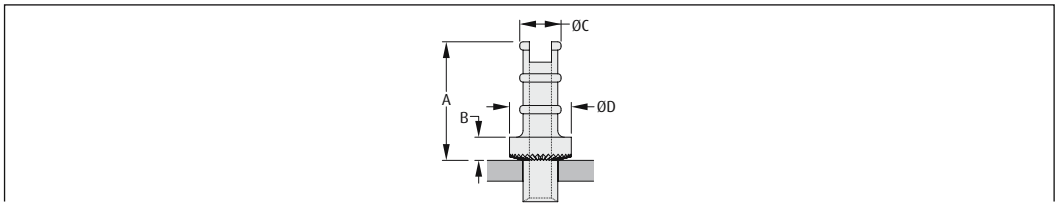
PCB Terminals

Turned Terminals

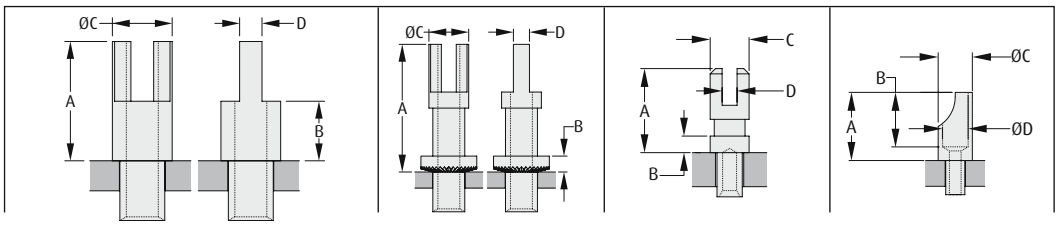
- Material: brass with tin plating.
- Retention by swaging or "star" feature available.
- For swaging tool, change order code prefix to Z, and suffix to 00 (example Z9001-00).
- Suitable for a variety of PCB thicknesses from 1.6mm to 3.2mm.



ORDER CODE	H9001-01	H9004-01	H2121-01	H9020-01	H9021-01
A	2.39mm	4.74mm	5.15mm	7.65mm	7.65mm
B	0.46mm	1.19mm	0.58mm	0.58mm	0.58mm
C	Ø1.02mm	Ø1.91mm	Ø2.39mm	Ø2.36mm	Ø2.36mm
D	Ø1.57mm	Ø3.18mm	Ø3.18mm	Ø3.18mm	Ø3.18mm
PANEL THICKNESS	1.6mm	1.6mm	1.6mm	1.6mm	2.4mm
MOUNTING HOLE Ø	Ø1.25-1.33mm	Ø2.01-2.09mm	Ø1.69-1.74mm	Ø2.35-2.45mm	Ø2.35-2.45mm



ORDER CODE	H2071Z01	H2072-01	H2072Z01	H2072ZL1	H2073Z01	H2074Z01
A	9.12mm	6.29mm	6.52mm	6.52mm	9.12mm	8.74mm
B	1.78mm	1.01mm	1.24mm	1.24mm	1.78mm	1.60mm
C	Ø3.18mm	Ø3.25mm	Ø2.54mm	Ø2.54mm	Ø3.18mm	Ø4.57mm
D	Ø4.75mm	Ø3.96mm	Ø3.96mm	Ø3.96mm	Ø4.75mm	Ø6.35mm
PANEL THICKNESS	2.4mm	1.6mm	1.6mm	2.4mm	3.2mm	3.2mm
MOUNTING HOLE Ø	Ø2.68-2.78mm	Ø2.17-2.27mm	Ø2.01-2.11mm	Ø2.01-2.11mm	Ø2.68-2.78mm	Ø3.93-4.03mm



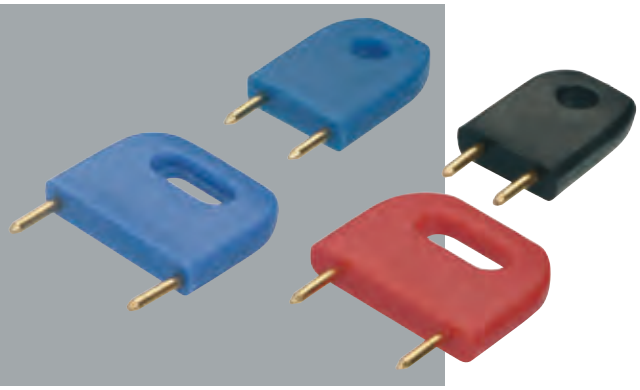
ORDER CODE	H2051-01	H2055-01	H2039-01	H9023-01	H9026-01
A	4.78mm	6.35mm	12.65mm	3.96mm	6.35mm
B	2.39mm	3.17mm	1.52mm	0.78mm	5.08mm
C	Ø3.18mm	Ø3.18mm	Ø3.90mm	Ø1.83mm	Ø3.18mm
D	0.73mm	1.13mm	1.54mm	0.71mm	Ø2.39mm
THROUGH HOLE Ø	Ø1.06mm	Ø1.74mm	Ø2.22mm	n/a	Ø1.13mm
PANEL THICKNESS	1.6mm	2.4mm	3.2mm	1.6mm	2.4mm
MOUNTING HOLE Ø	Ø1.60-1.68mm	Ø2.40-2.48mm	Ø3.19-3.27mm	Ø1.28-1.38mm	Ø1.84-1.92mm

All dimensions in mm.

Shorting Links

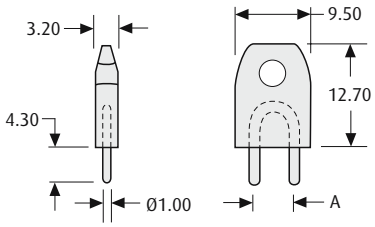
Ø1mm Shorting Link Plugs

- Choice of insulated or un-insulated links.
- Insulated links supplied in a variety of colours, with a high-performance gold finish.
- Un-insulated links can be soldered directly into the PCB for permanent linking.
- Can be used with PCB sockets (page 172) for hardware programming applications.

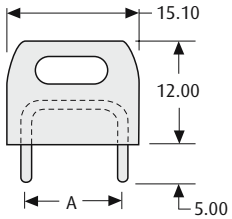


INSULATED

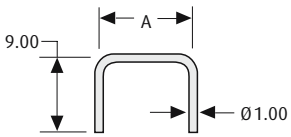
Style 1



Style 2



UN-INSULATED



SPECIFICATION

Material

Moulding:	PBT UL94V-0
Contact:	Brass
Finish:	Insulated: Gold Un-insulated: See order code

Electrical

Current rating:	10A at 20ºC

HOW TO ORDER

D308 X - XX

SERIES CODE

TYPE		STYLE	PITCH (A)
0	Un-insulated	n/a	5.08mm
1	Un-insulated	n/a	6.35mm
2	Un-insulated	n/a	10.16mm
6	Insulated	1	5.08mm
7	Insulated	1	6.35mm
8	Insulated	2	10.16mm
9	Insulated	2	12.70mm

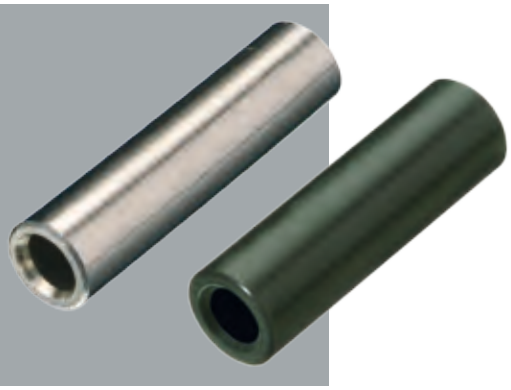
FINISH		
05	Gold (un-insulated)	Pb
46	Tin (un-insulated)	Pb
97	Blue (insulated)	Pb
98	Black (insulated)	Pb
99	Red (insulated)	Pb

All dimensions in mm.

Metric Spacers

Clearance spacers

- Standard lengths available from 3 to 30mm.
- Brass spacers: base material is free-machining brass, with nickel plating.
- Aluminium spacers: supplied with a chromate conversion protective coating.
- Plastic material: Nylon 66 UL94V-2.



CLEARANCE SPACERS

Brass, circular

Aluminium, circular

Plastic, circular

HOW TO ORDER

RXX - XXX XX XX

SERIES CODE	THREAD SIZE	MATERIAL	OUTSIDE DIA.
R30-601	M3 Clearance	Brass	Ø4.75mm
R30-620	M3 Clearance	Aluminium	Ø5mm
R30-670	M3 Clearance	Plastic	Ø5mm
R40-600	M4 Clearance	Brass	Ø6.35mm
R40-671	M4 Clearance	Plastic	Ø6.3mm

MATERIAL/FINISH		
02	Brass/Nickel	Pb
14	Aluminium/Chromate	Pb
94	Plastic	Pb

LENGTH (mm)
03 to 16, 18, 20, 25, 30

All dimensions in mm.

Metric & Imperial Spacers

Threaded Female Spacers

- Available in a variety of standard body lengths.
- Brass spacers: base material is free-machining brass, with nickel plating.
- Plastic material: Nylon 66 UL94V-2.

THREADED SPACERS

R25-100
Brass, Hexagonal
M2.5, 5.0mm A/F

R30-100
Brass, Hexagonal
M3, 5.0mm A/F

R30-101
Brass, Hexagonal
M3, 5.5mm A/F

R30-161
Plastic, Hexagonal
M3, 5.5mm A/F

R30-500
Brass, Circular
M3, Ø4.76mm O/D

R40-100
Brass, Hexagonal
M4, 7.0mm A/F

R44-100
Brass, Hexagonal
4-40 UNC, 5.0mm A/F

HOW TO ORDER

RXX - XXX XX XX

SERIES CODE
See pictures above

LENGTH (mm)	
04 to 16, 18, 20, 25	Other
06 to 16, 18, 20, 25	R30-161, R40-100
06, 09, 10, 12, 13, 15, 16, 19, 22, 23, 25, 30, 35, 45, 50	R44-100

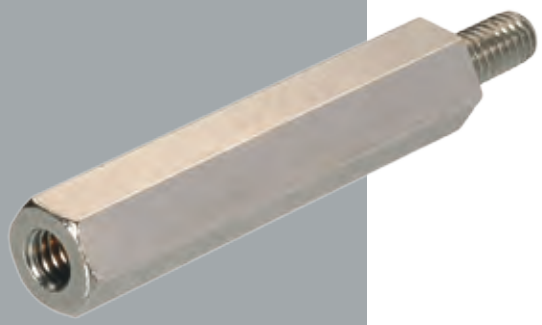
MATERIAL/FINISH		
00	Plastic	P6
02	Brass/Nickel	P6

All dimensions in mm.

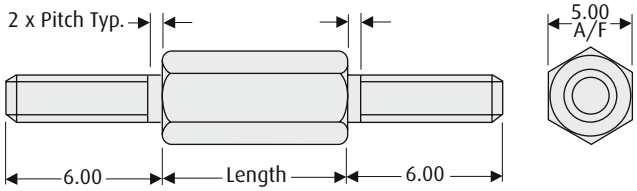
Metric Spacers

Brass Hexagonal Pillars

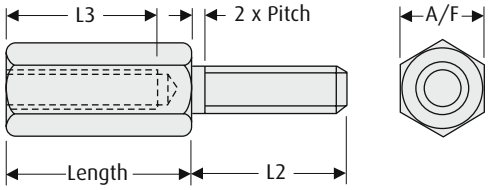
- Available in a choice of M3, M4, M5 and M6 thread sizes, with a variety of standard body lengths.
- Base material is free-machining brass, with nickel plating.



MALE/MALE



MALE/FEMALE



CALCULATION OF L3 (min)													
	Length mm												
Series	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16+**
R30-300	2.0	2.5	3.0	4.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
R30-301	2.5	3.0	4.0	5.0	5.0	5.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
R40-300	x	x	2.5	3.5	4.5	5.5	6.5	8.0	8.0	8.0	8.0	8.0	8.0
R50-300	x	x	x	x	4.0	5.5	6.0	8.0	8.0	8.0	10.0	10.0	10.0
R60-300	x	x	x	x	x	x	5.0	6 .0	7.0	8.5	9.5	10.5	11.5

HOW TO ORDER

R XX - XXX XX 02

SERIES CODE

THREAD SIZE & STYLE	
R30-300	M3 Male/Female, 5.0mm A/F, L2 = 6mm
R30-301	M3 Male/Female, 5.0mm A/F, L2 = 8mm
R30-400	M3 Male/Male
R40-300	M4 Male/Female, 7.0mm A/F, L2 = 8mm
R50-300	M5 Male/Female, 8.0mm A/F, L2 = 10mm
R60-300	M6 Male/Female, 10.0mm A/F, L2 = 10mm

FINISH	
02	Nickel

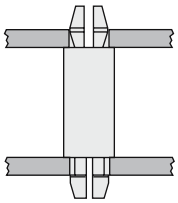
LENGTH (mm)	
04-16, 18, 20, 25, 30, 35, 40	R30
06-16, 18, 20, 25, 30, 35	R40
08-16, 18, 20, 25, 30, 35, 40	R50
10-16, 18, 20, 25, 30, 40	R60

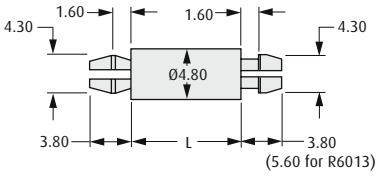
All dimensions in mm.

Locking Spacers

LOW PROFILE SELF-LOCK SPACERS

- Material: Nylon 6/6 UL94V-2.
- Spacer design uses minimum board area.
- Recommended PC board thickness 1.6mm.
- Recommended hole Size Ø4.0mm.

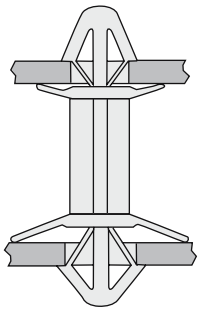


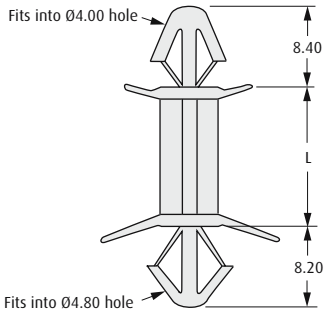


ORDER CODE	L	ORDER CODE	L
R6003-00	3.2	**R6009-00**	9.5
R6006-00	6.3	**R6010-00**	10.5
R6008-00	8.0	**R6013-00**	12.7

RIGID SELF-LOCK SPACERS

- Material: Nylon 6/6 UL94V-2.
- Spacers have wide ribs with locking fingers to provide a secure, rigid fit with extra stability.

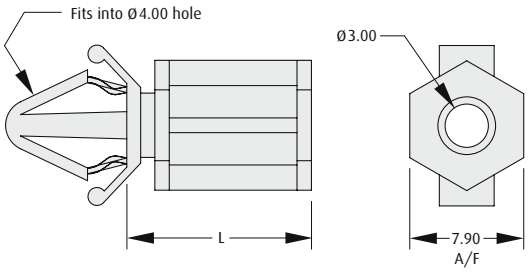




ORDER CODE	L	ORDER CODE	L
R6405-00	4.8	**R6419-00**	19.1
R6406-00	6.4	**R6422-00**	22.2
R6410-00	9.6	**R6425-00**	25.4
R6413-00	12.7	**R6428-00**	28.5
R6416-00	15.9	**R6435-00**	35.0

SELF-LOCK SPACER

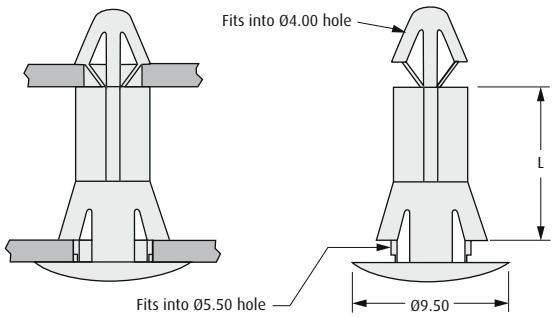
- Material: Nylon 6/6 UL94V-2.
- Fit spacer to underside of upper board, then attach lower board to bottom of spacer with No. 6 (1/8") screw.
- Recommended hole sizes: Ø4.00mm (upper board), Ø3.60mm (lower board).



ORDER CODE	L	ORDER CODE	L
R6505-00	5.5	**R6519-00**	19.1
R6510-00	9.5	**R6528-00**	28.5
R6513-00	12.8	**R6535-00**	35.0

REVERSE LOCK SPACERS

- Material: Nylon 6/6 UL94V-2.
- Fit spacers from underside of board.
- Recommended PC board thickness 0.5 – 1.8mm.



ORDER CODE	L	ORDER CODE	L
R6706-00	6.0	**R6712-00**	12.0
R6708-00	8.0	**R6714-00**	14.0
R6710-00	9.6	**R6718-00**	18.0

All dimensions in mm.

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