BEST CONTACTS FOR YOUR SUCCESS

Telegärtner
KARL GÄRTNER GMBH

NETWORKING COMPONENTS
COAXIAL CONNECTORS
CABLE ASSEMBLIES
PRECISION TURNED PARTS
PLASTIC INJECTION MOULD PARTS
INDUSTRIAL ELECTRONICS

Coax TestLine

RF Components for
Production Testing / Laboratory Measurement / Field Measurement

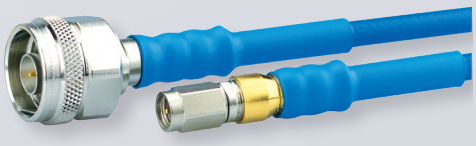
TestLine - RF Components for Measuring and Testing

Telegärtner has composed a comprehensive product programme for various measuring and test jobs under the name of "TestLine". High quality RF test cables which meet the highest demands regarding attenuation, phase stability and life endurance are an essential part of this product line.
Thanks to their special cable connection technology and the use of very high quality RF cables for low, stable VSWR values, the test cables from the "TestLine" programme are ideally suitable for measurements in the laboratory, for production tests or for field measurements. All the test cables have very effective cable protection against mechanical loads and at the same time meet the highest requirements for electrical transmission properties. Another special feature is the stainless steel connector bodies and coupling nuts which ensure high mating cycles.
All this makes the "TestLine" assemblies absolutely reliable, phase-stable and long lasting test cables for RF measurements.

TestLine Components

TestLine Cables

The new TestLine RF cable was specially designed for measuring processes with constantly changing test objects and the resulting high mating cycles. The high-end test cable has excellent transmission properties for highly demanding applications in measuring laboratories and production tests.



Termination Loads

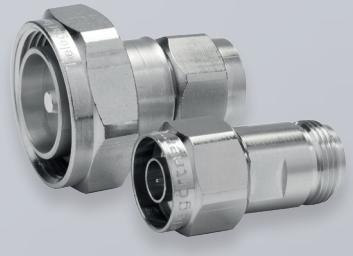
Telegärtner has a range of high quality TestLine termination loads of the 7-16, N, TNC, BNC, SMA, and R-SMA series. The termination loads are used for testing high frequency transmitters and amplifiers or in open transmitter ports.

Attenuators

The Telegärtner TestLine attenuators are used for reducing the power of RF signals. A precise signal attenuation of 3, 6, 10 or 20 dB, depending on the type, is effected here up to a frequency of 6 GHz. The attenuators are used for test and measuring applications where the RF power is to be set to certain values.

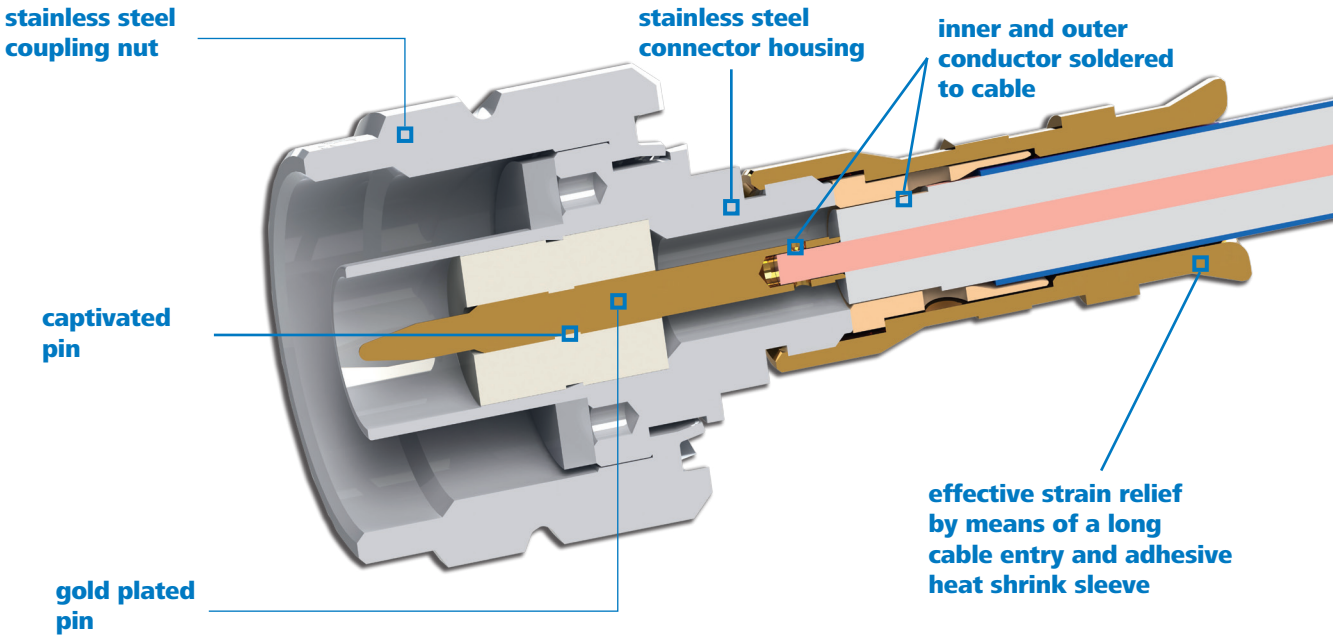
Inter-Series Adaptors / Connector Saver

Telegärtner offers a wide range of TestLine inter-series adaptors. All adaptors have very good RF properties.
Connector Savers are used to protect the test port of high quality measuring instruments. The Telegärtner Connector Savers are screwed onto the original port which, as a result, does not wear despite frequent use. The Connector Saver can be changed quickly and inexpensively when required.

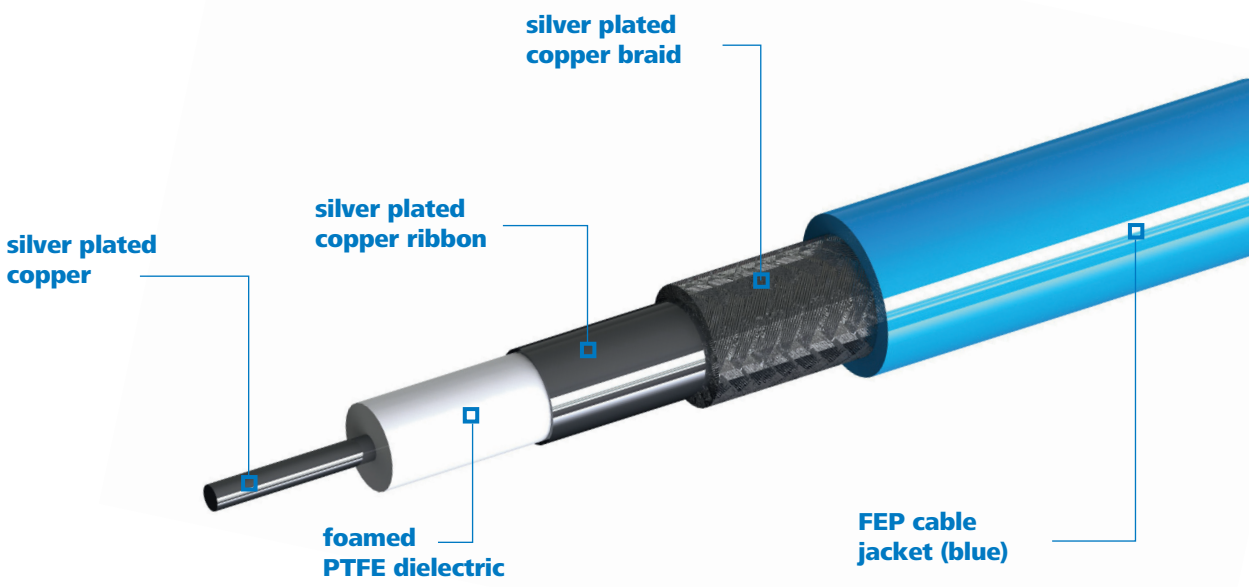


Construction of TestLine Cables

TestLine Connector Design

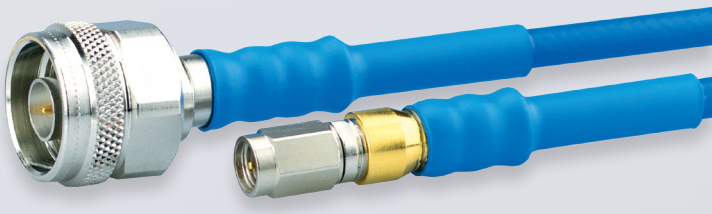


TestLine Cable Construction

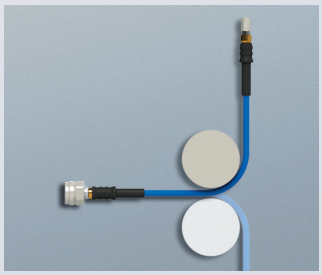


TestLine Cables

The pre-assembled RF cables of the TestLine series were designed especially for inspection and testing purposes with high requirements with regard to attenuation, phase stability and life endurance. The specially developed connectors have a special cable connecting technology for low, stable VSWR values and a highly effective cable protection against mechanical strains. In addition, the connector bodies and nuts are made of stainless steel to ensure a very high number of mating cycles. The TestLine cables are therefore also excellently suitable for use in production where a large number of reliable measurements need to be performed.

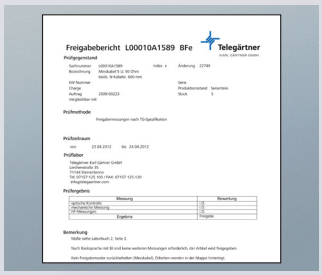


Product Features of TestLine Cables



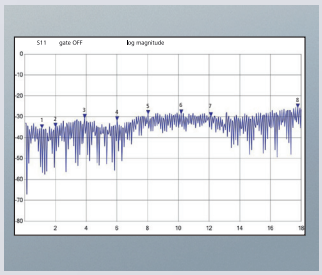
Stability

The special structure of the RF cable with a foamed PTFE dielectric guarantees excellent phase stability and return loss stability when the cable is subjected to bending stress.



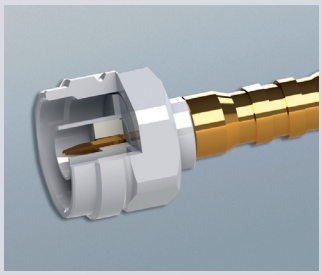
100% tested

Every cable comes with a detailed test report.



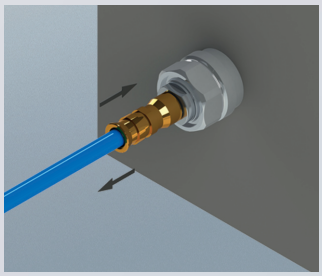
Excellent electrical parameters

for frequencies up to 18 GHz (SMA) or 11 GHz (N) at low return loss (-23 dB at 18 GHz). The maximum cable attenuation is only 1.0 dB/m at 18 GHz.



Precision connectors

The TestLine cables are assembled with plugs developed especially for test and inspection requirements.



High mating cycles

with constantly good transmission properties thanks to gold-plated inner conductors and a stainless steel plug body and coupling nut.

Characteristics of TestLine Cables

Mechanical Characteristics	
cable bending radius	> 30 mm
cable sheath	FEP, Ø 5.4 mm
connector center contact	CuZn39Pb3, gold-plated
connector outer contact	stainless steel
coupling nut	stainless steel
plugging cycles	> 1000

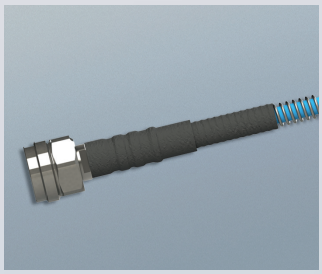
Environment	
opteration temperature	-55 °C to 110 °C
RoHS convormity	2002/95EC

Electrical Characteristics	
impedance	50 Ω
frequency range	SMA: < 18 GHz N: < 11 GHz
return loss (typical)	up to 4 GHz: -28 dB up to 10 GHz: -26 dB up to 18 GHz: -23 dB
max. cable attenuation (@18 GHz)	1,0 dB/m
phase stability (measured after 90° bend)	< 0.5° @ DC - 4 GHz < 1.5° @ 4 GHz - 18 GHz
amplitude stability	< 0.03 dB @ DC - 4 GHz < 0.03 dB @ 4 GHz - 18 GHz
screen effectiveness (at 1 GHz)	-110 dB max.

Special Version: TestLine Cables with Impact Protection

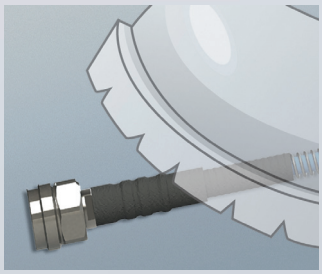
A special version of the TestLine cable from Telegärtner offers very strong protection against external loads. The cable protection consists of a steel wire coil with an extremely high pressure load capacity up to 80 kg/5 cm cable length. This virtually rules out damage to the cable by kinking or crushing.
The use of the cable protection is recommended especially in production, for field measurements and also in the laboratory where mechanical stress on the cable cannot be ruled out.

Product Features:



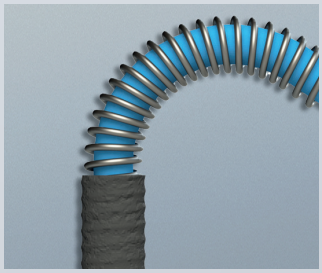
Cable Protection

TestLine cables can be fitted with an optional spring tube. The stainless steel spring tube protects the cable against extreme mechanical loads.



Impact-Proof

Pressure loads up to 80 kg/5 cm cable length.



Bending Protection

Excellent protection against kinking of the cable.

Temperature-resistant and flame-retardant

Temperature range -54 °C bis +135 °C

Order numbers TestLine cables

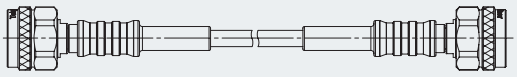
SMA-SMA

1

N-SMA

3

N-N



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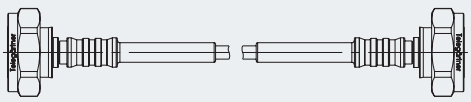
7-16 - 7-16



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pic.	Order no.	Description	Remarks	Frequency range	Length
1	L00010A1588	TestLine cable SMA - SMA	Standard	18 GHz	600 mm
1	L00010A1594	TestLine cable SMA - SMA	Standard	18 GHz	1000 mm
1	L00010B1588	TestLine cable SMA - SMA	with impact protection	18 GHz	600 mm
1	L00010B1594	TestLine cable SMA - SMA	with impact protection	18 GHz	1000 mm
2	L00010A1589	TestLine cable N - N	Standard	11 GHz	600 mm
2	L00010A1595	TestLine cable N - N	Standard	11 GHz	1000 mm
2	L00010B1589	TestLine cable N - N	with impact protection	11 GHz	600 mm
2	L00010B1595	TestLine cable N - N	with impact protection	11 GHz	1000 mm
3	L00010A1590	TestLine cable SMA - N	Standard	11 GHz	600 mm
3	L00010A1596	TestLine cable SMA - N	Standard	11 GHz	1000 mm
3	L00010B1590	TestLine cable SMA - N	with impact protection	11 GHz	600 mm
3	L00010B1596	TestLine cable SMA - N	with impact protection	11 GHz	1000 mm
4	TestLine 7-16 - 7-16 on request				

Termination Loads

Termination loads are connected to an open signal output or a RF cable to avoid reflections. They are available with a impedance 50 Ω. The power of the termination loads ranges between 1 W and 625 W, at maximum frequencies of up to 18 GHz. The termination loads are used, for example, in open ports of RF transmission systems as well as for calibration of RF measuring instruments.

Electrical Characteristics Series SMA / R-SMA	
impedance	50 Ω
frequency range	< 18 GHz (SMA) < 6 GHz (R-SMA)
return loss	2 GHz: 34 dB 6 GHz: 23 dB 18 GHz: 17 dB
max. power	1 Watt

Electrical Characteristics Series N	
impedance	50 Ω
frequency range	< 18 GHz
return loss	4 GHz: 26 dB 6 GHz: 25 dB 18 GHz: 13 dB
max. power	2 bzw. 10 Watt

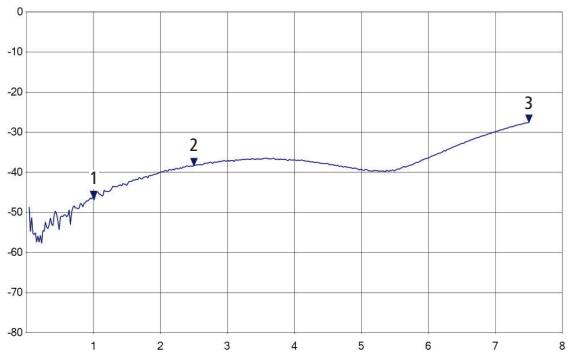
Electrical Characteristics Series SMC	
impedance	50 Ω
frequency range	< 2 GHz
return loss	2 GHz: 34 dB
max. power	1 Watt

Electrical Characteristics Series TNC	
impedance	50 Ω
frequency range	< 6 GHz
return loss	6 GHz: 21 dB
max. power	1 Watt

Electrical Characteristics Series BNC	
impedance	50 Ω
frequency range	< 4 GHz
return loss	4 GHz: 24 dB
max. power	1 Watt

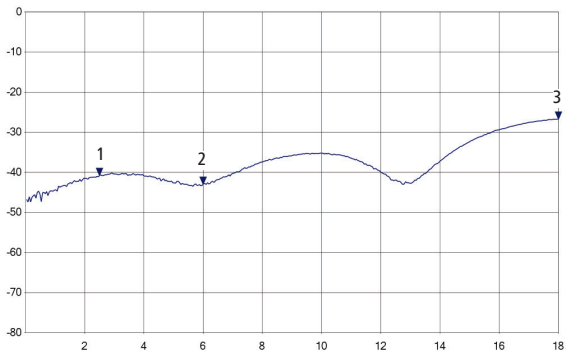
Electrical Characteristics Series 7-16	
impedance	50 Ω
frequency range	< 7.5 GHz
return loss	2.5 GHz: 27 dB
max. power	2 bzw. 10 Watt

Typical Return Loss 7-16 Termination Loads



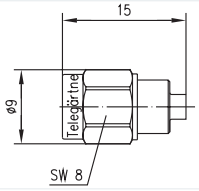
marker	stimulus	value
1	1,000 GHz	-46,469 dB
2	2,500 GHz	-38,307 dB
3	7,500 GHz	-27,477 dB

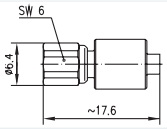
Typical Return Loss SMA Termination Loads

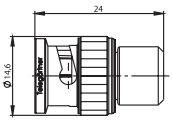


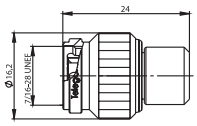
marker	stimulus	value
1	2,500 GHz	-40,658 dB
2	6,000 GHz	-42,856 dB
3	18,000 GHz	-26,694 dB

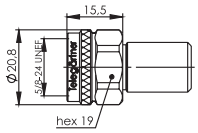
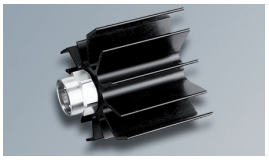
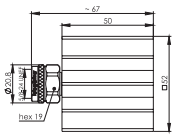
Order Numbers Termination Loads

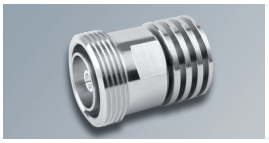
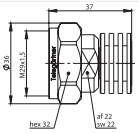
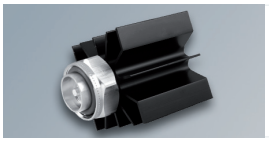
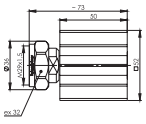
Series SMA / R-SMA		Order no.	Description	Max. Frequency	Max. Power
		J01152A0011	SMA termination load, male	6 GHz	1 W
		J01152B0011	SMA termination load, male	18 GHz	1 W
		J01152R0011	R-SMA termination load, male	6 GHz	1 W

Series SMC		Order no.	Description	Max. Frequency	Max. Power
		J01176A0001	SMC termination load, female	2 GHz	1 W

Series BNC		Order no.	Description	Max. Frequency	Max. Power
		J01006A0020	BNC termination load, male	4 GHz	1 W
		J01006A0021	BNC termination load, female	4 GHz	1 W

Series TNC		Order no.	Description	Max. Frequency	Max. Power
		J01016A0002	TNC termination load, male	6 GHz	1 W
		J01016A0003	TNC termination load, female	6 GHz	1 W

Series N		Order no.	Description	Max. Frequency	Max. Power
		J01026A0012	N termination load, male	6 GHz	1 W
		J01026A0010	N termination load, male	18 GHz	2 W
		J01026A0013	N termination load, female	6 GHz	1 W
		J01026A0014	N termination load, female	18 GHz	2 W
		J01026A0011	N termination load, male	18 GHz	10 W

Series 7-16		Order no.	Description	Max. Frequency	Max. Power
		J01124A0001	7-16 termination load, male	7.5 GHz	2 W
		J01124A0002	7-16 termination load, female	7.5 GHz	2 W
		J01124A0003	7-16 termination load, male	7.5 GHz	10 W
		J01124A0004	7-16 termination load, female	7.5 GHz	10 W

Attenuators

The Telegärtner attenuators are used for reducing the power of RF signals. A precise signal attenuation of 3, 6, 10 or 20 dB, depending on the type, is effected here up to a frequency of 6 GHz. The attenuators are used for testing and measuring as well as in antenna cables (e.g. mobile radios, WLAN) in which the transmitted power is to be set to certain values.

Electrical Characteristics Series SMA

impedance	50 Ω
frequency range	6 GHz
return loss	1 GHz: 30 dB 3 GHz: 25 dB 6 GHz: 20 dB
max. power	2 Watt

Electrical Characteristics Series N

impedance	50 Ω
frequency range	6 GHz
return loss	1 GHz: 30 dB 3 GHz: 25 dB 6 GHz: 20 dB
max. power	2 Watt

Electrical Characteristics Series BNC

impedance	50 Ω
frequency range	6 GHz
return loss	1 GHz: 30 dB 3 GHz: 25 dB 6 GHz: 20 dB
max. power	2 Watt

Electrical Characteristics Series R-TNC

impedance	50 Ω
frequency range	6 GHz
return loss	1 GHz: 30 dB 3 GHz: 25 dB 6 GHz: 20 dB
max. power	2 Watt

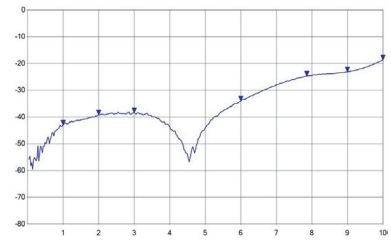
Electrical Characteristics Series TNC

impedance	50 Ω
frequency range	6 GHz
return loss	1 GHz: 30 dB 3 GHz: 25 dB 6 GHz: 20 dB
max. power	2 Watt

Electrical Characteristics Series R-SMA

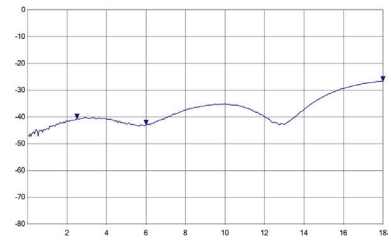
impedance	50 Ω
frequency range	6 GHz
return loss	1 GHz: 30 dB 3 GHz: 25 dB 6 GHz: 20 dB
max. power	2 Watt

Typical Return Loss Attenuator Series SMA



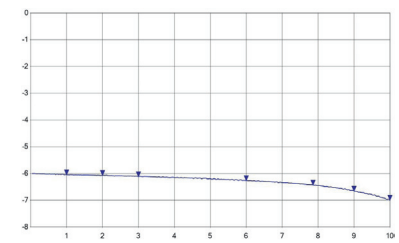
marker	stimulus	value
1	1,000 GHz	-43,050 dB
2	2,000 GHz	-39,247 dB
3	3,000 GHz	-38,430 dB
4	6,000 GHz	-34,039 dB
5	7,859 GHz	-24,734 dB
6	9,000 GHz	-23,115 dB
7	10,000 GHz	-18,670 dB

Typical Return Loss Attenuator Series N



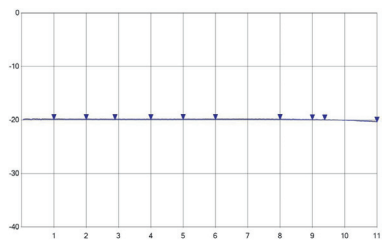
marker	stimulus	value
1	1,000 GHz	-43,467 dB
2	2,000 GHz	-36,685 dB
3	2,890 GHz	-33,059 dB
4	4,000 GHz	-30,351 dB
5	5,000 GHz	-30,063 dB
6	6,000 GHz	-31,291 dB
7	8,000 GHz	-27,032 dB
8	9,000 GHz	-23,075 dB
9	9,383 GHz	-21,720 dB
10	11,000 GHz	-16,603 dB

Typical Insertion Loss Attenuator Series SMA



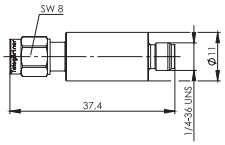
marker	stimulus	value
1	1,000 GHz	-6,044 dB
2	2,000 GHz	-6,068 dB
3	3,000 GHz	-6,116 dB
4	6,000 GHz	-6,262 dB
5	7,859 GHz	-6,428 dB
6	9,000 GHz	-6,657 dB
7	10,000 GHz	-6,993 dB

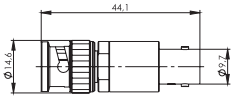
Typical Insertion Loss Attenuator Series N

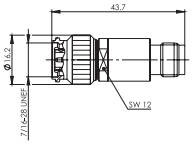


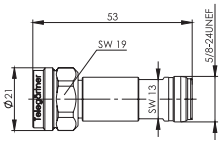
marker	stimulus	value
1	1,000 GHz	-19,880 dB
2	2,000 GHz	-19,880 dB
3	2,890 GHz	-19,882 dB
4	4,000 GHz	-19,889 dB
5	5,000 GHz	-19,865 dB
6	6,000 GHz	-19,868 dB
7	8,000 GHz	-19,866 dB
8	9,000 GHz	-19,931 dB
9	9,383 GHz	-19,967 dB
10	11,000 GHz	-20,368 dB

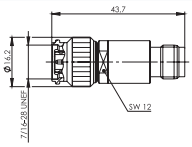
Order Numbers Attenuators

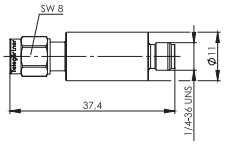
Series SMA		Order no.	Description	Attenuation nom.
		J01156A0011	SMA attenuator, male-female	3 dB
		J01156A0021	SMA attenuator, male-female	6 dB
		J01156A0031	SMA attenuator, male-female	10 dB
		J01156A0041	SMA attenuator, male-female	20 dB

Series BNC		Order no.	Description	Attenuation nom.
		J01006A0022	BNC attenuator, male-female	3 dB
		J01006A0023	BNC attenuator, male-female	6 dB
		J01006A0024	BNC attenuator, male-female	10 dB
		J01006A0025	BNC attenuator, male-female	20 dB

Series TNC		Order no.	Description	Attenuation nom.
		J01016A0004	TNC attenuator, male-female	3 dB
		J01016A0005	TNC attenuator, male-female	6 dB
		J01016A0006	TNC attenuator, male-female	10 dB
		J01016A0007	TNC attenuator, male-female	20 dB

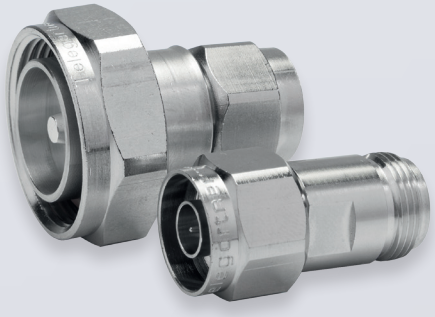
Series N		Order no.	Description	Attenuation nom.
		J01026A0018	N attenuator, male-female	3 dB
		J01026A0019	N attenuator, male-female	6 dB
		J01026A0020	N attenuator, male-female	10 dB
		J01026A0021	N attenuator, male-female	20 dB

Series R-TNC		Order no.	Description	Attenuation nom.
		J01016R0004	R-TNC attenuator, male-female	3 dB
		J01016R0005	R-TNC attenuator, male-female	6 dB
		J01016R0006	R-TNC attenuator, male-female	10 dB
		J01016R0007	R-TNC attenuator, male-female	20 dB

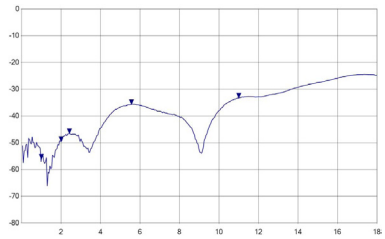
Series R-SMA		Order no.	Description	Attenuation nom.
		J01156R0011	R-SMA attenuator, male-female	3 dB
		J01156R0021	R-SMA attenuator, male-female	6 dB
		J01156R0031	R-SMA attenuator, male-female	10 dB
		J01156R0041	R-SMA attenuator, male-female	20 dB

Inter-Series Adaptors

Telegärtner offers you a wide range of high quality Test-Line adaptors. The TestLine adaptors are specially designed for a large number of plugging cycles and have excellent high frequency properties.

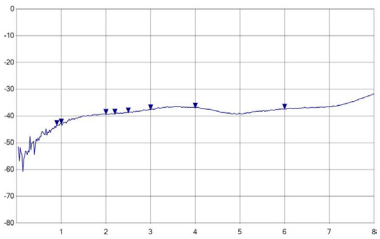


Typical Return Loss Adaptor N to SMA



marker	stimulus	value
1	1,000 GHz	-56,112 dB
2	2,000 GHz	-49,518 dB
3	2,420 GHz	-46,573 dB
4	5,563 GHz	-35,683 dB
5	11,000 GHz	-33,277 dB

Typical Return Loss Adaptor 7-16 to N



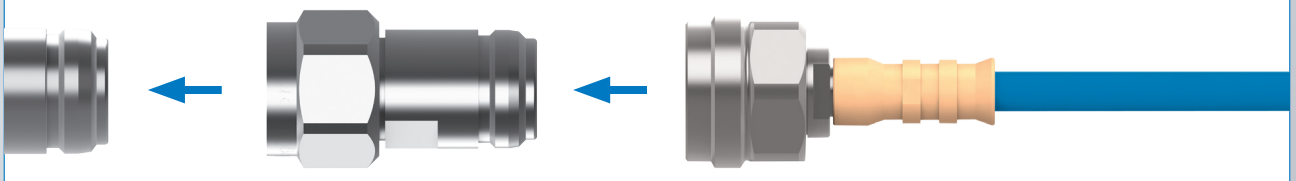
marker	stimulus	value
1	0,900 GHz	-43,463 dB
2	1,000 GHz	-42,967 dB
3	2,000 GHz	-39,342 dB
4	2,200 GHz	-39,261 dB
5	2,500 GHz	-38,730 dB
6	3,000 GHz	-37,606 dB
7	4,000 GHz	-36,997 dB
8	6,000 GHz	-37,365 dB

Connector Saver

Connector Savers are used to protect the test port of high quality measuring instruments. Changing plugs in measuring instruments is expensive and time-consuming. To avoid this, the Telegärtner Connector Savers are screwed onto the original port which, as a result, does not wear despite frequent use. The Connector Saver can be changed quickly and inexpensively when required.

worn off jack

Usage of Connector Savers



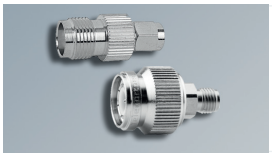
Testport | Connector Saver | Measuring Cable

Order Numbers Inter-Series Adaptors / Connector Savers

BNC to TNC		Order no.	Remarks	Return Loss
		J01019B0000	female-male	27 dB/1 GHz; 24 dB/4 GHz
		J01008B0010	male-female	33 dB/1 GHz; 20 dB/4 GHz
		J01008A0011	male-male	38 dB/2 GHz; 35 dB/4 GHz
		J01008A0012	female-female	27 dB/1 GHz; 24 dB/4 GHz

BNC to N		Order no.	Remarks	Return Loss
		J01008A0824	male-female	29 dB/1 GHz; 22,5 dB/4 GHz
		J01008C0025	female-male	40 dB/1 GHz; 26 dB/4 GHz
		J01008A0090	male-male	34 dB/1 GHz; 26 dB/4 GHz
		J01008A0088	female-female	34 dB/1 GHz; 26 dB/4 GHz

TNC to N		Order no.	Remarks	Return Loss
		J01019C0007	female-male	36 dB/1 GHz; 23 dB/4 GHz
		J01019A0008	male-female	33 dB/1 GHz; 30 dB/4 GHz
		J01019A0031	male-male	34 dB/1 GHz; 26 dB/6 GHz
		J01019A0025	female-female	36 dB/1 GHz; 25 dB/ 6 GHz

TNC to SMA		Order no.	Remarks	Return Loss
		J01019B0029	female-male	29 dB/1 GHz; 22.5 dB/4 GHz
		J01019A0032	male-female	35 dB/1 GHz; 20 dB/ 11 GHz

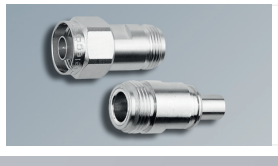
N to SMA		Order no.	Remarks	Return Loss
		J01027T0018	male-female	40 dB/2 GHz; 20 dB/18 GHz
		J01027T0017	female-female	40 dB/2 GHz; 20 dB/18 GHz
		J01027T0019	male-male	40 dB/2 GHz; 20 dB/18 GHz
		J01027T0016	female-male	40 dB/2 GHz; 20 dB/18 GHz

7-16 to N		Order no.	Remarks	Return Loss
		J01122B0010	male-female	44 dB/1 GHz; 32 dB/6 GHz
		J01122C0009	male-male	44 dB/1 GHz; 32 dB/6 GHz
		J01122A0011	female-male	44 dB/1 GHz; 40 dB/2.5 GHz
		J01122A0008	female-female	44 dB/1 GHz; 40 dB/2.5 GHz

SMA to R-SMA		Order no.	Remarks	Return Loss
		J01155R0085	male-female reverse	15 dB/6 GHz
		J01155R0095	female-male reverse	15 dB/6 GHz

TNC to R-TNC		Order no.	Remarks	Return Loss
		J01014R0000	male-female reverse	15 dB/6 GHz
		J01014R0001	female-male reverse	15 dB/6 GHz

SMA to Push-On SMA		Order no.	Remarks	Return Loss
		J01155A0099	male-female push-on type	21 dB/10 GHz

Connector Saver		Order no.	Remarks	Return Loss
		J01024A0010	N, male-female short thread type	35 dB/2 GHz; 25 dB/11 GHz
		J01024A0011	N, female-male (Push-On)	35 dB/2 GHz; 25 dB/11 GHz
		J01123B0006	7-16, male-female	43 dB/1 GHz; 29 dB/6 GHz

More Customised: assembling RF cables online

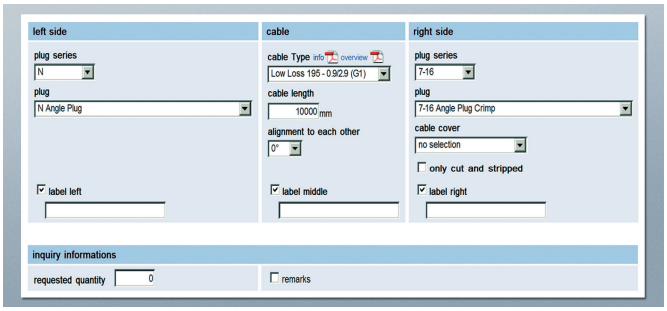
Do you want to assemble RF cables with coaxial connectors individually and add strain relief, labelling and cable length according to your requirements? Then the COAX configurator developed by Telegärtner is just what you need:

… **simple,** and is available to you around the clock

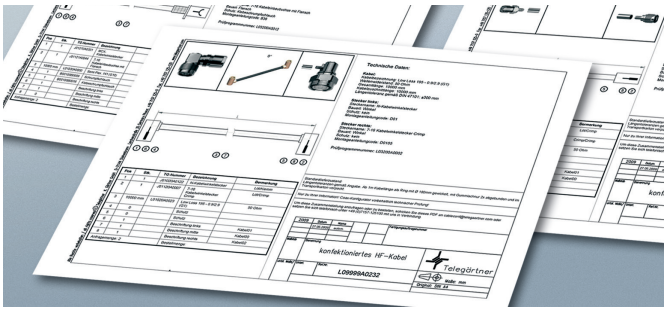
… **fast,** and allows you to configure your customised assembly with just a few clicks, thanks to a logical and easy-to-understand user-guidance

… **user-orientated**, and offers you exactly the information you require in order to configure your individual cable assembly

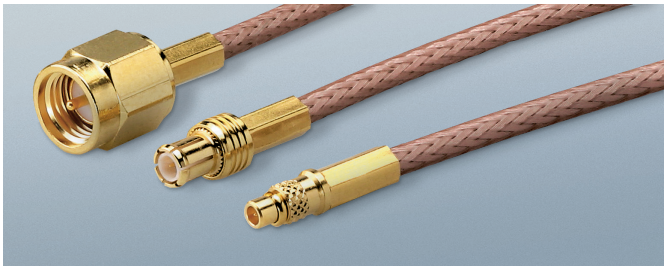
User-friendly input mask …



… and creation of a clear specification (PDF)



⇨ for individually assembled TestLine and other RF Cables



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