

BEST CONTACTS FOR YOUR SUCCESS



Telegärtner

KARL GÄRTNER GMBH

NETWORKING COMPONENTS

COAXIAL CONNECTORS

CABLE ASSEMBLIES

PRECISION TURNED PARTS

PLASTIC INJECTION MOULD PARTS

INDUSTRIAL ELECTRONICS



Components for Mobile Communication Networks

RF Components

Fiber Optic and RJ45 Components



All products are shown in our
online catalogue
www.telegaertner.com

Publisher

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team:orange GmbH, Web- und Werbeagentur
www.teamorange.de

Photos

Katja Hartmann, hartmannstudios

Print

Druckerei Raisch

Edition

Components for Mobile Radio Base Stations
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BEST CONTACTS FOR YOUR SUCCESS

Professional Connectivity Solutions

Telegärtner Karl Gärtner GmbH is a leading manufacturer of professional, high-quality connectivity solutions. Headquartered in Steinbronn near Stuttgart in south-west Germany, Telegärtner is proud to serve its customers globally. Our comprehensive portfolio of innovative product solutions includes RF coaxial connectors and connecting hardware for structured cabling of office buildings, homes, industrial premises, data centers and mobile communication networks.

In its more than 70 year history, Telegärtner Karl Gärtner GmbH has evolved from a spare parts supplier for telephone installations in American barracks to a leading manufacturer of coaxial, twisted pair and fiber optic components. This extraordinary evolution was possible by combining traditional values like quality and reliability with innovation, flexibility and short turn-around times. Throughout the years, Telegärtner has had one goal: to provide customers with excellent product solutions that help them to be even more successful.

All of Telegärtner's infrastructure components have three distinguishing features: superior quality, the possibility of creating application and customer specific types and instant availability. Whether a large or small product series is required, Telegärtner is the ideal supplier and development partner for customers who expect the best contacts for their success.



MOBILE COMMUNICATIONS

Developed for highest demands

The reliability of a mobile communication connection depends essentially on the antenna used. This must ensure reliable transmission and reception of data and signals even under the most difficult conditions and stressful situations.

Telegärtner's product solutions for Mobile Communication Networks are developed using powerful CAD systems and rigorously tested with high-performance network analyzers and intermodulation test benches in the Telegärtner Labs.

A well-balanced combination of fully automated, semi-automated and manual manufacturing processes allows a high level of flexibility. Telegärtner's quality levels exceed the specifications set by the standards. ISO specifications are merely the basis for Telegärtner's high quality standards, which are raised daily. To document this, Telegärtner has established a quality assurance programme according to DIN EN ISO 9001:2008 and DIN EN ISO 14001:2004 for the entire flow of goods from goods received through manufacturing to shipping and maintenance.

A fully automated state-of-the-art warehouse with more than 28,000 containers ensures that our customers receive the right product at the right place and the right time. 24-hour delivery time ex works is the standard Telegärtner sets. Who can compete with that?



YOUR EXPERT FOR...

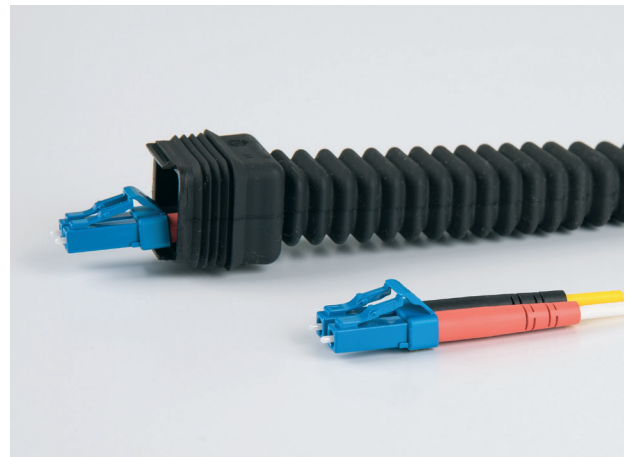
Coaxial Cabling Solutions

Mobility has become an integral part of our life, and mobile communication is a must in today's world. The networks all this is based on have to be robust, reliable and economical.



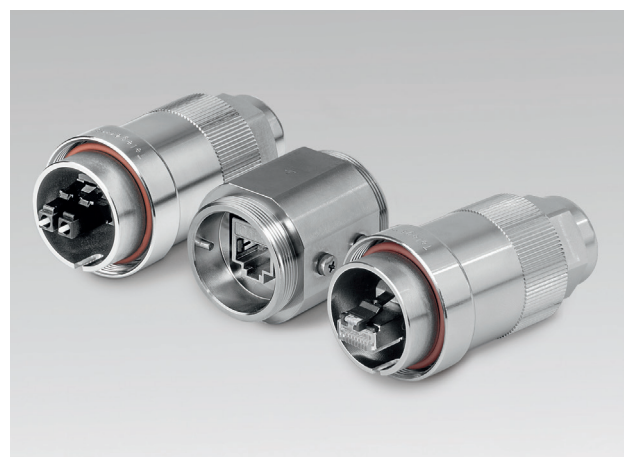
FTTA - Fiber to the Antenna

Optical fibers, nearly as thin as the lines of these letters, transmit enormous amounts of voice and data signals. Any service, any time, any place leads to an ever-growing bandwidth demand. So it's only logical to connect mobile radio antennas to optical fibers – for higher performance at lower costs.



Microwave Links

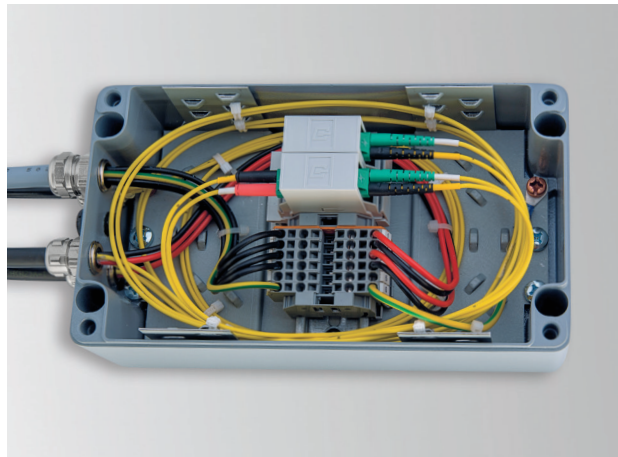
Would you like to dig up the roads of a big city or the stony ground in the mountains? No need, as microwave links offer a cost-effective solution with cutting-edge performance. To work properly, they need a free line of sight and a reliable connection to the network.



...MOBILE COMMUNICATION NETWORKS

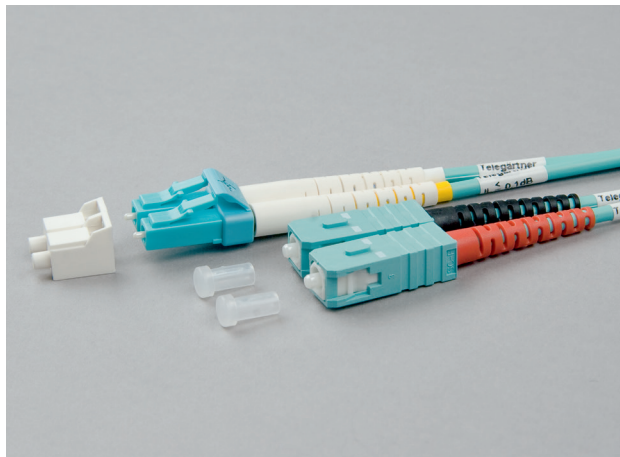
Cabling and Distribution Hardware

It's more than just a cable and a box. It's the paths and junctions of the network all the voice and data signals use. Whatever runs over your network, it runs over the cabling. It's good to know that Telegärtner paves the way for you.



Backhaul / IP

No mobile network works completely wirelessly. In fact, most parts of mobile communication networks are wired for better performance and higher reliability. The backhaul cabling is the highway voice and data signals need for safe and fast travel.



In-Building Antenna Systems

No need to change from wireless to fixed line when entering a building. In building wireless networks offer the benefits users appreciate, like roaming and seamless transfer from one network to another. Telegärtner knows wireless networks – inside out.

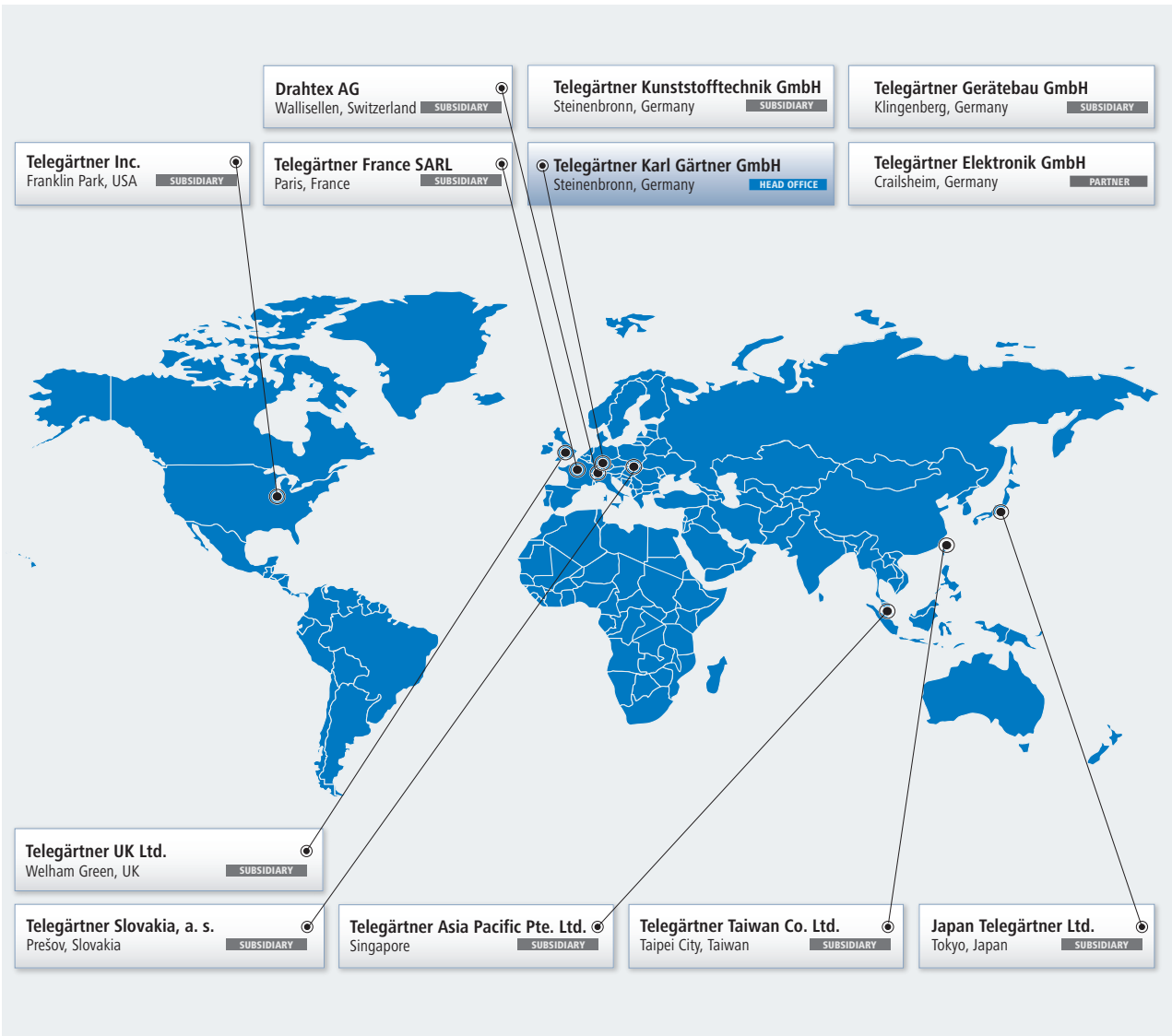


GLOBAL PRESENCE

Whether in Tokyo, Chicago or London – With more than 600 employees, Telegärtner is present all over the world. Naturally, all products comply with the applicable international standards. We are where our customers are, providing the best contacts for your success.



Telegärtner worldwide
 You will find Telegärtner agents always up to date on our homepage www.telegaertner.com



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IP Classification of Degree of Protection

The degree of protection is classified according to IEC 60529. The coding system used is the IP Code (International Protection). The coding denotes the level of

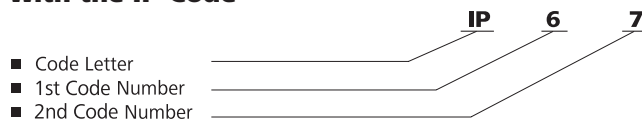
protection against the ingress of solid bodies (first code number) and the ingress of water (second code number).

Protection against solid foreign bodies*	
1st Code Number	Description
0	No particular protection
1	Protection against ingress of solid foreign bodies with a diameter of 50 mm or more
2	Protection against ingress of solid foreign bodies with a diameter of 12.5 mm or more
3	Protection against ingress of solid foreign bodies with a diameter of 2.5 mm or more
4	Protection against ingress of solid foreign bodies with a diameter of 1.0 mm or more
5	Dust protected
6	Dust-proof

Protection against water*	
2nd Code Number	Description
0	No particular protection
1	Protection against dripping water
2	Protection against vertically dripping water. There must be no harmful effect on materials tipped (in a container) up to 15° from its normal position.
3	Protection against fine water spray
4	Protection against water spray
5	Protection against water jet
6	Protection against strong water jet
7	Protection against water, when the material is immersed in water
8	The material is suitable for continuous submersion in water. Must be agreed between customer and supplier.

* Definitions see IEC 60529

Example of Classification in Accordance with the IP Code

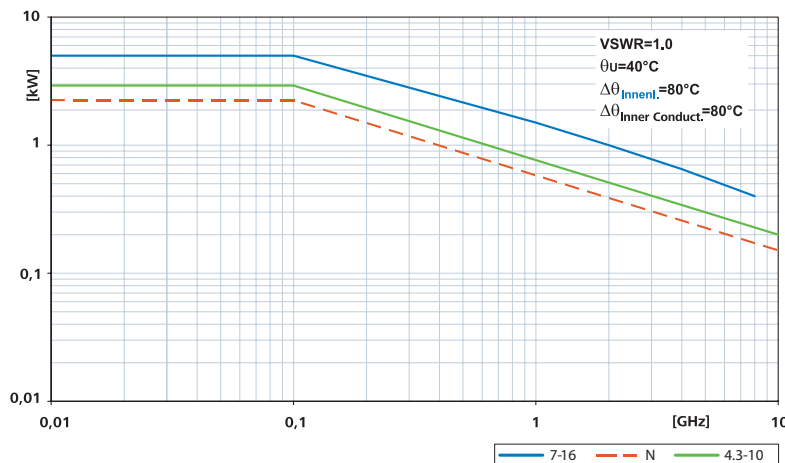


A housing with IP Classification

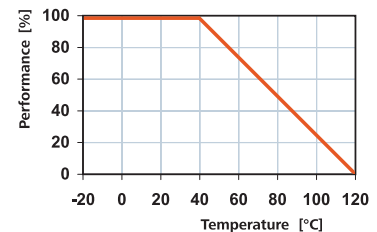
6 No ingress of dust

7 When subjected to submersion in water at a defined pressure and for a defined length of time, the ingress of water must be so restricted that no damage is caused. Submersion Bath: Water level above the enclosure: 0.15 m measured from the top of the enclosure, 1.0 m measured from the bottom of the enclosure. Duration of Test: 30 mins. TG Specification for Simfix Connectors: height of water level: 25 m: is equivalent to 2.5 bar; duration of test: 24 hrs.

Performance Diagrams 7-16 / N / 4.3-10



Power derating by temperature



Conversion Table: VSWR – Return Loss – Reflection Coefficient*

The reflection behavior in coaxial connectors can be described as Return Loss, Reflection Coefficient or Voltage Standing Wave Ratio (VSWR). The relation between these three values is shown in the following table.

You can also use our online calculator on our website www.telegaertner.com. Here you can compute the relationship of these three sizes to each other online.

Return Loss	Reflection Coefficient	VSWR	Return Loss	Reflection Coefficient	VSWR
10	0.316	1.923	30.5	0.030	1.060
10.5	0.298	1.848	31	0.028	1.056
11	0.282	1.780	31.5	0.027	1.054
11.5	0.266	1.726	32	0.025	1.051
12	0.252	1.671	32.5	0.024	1.048
12.5	0.237	1.618	33	0.022	1.045
13	0.224	1.578	33.5	0.021	1.043
13.5	0.211	1.538	34	0.020	1.040
14	0.199	1.497	34.5	0.019	1.038
14.5	0.188	1.462	35	0.018	1.036
15	0.178	1.430	35.5	0.017	1.034
15.5	0.165	1.396	36	0.016	1.032
16	0.158	1.374	36.5	0.015	1.030
16.5	0.150	1.350	37	0.014	1.028
17	0.141	1.329	37.5	0.013	1.027
17.5	0.133	1.304	38	0.013	1.025
18	0.126	1.285	38.5	0.012	1.022
18.5	0.119	1.268	39	0.011	1.021
19	0.112	1.251	39.5	0.011	1.020
19.5	0.106	1.235	40	0.010	1.020
20	0.100	1.220	40.5	0.009	1.018
20.5	0.094	1.208	41	0.009	1.017
21	0.089	1.193	41.5	0.008	1.016
21.5	0.084	1.180	42	0.008	1.015
22	0.079	1.171	42.5	0.008	1.014
22.5	0.075	1.160	43	0.007	1.013
23	0.071	1.151	43.5	0.007	1.012
23.5	0.067	1.142	44	0.006	1.012
24	0.063	1.133	44.5	0.006	1.011
24.5	0.060	1.124	45	0.005	1.011
25	0.057	1.118	45.5	0.005	1.011
25.5	0.053	1.111	46	0.004	1.010
26	0.050	1.105	46.5	0.004	1.009
26.5	0.047	1.100	47	0.004	1.008
27	0.045	1.094	47.5	0.004	1.008
27.5	0.042	1.088	48	0.004	1.008
28	0.040	1.082	48.5	0.004	1.008
28.5	0.038	1.078	49	0.004	1.007
29	0.035	1.073	49.5	0.003	1.007
29.5	0.034	1.069	50	0.003	1.006
30	0.032	1.064			

*Errors and omissions excepted!



Connectors

SIMFix® – Connector Series 7-16 / N / 4.3-10

The RF connectors in the SIMFix® (Simple to Fix) series are rugged connectors with threaded coupling for use in high performance transmitter applications. These connectors are waterproof and suitable for external use. Furthermore, their design ensures excellent technical performance, especially when it comes to return loss and intermodulation. The SIMFix® range includes RF connectors for terminating 1/4", 1/2" flex, 1/2", 7/8", 1 1/2" and 1 5/8" sized corrugated cables.

Assembly for all sizes is simple and reliable, thus guaranteeing constantly good electrical performance with regard to return loss and intermodulation.

Ease of termination of the cables has been greatly enhanced by the use of specially developed tooling, which allows for exact stripping of the corrugated cables in the shortest time.



SIMFix® Pro Types – IP68

Special seals on the sheath and outer conductor of the cable provide reliable protection against the ingress of water. Tested to a pressure of 2.5 bar (equivalent to water pressure at a depth of 25 m), a high degree of security against damage from water is guaranteed – even after years of service – in every climate, world-wide.

SIMFix® ST Types – IP67

The SIMFix® ST (Short Type) range is the shorter version of the SIMFix® Pro connectors. It has almost the same design as the SIMFix® Pro except for the sealing, which is specified IP67. Application areas are where especially short and cost-efficient connectors are needed, indoor applications or where additional sealing by taping is used.

SIMFix® CA Types (Pro/ST)

The SIMFix® CA series are special connectors for use with cables with either copper or aluminium outer conductors. As with the tried and tested SIMFix® connectors, sealing is achieved through actively compressed O-rings. The SIMFix® CA connectors are available in the **Pro** (IP68) design, with sealing on the sheath and outer conductor, as well as the **ST** design, with sealing on the outer conductor only (short type), as a more cost-effective alternative.

Other available connector types

Telegärtner connectors for feeder and jumper cables (highly flexible) are available in 3 different types, as follows:

SIMFix®: For quick and easy assembly. Designed for feeder cables. Watertight.

Standard: Watertight types for feeder and jumper cables.

Short: Compact types for feeder and jumper cables.

Self-adhesive sleeving is necessary for watertight external installation.

SIMFix® Pro – IP68: Waterproof with a high degree of safety

Triple protection concept

Protection Step 1:

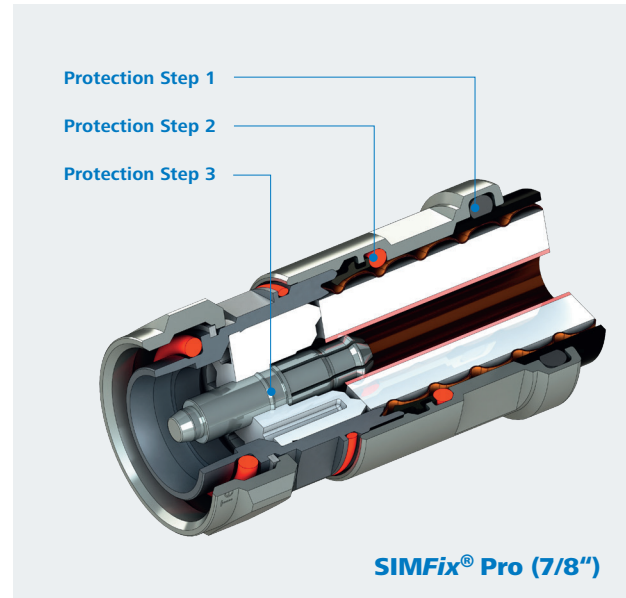
An O-ring on the outer jacket of the cable guarantees reliable protection against the ingress of water in normal applications of an undamaged cable.

Protection Step 2:

A special seal to the outer conductor of the cable. Damage to the cable's outer jacket poses the danger that water will enter the connector between the outer jacket and the outer conductor of the cable. This is prevented by the additional seal.

Protection Step 3:

Barrier sealed by protective steps taken on the centre contact. Massive destruction of the cable resulting in water ingress into the dielectric and possibly even into the inner conductor can destroy the following cable segment and even damage the base station, if water is able to seep through the connector. This is prevented by the barrier seal.



Easy and fast assembly using special tools



N00091A0022



N00091B0019



R00200A0011

Manual tool

- Cutting the sheath, outer conductor, dielectric and inner conductor to size
- Burr removal on the inner conductor
- Flaring the outer conductor
- Screw for fine adjustment of the cutting depth

Rotating tool

- For cable preparation with electric drill
- Cutting the sheath, outer conductor, dielectric, and inner conductor to size
- Includes separate tooling for flaring and burr removal

Termination tool set

- Tool kit for 1 1/4" and 1 5/8" corrugated cable preparation and termination of connectors
- Two empty extra pockets for adding 1/2" and 7/8" stripping tools

4.3-10 Connectors

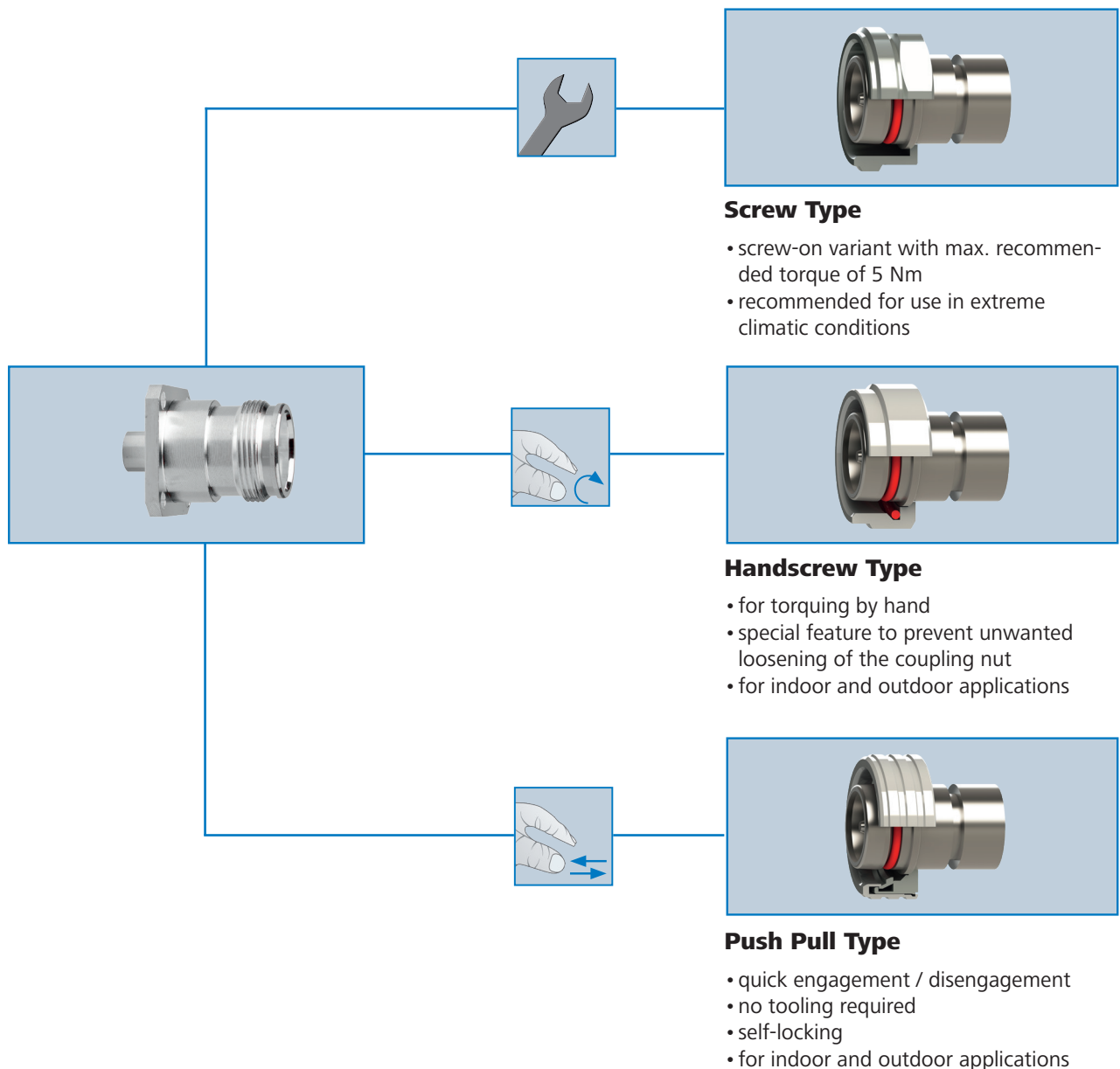
The compact, installation-friendly 4.3-10 RF connectors have been specially developed to meet the ever increasing demands in mobile radio communication applications. The small size and low weight of these connectors is a perfect example of the miniaturisation of mobile radio network components. Despite their size, the connectors guarantee excellent return loss and passive intermodulation (PIM) performance levels. In addition, the 4.3-10 connector

series is very variable, since one universal cable jack is suitable for mating with 3 different cable plug designs. All of the 4.3-10 connectors meet the requirements of IP68 and, because of the excellent properties of the materials used, are suitable for temperatures ranging from -40°C up to $+85^{\circ}\text{C}$. Customised connector designs for use at higher temperatures are also possible on demand.

1 Cable Jack - 3 Cable Plug Designs

The main feature of the push-pull design is the quick and reliable coupling mechanism. Because no tools are required to mate the connectors, any problems with packing density are immediately resolved.

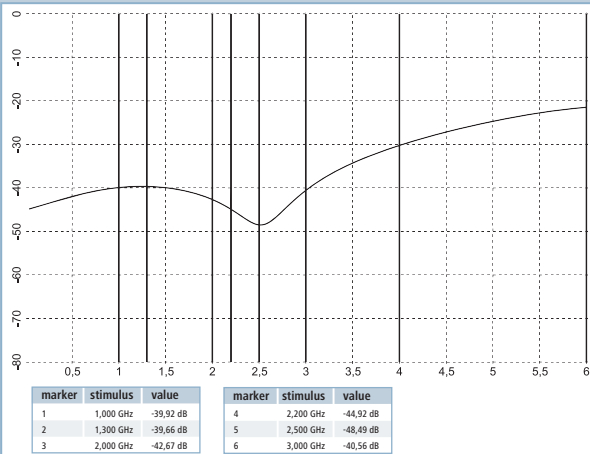
The screw designs are more rugged because of the threaded mating and, despite the use of high-quality materials, are less expensive because of the simpler and cost-effective design.



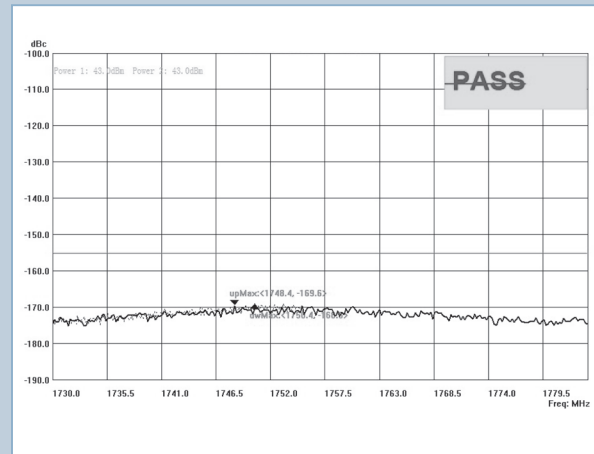
Technical Data 4.3-10 Series

Excellent PIM (passive intermodulation) performance even under mechanical stress. Excellent return loss values.

Return Loss (J01440A0005 typical)



Passive Intermodulation (J01440A0005 typical)



4.3-10 Series Mechanical Characteristics

Finish	
Inner conductor	Silver
Other conductive parts	Silver or Tealloy
Other parts	Nickel or Tealloy
Coupling torque (Screw Type)	5 Nm
Durability (mating cycles)	> 100

Thermal and Climatic Characteristics

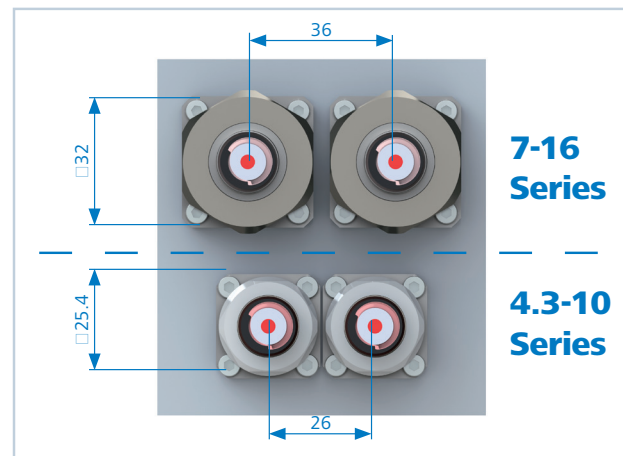
Category to DIN IEC 68 Part 1	40/85/26
Protection to IEC 60529	
SIMFix Pro types	IP68 (2.5 bar, axially and radially watertight)
SIMFix ST, short type with shrink sleeving and Standard types	IP67

Electrical Characteristics

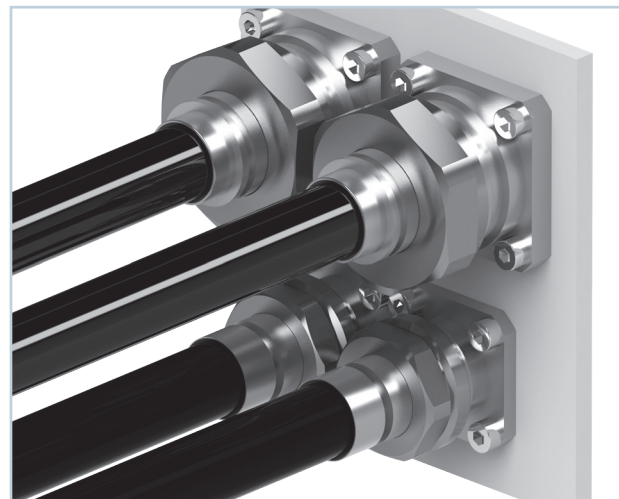
Contact resistance (only) inner contact	< 0.2 mΩ
Contact resistance (overall) inner contact	< 1 mΩ
Contact resistance (only) outer contact	< 0.2 mΩ
Contact resistance (overall) outer contact	< 1 mΩ
Insulation resistance	> 5 GΩ
Voltage proof	2.5 kV _{eff} /50 Hz
Impedance	50 Ω
Working voltage	500 V _{eff} /50-60 Hz
Power handling	700 W@1 GHz; 500 W@2 GHz

Passive Intermodulation

Two unmodulated test signals at 43 dBm (2x20 W) (acc. to IEC 62037-3)	
0.4 to 4 GHz	-166 dBc (typ.)



The compact design allows space saving of 37%.

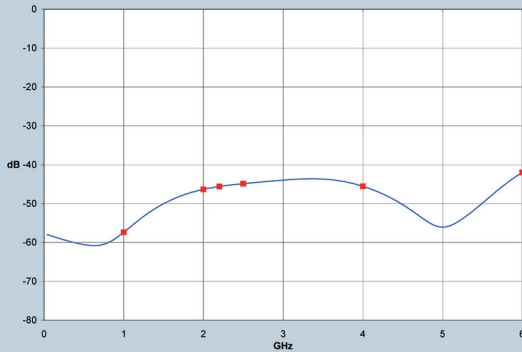


At the same time the 4.3-10s reduce the weight substantially.

7-16 and N Series Technical Data

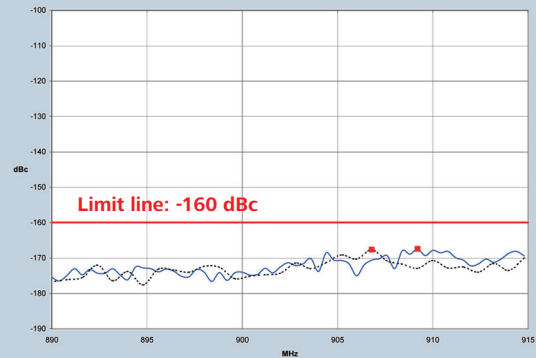
Excellent electrical performance. Trouble-free transmission in mobile networks.

Return Loss (J01120G0085 typical)



1: 1,0 GHz = -57,4 dB	4: 2,0 GHz = -44,9 dB
2: 2,0 GHz = -46,3 dB	5: 4,0 GHz = -45,5 dB
3: 2,0 GHz = -45,6 dB	6: 6,0 GHz = -42,0 dB

Passive Intermodulation (J01120G0085 typical)



F1 UP (SolidLine) from = 925 MHz to = 940,8 MHz IM3 = -167,4 dBc at 909,2 MHz Carrier Power Level = 43 dBm	F2 DOWN (DotLine) from = 960 MHz to = 933,4 MHz IM3 = -167,6 dBc at 906,8 MHz CPL = 43 dBm
----------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------

7-16 Series Mechanical Characteristics

Finish	
Inner conductor	Silver
Other conductive parts	Silver or silver with Telealloy flash (CuSnZn3)
Other parts	Nickel or Telealloy
Coupling torque	25-35 Nm
Durability (mating cycles)	> 500

Thermal and Climatic Characteristics

Category to DIN IEC 68 Part 1	40/85/21
Protection to IEC 60529	
SIMFix Pro types	IP68 (2.5 bar, axially and radially watertight)
SIMFix ST, short type with shrink sleeving and Standard types	IP67

Electrical Characteristics

Contact resistance (only) inner contact	< 0.1 mΩ
Contact resistance (overall) inner contact	< 0.4 mΩ
Contact resistance (only) outer contact	< 0.1 mΩ
Contact resistance (overall) outer contact	< 0.2 mΩ
Insulation resistance	> 10 GΩ
Voltage proof	4 kV _{eff} /50 Hz
Impedance	50 Ω
Working voltage	< 2.7 kV _{eff} /50 Hz
Power handling	1.8 kW/1 GHz
Intermodulation	
Two unmodulated test signals at 43 dBm (2x20 W) 0.4 to 4 GHz	-155 dBc (typ.)

N Series Mechanical Characteristics

Finish	
Inner conductor	Silver
Other conductive parts	Silver or silver with Telealloy flash (CuSnZn3)
Other parts	Nickel or Telealloy
Coupling torque	4-6 Nm
Durability (mating cycles)	> 500

Thermal and Climatic Characteristics

Category to DIN IEC 68 Part 1	40/85/21
Protection to IEC 60529	
SIMFix Pro types	IP68 (2.5 bar, axially and radially watertight)
SIMFix ST, short type with shrink sleeving and Standard types	IP67

Electrical Characteristics

Contact resistance (overall) inner contact	< 2 mΩ
Contact resistance (overall) outer contact	< 0.5 mΩ
Insulation resistance	> 5 GΩ
Voltage proof	2.5 kV _{eff} /50 Hz
Impedance	50 Ω
Working voltage	< 1 kV _{eff} /50 Hz
Intermodulation	
Two unmodulated test signals at 43 dBm (2x20 W) 0.4 to 4 GHz	-155 dBc (typ.)

7-16 & N Connectors for 1/2" Highly Flexible Cables

**1/2"
FLEX**

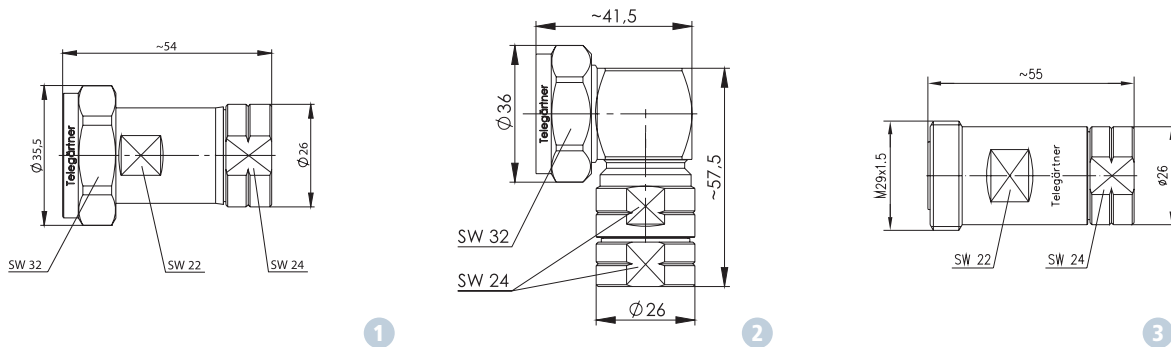
Stripping Tool


Cable Types

- Eupen 5092
- RFF 1/2"-50
- FSJ4-50B
- SCF12-50J
- HPL50-1/2 SF
- HFSC 12D
- Flexline 1/2"S

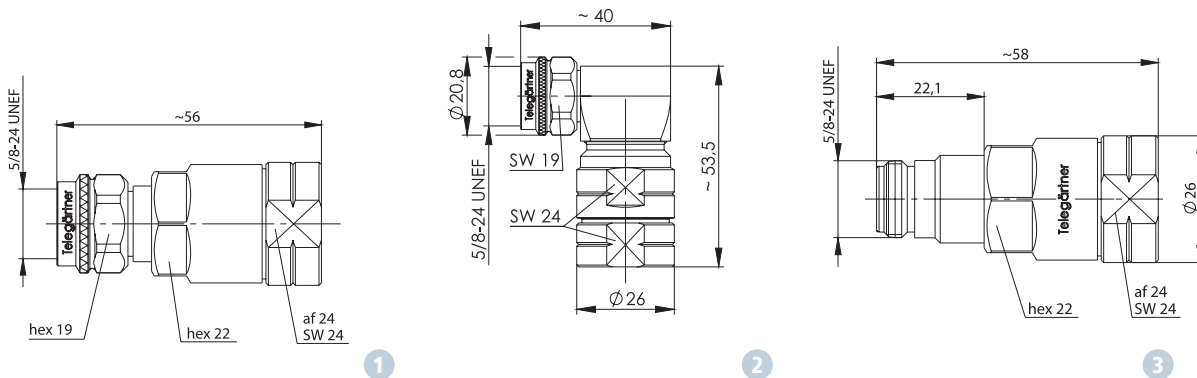


7-16 Series



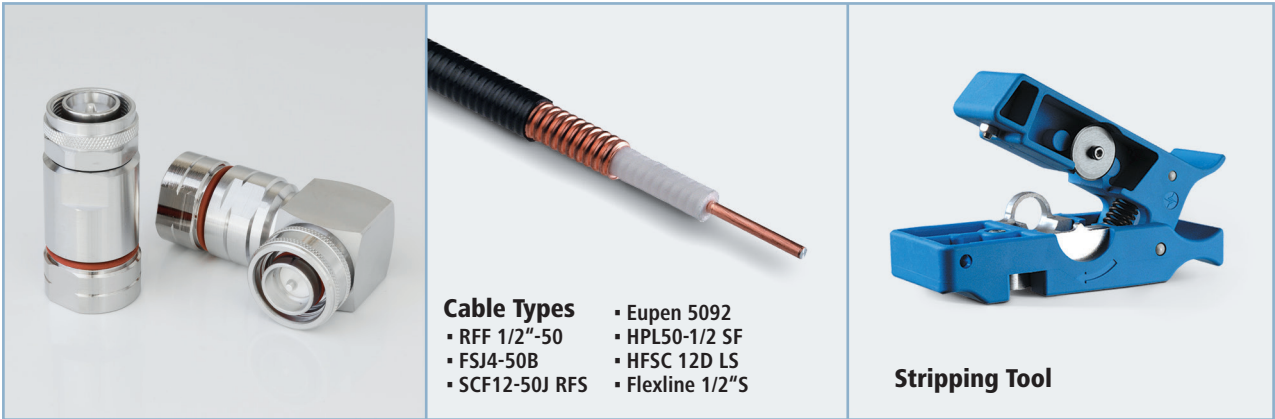
Series	Design	Type	Protection Class	Order no.	Tool	Fig.
7-16	Straight plug	SIMFix Pro	IP68	J01120B0077	N00091A0013	1
7-16	Straight plug	SIMFix ST	IP67	J01120B0073	N00091A0004	-
7-16	Angle plug	SIMFix Pro	IP68	J01120A0094	N00091A0013	2
7-16	Straight jack	SIMFix Pro	IP68	J01121B0120	N00091A0013	3
7-16	Straight jack	SIMFix ST	IP67	J01121B0114	N00091A0004	-

N Series

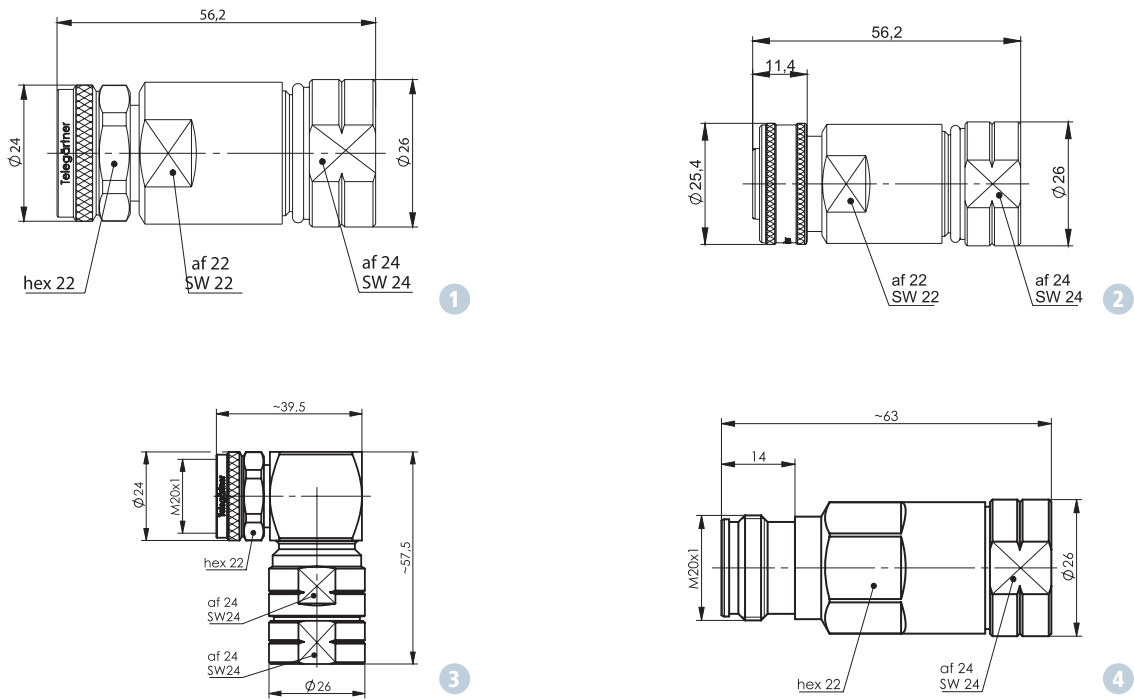


Series	Design	Type	Protection Class	Order no.	Tool	Fig.
N	Straight plug	SIMFix Pro	IP68	J01020C0105	N00091A0013	1
N	Straight plug	SIMFix ST	IP67	J01020B0098	N00091A0004	-
N	Angle plug	SIMFix Pro	IP68	J01020A0147	N00091A0013	2
N	Straight jack	SIMFix Pro	IP68	J01021C0163	N00091A0013	3
N	Straight jack	SIMFix ST	IP67	J01021B0156	N00091A0004	-

4.3-10 Connectors for 1/2" Highly Flexible Cables



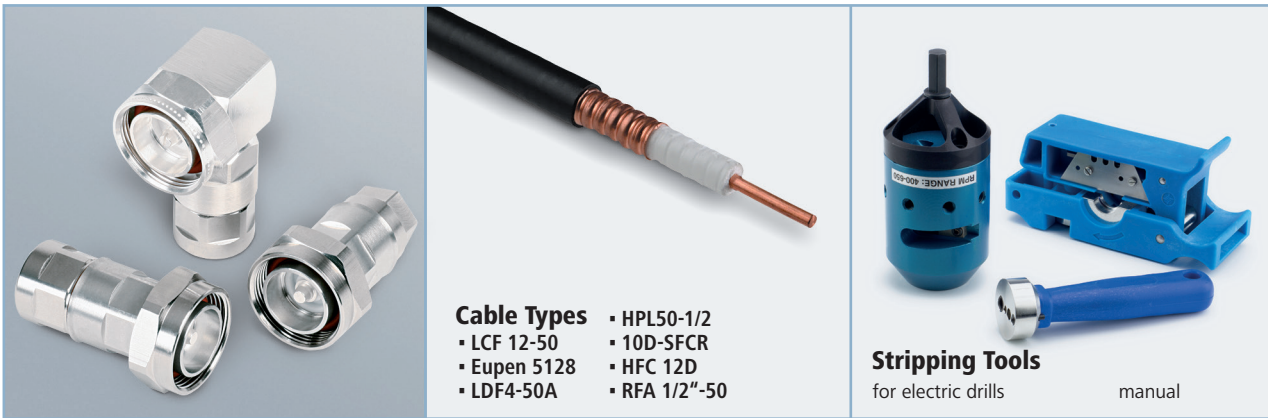
4.3-10 Series



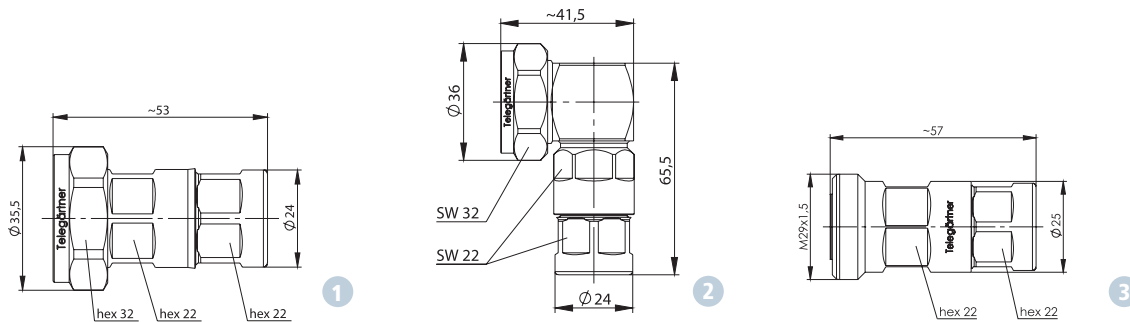
Series	Design	Type	Protection Class	Order no.	Tool	Fig.
4.3-10	Straight plug, screw	SIMFix Pro	IP68	J01440A0005	N00091A0013	1
4.3-10	Straight plug, push-pull	SIMFix Pro	IP68	J01440A3005	N00091A0013	2
4.3-10	Angle plug, screw	SIMFix Pro	IP68	J01440A0013	N00091A0013	3
4.3-10	Straight jack	SIMFix Pro	IP68	J01441A0010	N00091A0013	4

7-16 & N Connectors for 1/2" Corrugated Cables

1/2"

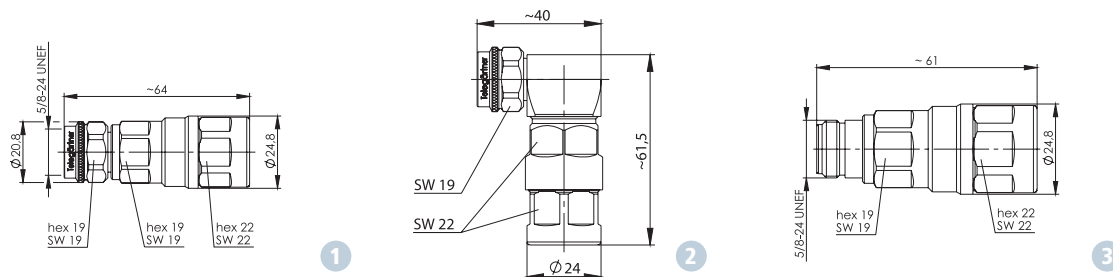


7-16 Series



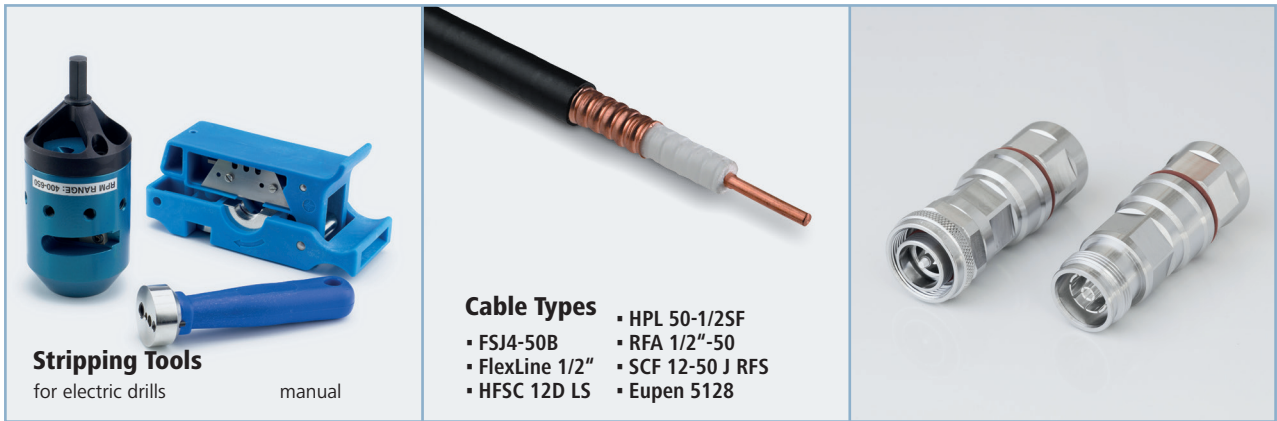
Series	Design	Type	Protection Class	Order no.	Tool		Fig.
					Manual	Electric	
7-16	Straight plug	SIMFix Pro	IP68	J01120G0085	N00091A0015	N00091B0018	1
7-16	Angle plug	SIMFix Pro	IP68	J01120B0026	N00091A0015	N00091B0018	2
7-16	Straight jack	SIMFix Pro	IP68	J01121G0136	N00091A0015	N00091B0018	3

N Series

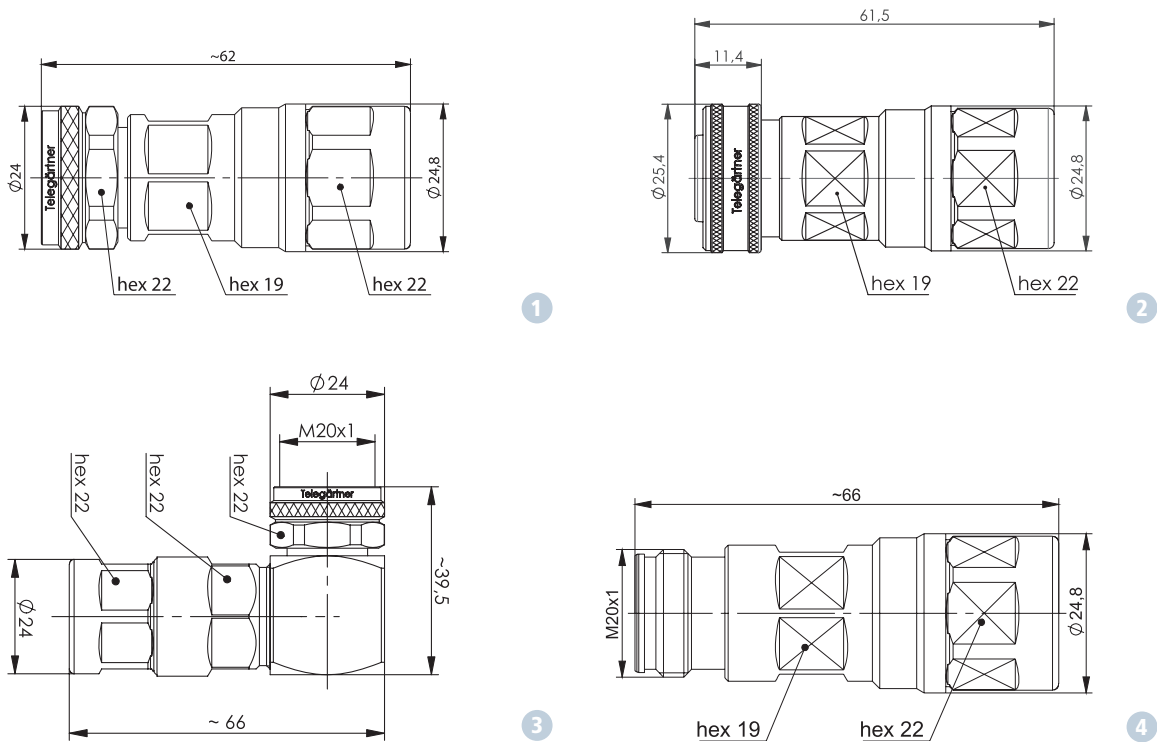


Series	Design	Type	Protection Class	Order no.	Tool		Fig.
					Manual	Electric	
N	Straight plug	SIMFix Pro	IP68	J01020C0141	N00091A0015	N00091B0018	1
N	Angle plug	SIMFix Pro	IP68	J01020B0044	N00091A0015	N00091B0018	2
N	Straight jack	SIMFix Pro	IP68	J01021C0174	N00091A0015	N00091B0018	3

4.3-10 Connectors for 1/2" Corrugated Cables



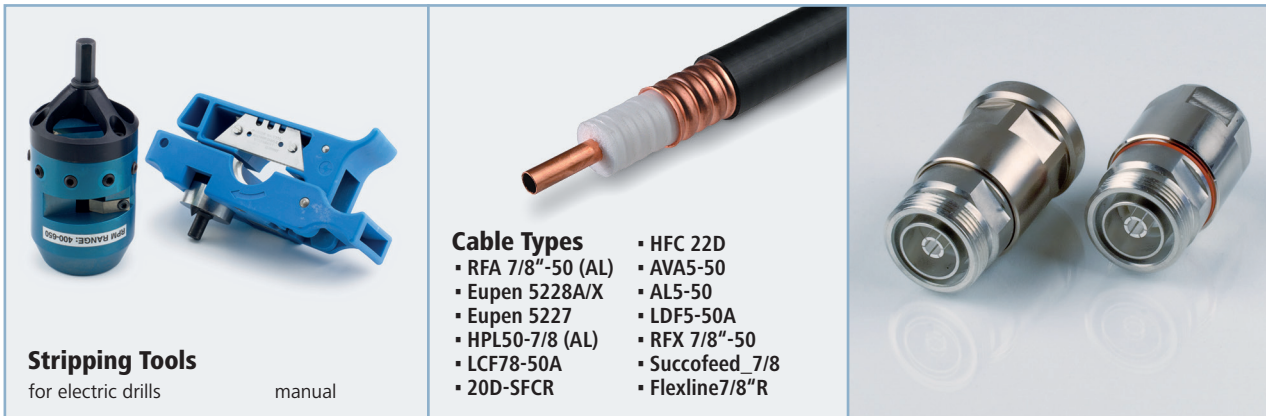
4.3-10 Series



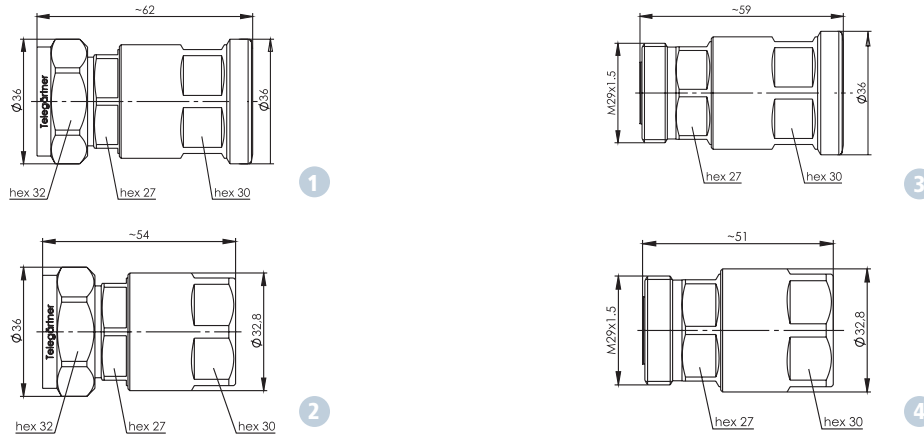
Series	Design	Type	Protection Class	Order no.	Tool		Fig.
					Manual	Electric	
4.3-10	Straight plug, screw	SIMFix Pro	IP68	J01440A0007	N00091A0015	N00091B0018	1
4.3-10	Straight plug, push-pull	SIMFix Pro	IP68	J01440A3007	N00091A0015	N00091B0018	2
4.3-10	Angle plug, screw	SIMFix Pro	IP68	J01440A0014	N00091A0015	N00091B0018	3
4.3-10	Straight jack	SIMFix Pro	IP68	J01441A0008	N00091A0015	N00091B0018	4

7-16 & N Connectors for 7/8" Corrugated Cables

7/8"

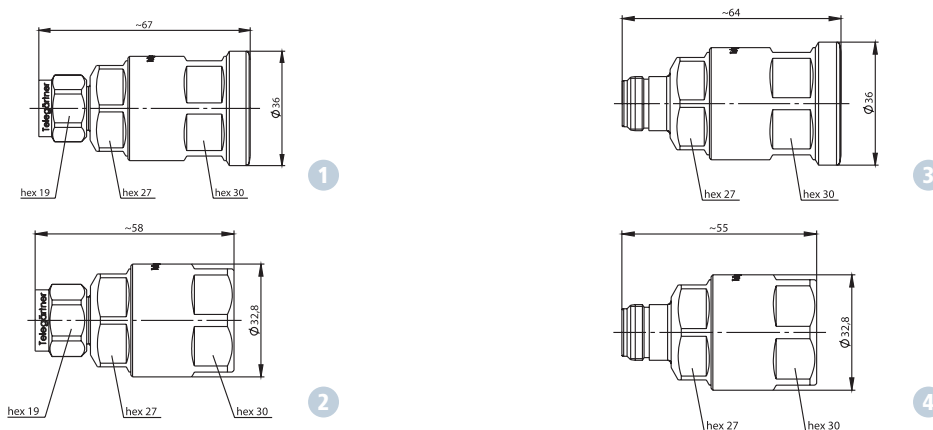


7-16 Series






Series	Design	Type	Protection Class	Order no.	Tool		Fig.
					Manual	Electric	
7-16	Straight plug	SIMFix CA-Pro	IP68	J01120A0104	N00091A0022	N00091B0019	1
7-16	Straight plug	SIMFix CA-ST	IP67	J01120B0104	N00091A0022	N00091B0019	2
7-16	Straight jack	SIMFix CA-Pro	IP68	J01121A0180	N00091A0022	N00091B0019	3
7-16	Straight jack	SIMFix CA-ST	IP67	J01121B0180	N00091A0022	N00091B0019	4

N Series

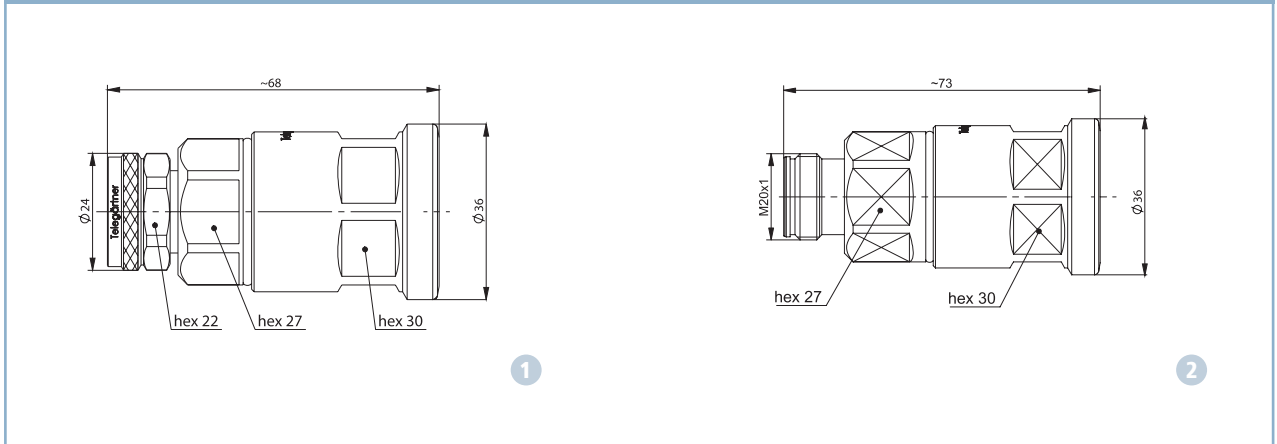


Series	Design	Type	Protection Class	Order no.	Tool		Fig.
					Manual	Electric	
N	Straight plug	SIMFix CA-Pro	IP68	J01020A0153	N00091A0022	N00091B0019	1
N	Straight plug	SIMFix CA-ST	IP67	J01020B0153	N00091A0022	N00091B0019	2
N	Straight jack	SIMFix CA-Pro	IP68	J01021A0201	N00091A0022	N00091B0019	3
N	Straight jack	SIMFix CA-ST	IP67	J01021B0201	N00091A0022	N00091B0019	4

4.3-10 Connectors for 7/8" Corrugated Cables

 <p>Stripping Tools for electric drills</p> <p style="text-align: right;">manual</p>	 <p>Cable Types</p> <ul style="list-style-type: none"> • RFA 7/8"-50 (AL) • Eupen 5228A/X • Eupen 5227 • HPL50-7/8 (AL) • LCF78-50A • 20D-SFCR • HFC 22D • AVA5-50 • AL5-50 • LDF5-50A • RFX 7/8"-50 • Succofeed_7/8 • Flexline7/8"R 	
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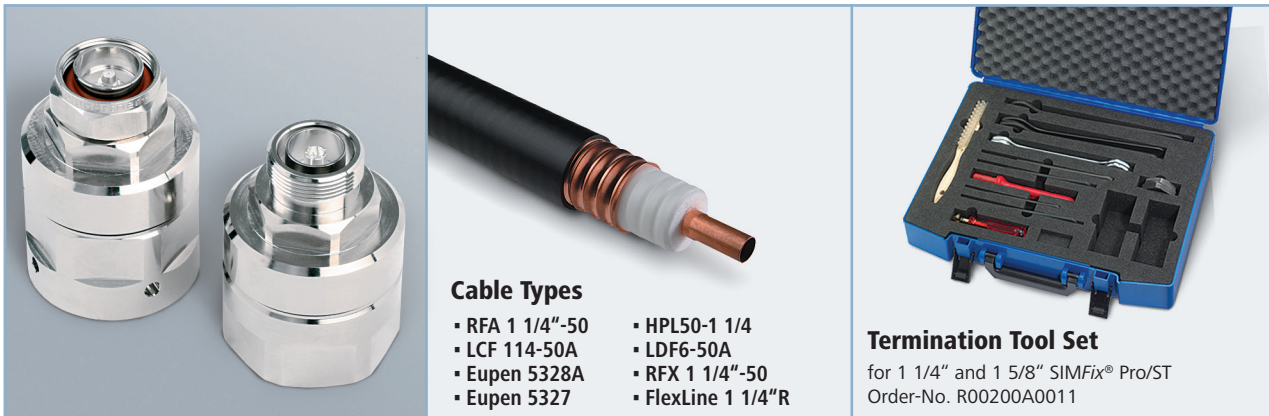
4.3-10 Series



Series	Design	Type	Protection Class	Order no.	Tool		Fig.
					Manual	Electric	
4.3-10	Straight plug, screw	SIMFix CA-Pro	IP68	J01440A0008	N00091A0022	N00091B0019	1
4.3-10	Straight jack	SIMFix CA-Pro	IP68	J01441A0009	N00091A0022	N00091B0019	2

7-16 & N Connectors for 1 1/4" Corrugated Cables

1 1/4"



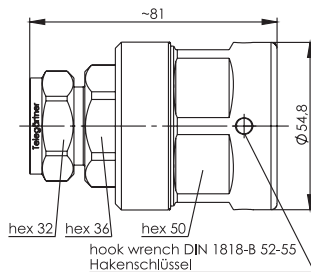
Cable Types

- RFA 1 1/4"-50
- LCF 114-50A
- Eupen 5328A
- Eupen 5327
- HPL50-1 1/4
- LDF6-50A
- RFX 1 1/4"-50
- FlexLine 1 1/4"R

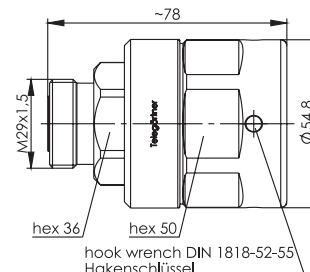
Termination Tool Set

for 1 1/4" and 1 5/8" SIMFix® Pro/ST
Order-No. R00200A0011

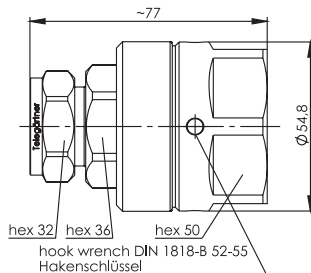
7-16 Series



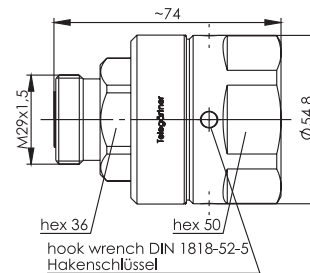
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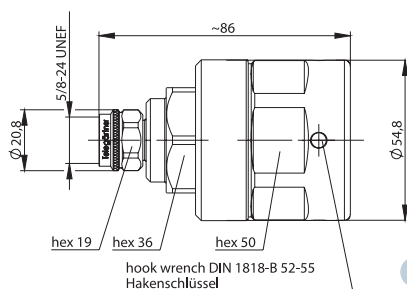
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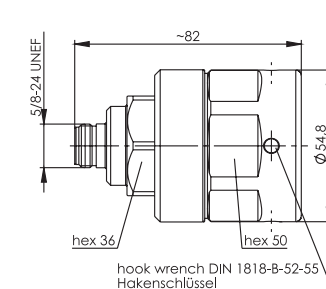
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Series	Design	Type	Protection Class	Order no.	Tool	Fig.
7-16	Straight plug	SIMFix Pro	IP68	J01120G0087	R00200A0011	1
7-16	Straight plug	SIMFix ST	IP67	J01120H0087	R00200A0011	2
7-16	Straight jack	SIMFix Pro	IP68	J01121G0138	R00200A0011	3
7-16	Straight jack	SIMFix ST	IP67	J01121H0138	R00200A0011	4

N Series



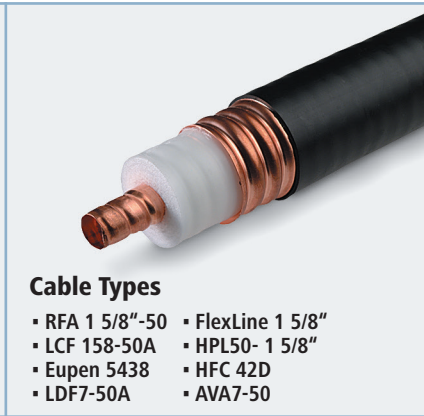
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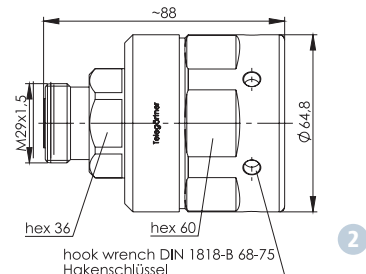
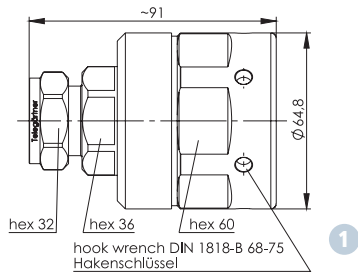
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Series	Design	Type	Protection Class	Order no.	Tool	Fig.
N	Straight plug	SIMFix Pro	IP68	J01020G0143	R00200A0011	1
N	Straight jack	SIMFix Pro	IP68	J01021G0178	R00200A0011	2

15/8" 7-16 & N Connectors for 1 5/8" Corrugated Cables

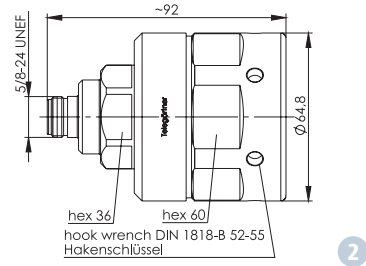
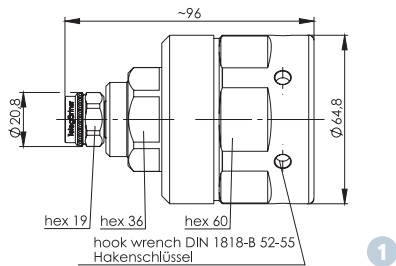


7-16 Series



Series	Design	Type	Protection Class	Order no.	Tool	Fig.
7-16	Straight plug	SIMFix Pro	IP68	J01120G0088	R00200A0011	1
7-16	Straight jack	SIMFix Pro	IP68	J01121G0139	R00200A0011	2

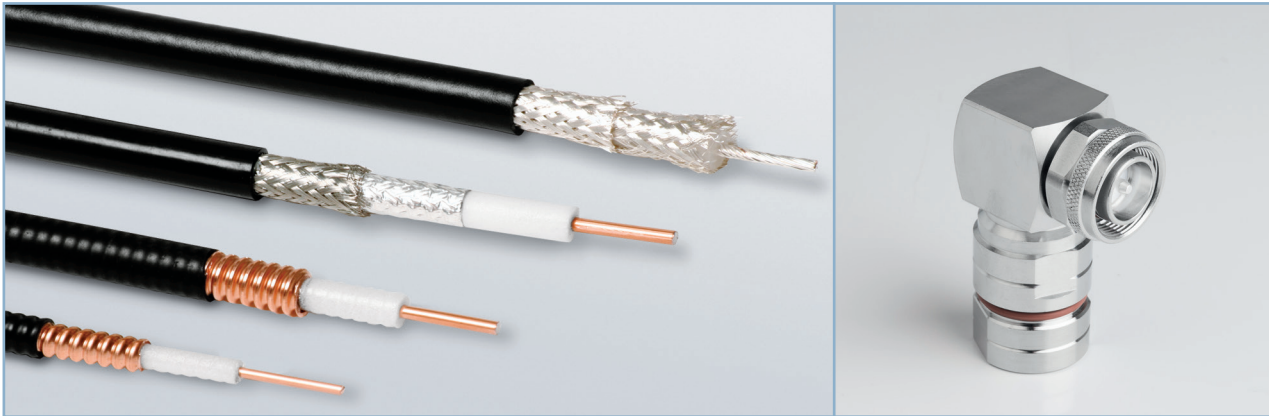
N Series



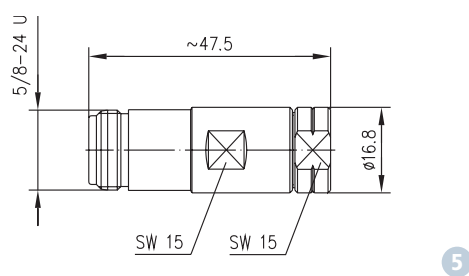
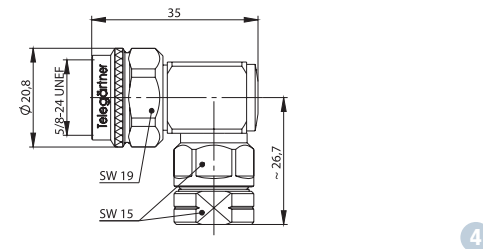
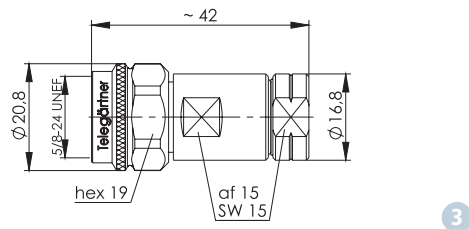
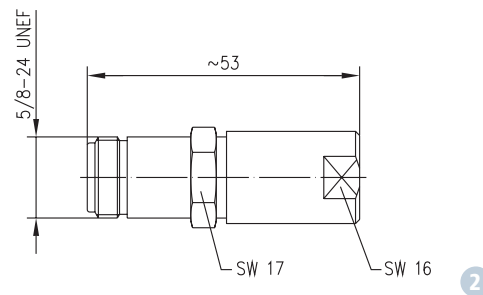
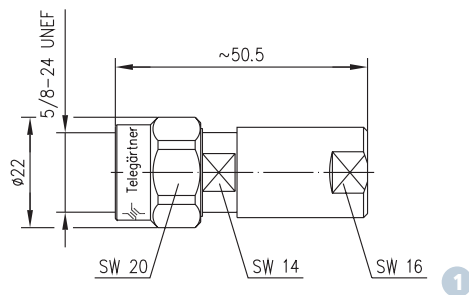
Series	Design	Type	Protection Class	Order no.	Tool	Fig.
N	Straight plug	SIMFix Pro	IP68	J01020G0144	R00200A0011	1
N	Straight jack	SIMFix Pro	IP68	J01021G0179	R00200A0011	2

N Connectors for 1/4" Corrugated Cables

1/4"



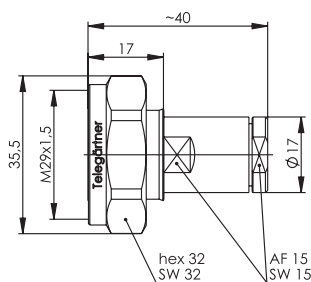
Connectors for 1/4"



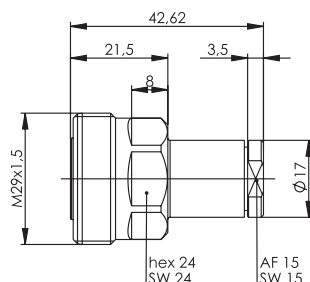
Series	Design	Type	Cable	Order no.	Assembly	Fig.
N	Straight plug	Standard	LCF 14-50J; 5062 1/4"; HPL50-1/4	J01020A0028	B25	1
N	Straight jack	Standard		J01021A0043	B25	2
N	Straight plug	SIMFix	5042 1/4" -Hiflex; FSJ1-50; RFF 1/4"-50, SCF 14-50J	J01020A0150	B85	3
N	Angle plug	Short		J01020C0126	B95	4
N	Straight jack	SIMFix		J01021A0188	B85	5

Connectors for Braided Cables

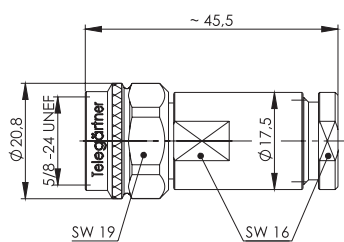
Connectors for Braided Cables



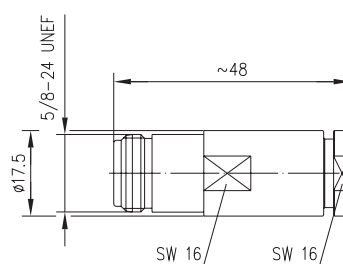
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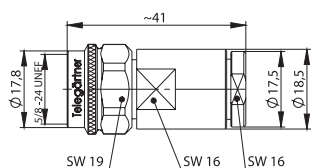
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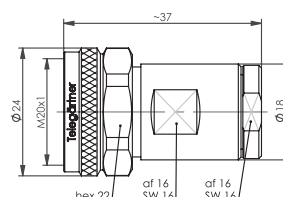
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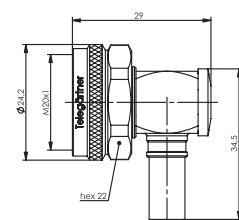
4



5



6



7

Series	Design	Type	Cable	Order no.	Assembly	Fig.
7-16	Straight plug	Solder/Clamp	RG213; RG214;	J01120A0101	B88	1
7-16	Straight jack	Solder/Clamp	G37 (2.7/7.25); G42 (2.7/7.1)	J01121A0177	B88	2
7-16	Straight plug	Clamp/Clamp	G37 (2.7/7.25); G42 (2.7/7.1)	J01120A0103	B87	1
N	Straight plug	Solder/Clamp	RG213; RG214	J01020I1070	B01	3
N	Straight jack	Solder/Clamp		J01021H1076	B04	4
N	Straight plug	Solder/Clamp	G37 (2.7/7.25); G42 (2.7/7.1)	J01020A0149	B82	5
N	Straight plug	Clamp/Clamp		J01020A0156	B87	5
4.3-10	Straight plug, screw	Clamp/Clamp	LMR-400; Low Loss 7810A; 9913 (F);	J01440A0011	B87	6
4.3-10	Straight plug, push-pull	Clamp/Clamp	2.7/7.3 (AF/CF), Speedfoam 400 HFJ; C2FCP; CNT-400; EC 400; HPF 400; MRC 400 AFB; RF 400 TT; TZC 500 32; WBC-400; WCX400; Aircom Plus; 2.6/7.3 AF; 213RT5; 9914; H 1000; H 2000; RT 50/20	J01440A3011	B87	6
4.3-10	Angle plug, push pull	Solder/Crimp	G37 (2.7/7.25); G42 (2.7/7.1) G55 (2.7/7.25 FLEX)	J01440A3015	B4012	7

Solder/Clamp: inner conductor: solder; outer conductor: clamp

Clamp/Clamp: inner conductor: spring; outer conductor: clamp (field; mount type)

Connectors Overview

4.3-10 Connectors Overview

Ø	Cable	Cable Type	Design	Order no.	Type	IP Class	Weight
1/2" Flex	1/2"-Hiflex Eupen, FSJ4-50B FlexLine 1/2"S, HFSC 12D LS, HPL 50-1/2 SF, RFF 1/2"-50, SCF 12-50 J RFS	J	Straight plug, screw	J01440A0005	SIMFix Pro	IP68	135 g
			Straight plug, push-pull	J01440A3005	SIMFix Pro	IP68	135 g
			Angle plug, screw	J01440A0013	SIMFix Pro	IP68	210 g
			Straight jack	J01441A0010	SIMFix Pro	IP68	145 g
1/2"	RFA 1/2"-50, LCF 50A, 5128 1/2"-LD Eupen, SUCOFEED_1/2 HPL50-1/2, Flexline 1/2" R, HFC 12D LS, RFX 1/2"-50	F/X	Straight plug, screw	J01440A0007	SlmFix Pro	IP68	100 g
			Straight plug, push-pull	J01440A3007	SIMFix Pro	IP68	100 g
			Angle plug, screw	J01440A0014	SIMFix Pro	IP68	220 g
			Straight jack	J01441A0008	SIMFix Pro	IP68	90 g
7/8"	RFA 7/8"-50 (AL), RFX 7/8"-50, 5228A 7/8"-LD, 5228 7/8"-LD, HPL50-7/8 (AL), LCF78-50JA, HFC 22D, FlexLine 7/8"R, AVA5-50, LDF5-50A, AL5-50, Succofeed_7/8, VXL5-50	F/X	Straight plug, screw	J01440A0008	SimFix CA-Pro	IP68	155 g
			Straight jack	J01441A0009	SIMFix CA-Pro	IP68	140 g

7-16 (DIN) Connectors Overview

Ø	Cable	Cable Type	Design	Order no.	Type	IP Class	Weight
~10 mm	RG213, RG214 G37(2.7/7.25), G42(2.7/7.1) G37(2.7/7.25), G42(2.7/7.1)	B	Straight plug	J01120A0101	Solder/Clamp	IP67	80 g
			Straight jack	J01121A0177	Solder/Clamp	IP67	87 g
		B	Straight plug	J01120A0103	Clamp/Clamp	IP67	80 g
1/2" Flex	RFF 1/2"-50; FSJ4-50B; SCF 12-50J; Flexline 1/2"S Eupen 5092; HPL50-1/2-SF HFSC 12D	J	Straight plug	J01120B0077	SIMFix Pro	IP68	170 g
			Straight plug	J01120B0073	SIMFix ST	IP67	170 g
			Angle plug	J01120A0094	SIMFix Pro	IP68	250 g
			Straight jack	J01121B0120	SIMFix Pro	IP68	160 g
			Straight jack	J01121B0114	SIMFix ST	IP67	160 g
1/2"	RFA 1/2"-50, LCF 50A, 5128 1/2"-LD Eupen, SUCOFEED_1/2 HPL50-1/2, Flexline 1/2" R, HFC 12D LS, RFX 1/2"-50	F/X	Straight plug	J01120G0085	SIMFix Pro	IP68	120 g
			Angle plug	J01120B0026	SIMFix Pro	IP68	230 g
			Straight jack	J01121G0136	SIMFix Pro	IP68	110 g
7/8"	RFA 7/8"-50 (AL), RFX 7/8"-50, 5228A 7/8"-LD, 5228 7/8"-LD, HPL50-7/8 (AL), LCF78-50JA, HFC 22D, FlexLine 7/8"R, AVA5-50, LDF5-50A, AL5-50, Succofeed_7/8, VXL5-50	F/X	Straight plug	J01120A0104	SIMFix CA Pro	IP68	160 g
			Straight plug	J01120B0104	SIMFix CA ST	IP67	150 g
			Straight jack	J01121A0180	SIMFix CA Pro	IP68	155 g
			Straight jack*	J01121B0180	SIMFix CA ST	IP67	145 g
1 1/4"	RFA 1 1/4"-50; LCFS114-50JA; 5328 A 1 1/4"-GL; LDF6-50; RFX 1 1/4"-50; 5328A 1 1/4"-GL; FlexLine 1 1/4"R, SUCOFEED_1_1/4	F	Straight plug	J01120G0087	SIMFix Pro	IP68	540 g
			Straight plug	J01120H0087	SIMFix ST	IP67	530 g
			Straight jack	J01121G0138	SIMFix Pro	IP68	530 g
			Straight jack	J01121H0138	SIMFix ST	IP67	520 g
1 5/8"	RFA 1 5/8"-50; LCF 158-50JA; 5438A 1 5/8"-LD; LDF7-50A; HPL50-1-5/8; HFC 42D; AVA7-50; FlexLine 1 5/8"R; SUCOFEED_1_5/8	F	Straight plug	J01120G0088	SIMFix Pro	IP68	700 g
			Straight jack	J01121G0139	SIMFix Pro	IP68	690 g



Packaging:

Individually packed in PE foil.

B: Braided Cable

F: Feeder Cable (with annular corrugated outer conductor)

J: Jumper Cable (with spiral corrugated outer conductor)

X: Radiating Cable

Connectors Overview

N Connectors Overview

Ø	Cable	Cable Type	Design	Order no.	Type	IP Class	Weight
~10 mm	RG213; RG214	B	Straight plug	J01020I1070	Solder/Clamp	IP67	57 g
			Straight jack	J01021H1076	Solder/Clamp	IP67	53 g
	G37 (2.7/7.25); G42 (2.7/7.1)	B	Straight plug	J01020A0149	Solder/Clamp	IP67	55 g
			Straight plug	J01020A0156	Clamp/Clamp	IP67	55 g
1/4"	CF 14-50J; Eupen 5062; HPL50-1/4	F	Straight plug	J01020A0028	Standard	IP67	70 g
			Straight jack	J01021A0043	Standard	IP67	70 g
1/4"	FSJ1-50; RFF 1/4" Cu2Y-50; SCF 14-50; Eupen 5042	J	Straight plug	J01020A0150	SIMFix	IP67	60 g
			Angle plug	J01020C0126	Short	IP54	70 g
			Straight jack	J01021A0188	SIMFix	IP67	65 g
1/2" Flex	RFF 1/2"-50; FSJ4-50B; SCF 12-50J; Flexline 1/2"S Eupen 5092; HPL50-1/2-SF HFSC 12D	J	Straight plug	J01020C0105	SIMFix Pro	IP68	170 g
			Straight plug	J01020B0098	SIMFix ST	IP67	170 g
			Angle plug	J01020A0147	SIMFix Pro	IP68	180 g
			Straight jack	J01021C0163	SIMFix Pro	IP68	160 g
			Straight jack	J01021B0156	SIMFix ST	IP67	160 g
1/2"	1/2"-LD Eupen, SUCCOFEED_1/2 HPL50-1/2, Flexline 1/2" R, HFC 12D LS, RFX 1/2"-50	F/X	Straight plug	J01020C0141	SIMFix Pro	IP68	120 g
			Angle plug	J01020B0044	SIMFix Pro	IP68	165 g
			Straight jack	J01021C0174	SIMFix Pro	IP68	120 g
7/8"	RFA 7/8"-50 (AL), RFX 7/8"-50, 5228A 7/8"-LD, 5228 7/8"-LD, HPL50-7/8 (AL), LCF78-50JA, HFC 22D, FlexLine 7/8"R, AVA5-50, LDF5-50A, AL5-50, Succofeed_7/8, VXL5-50	F	Straight plug	J01020A0153	SIMFix CA Pro	IP68	145 g
			Straight plug	J01020B0153	SIMFix CA ST	IP67	130 g
			Straight jack	J01021A0201	SIMFix CA Pro	IP68	140 g
			Straight jack	J01021B0201	SIMFix CA ST	IP67	125 g
1 1/4"	RFA 1 1/4"-50; LCFS114-50JA; 5328 A 1 1/4"-GL; LDF6-50; RFX 1 1/4"-50; 5328A 1 1/4"-GL; FlexLine 1 1/4"R, SUCCOFEED_1_1/4	F	Straight plug	J01020G0143	SIMFix Pro	IP68	710 g
			Straight jack	J01021G0178	SIMFix Pro	IP68	700 g
1 5/8"	RFA 1 5/8"-50; LCF 158-50JA; 5438A 1 5/8"-LD; LDF7-50A; AVA7-50; FlexLine 1 5/8"R; SUCCOFEED_1_5/8	F	Straight plug	J01020G0144	SIMFix Pro	IP68	800 g
			Straight jack	J01021G0179	SIMFix Pro	IP68	790 g


Packaging:

Individually packed in PE foil.

B: Braided Cable

F: Feeder Cable (with annular corrugated outer conductor)

J: Jumper Cable (with spiral corrugated outer conductor)

X: Radiating Cable



Tools and Accessories

2

Stripping Tools (1/2" and 7/8")

The stripping tools are used for preparing cables for termination with SIMFix® Pro and ST connectors. Both tools come with a flaring tool.

Manual stripping tools:

- Precise cable outer jacket removal
- Precise cutting of outer conductor, dielectric and inner conductor
- Edge forming of the outer conductor
- Removal of burrs on the inner conductor
- Adjusting screw for accommodating cable tolerances
- The tool is supplied with a hardened blade (including spare blade) for prolonged use

Rotating stripping tool for use with an electric power drill

- Exact stripping of cable jacket, outer conductor, dielectric and inner conductor in one step
- Spare blade sets can be ordered separately

Termination Tool Set for SIMFix® Pro/ST 1 1/4" + 1 5/8" Connectors

The tool kit includes tools for preparing the cable and for terminating all SIMFix® Pro 1 1/4" + 1 5/8" connectors made by Telegärtner. Furthermore there are two empty pockets for adding on 1/2" + 7/8" stripping tools.

- Sheath Cutter for 1 1/4" and 1 5/8" corrugated cables
- Sawing Guides 1 1/4", 1 5/8"
- Deburring Tools 1 1/4", 1 5/8"
- Cable knife
- Brush for removing metal shavings
- Spanners for SIMFix® Pro/ST 1/2", 7/8", 1 1/4" and 1 5/8"

Manual stripping tool



Rotation stripping tool



Tools and Accessories

Termination Tool Set

Cable	Type	Order no.
1 1/4" + 1 5/8"	Set in stable case	R00200A0011

Stripping Tools and Spare Blades for Stripping Tools

Cable	Stripping Tools	Connector Type	Series	Order no.
1/2"(Flex)	Manual stripping tool	SIMFix ST	7-16; N; 4.3-10	N00091A0004
	Manual stripping tool	SIMFix Pro*	7-16; N; 4.3-10	N00091A0013
1/2"	Manual stripping tool	SIMFix Pro* + ST	7-16; N; 4.3-10	N00091A0015
	Rotating stripping tool for use with an electric power drill	SIMFix Pro* + ST	7-16; N; 4.3-10	N00091B0018
7/8"	Manual stripping tool	SIMFix Pro + ST	7-16; N; 4.3-10	N00091A0022
	Rotating stripping tool for use with an electric power drill	SIMFix Pro + ST	7-16; N; 4.3-10	N00091B0019
1 1/4" + 1 5/8"	Tool kit	SIMFix Pro + ST	7-16; N	R00200A0011
1/2"(Flex)	Spare blades (2 round, 1 small) for manual stripping tool			N00099A0001
1/2" + 7/8"	Spare blades (4 large, 1 small) for manual stripping tool			N00099A0000
1/2"	Spare blade set rotating stripping tool			N00099A0006
7/8"	Spare blade set rotating stripping tool			N00099A0007

* suitable for straight and angled types

Spanner, Sheath Cutter, Open Ended Wrench

For terminating connectors on 1 1/4" and 1 5/8" corrugated cables (already included in tool kit R00200A0011).



Cable	Spanner and Sheath Cutter	Order no.
1 1/4"	Spanner DIN 1810-B52-55 for SIMFix Pro/ST	N00050A0001
1 1/4"	Sheath Cutter for SIMFix Pro/ST	N00080A0004
1 5/8"	Spanner DIN 1810-B68-75 for SIMFix Pro/ST	N00050A0003
1 5/8"	Sheath Cutter for SIMFix Pro/ST	N00080A0005
1/2"	Double open end wrench AF19/22	N00050A0011
1/2"+7/8"	Double open end wrench AF22/27	N00050A0012
7/8", 1 1/4", 1 5/8"	Double open end wrench AF32/36	N00050A0013

Sawing Guide, Flare and Deburring Tool

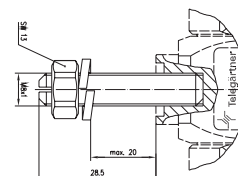
For terminating connectors on 1 1/4" and 1 5/8" corrugated cables (already included in tool kit R00200A0011).



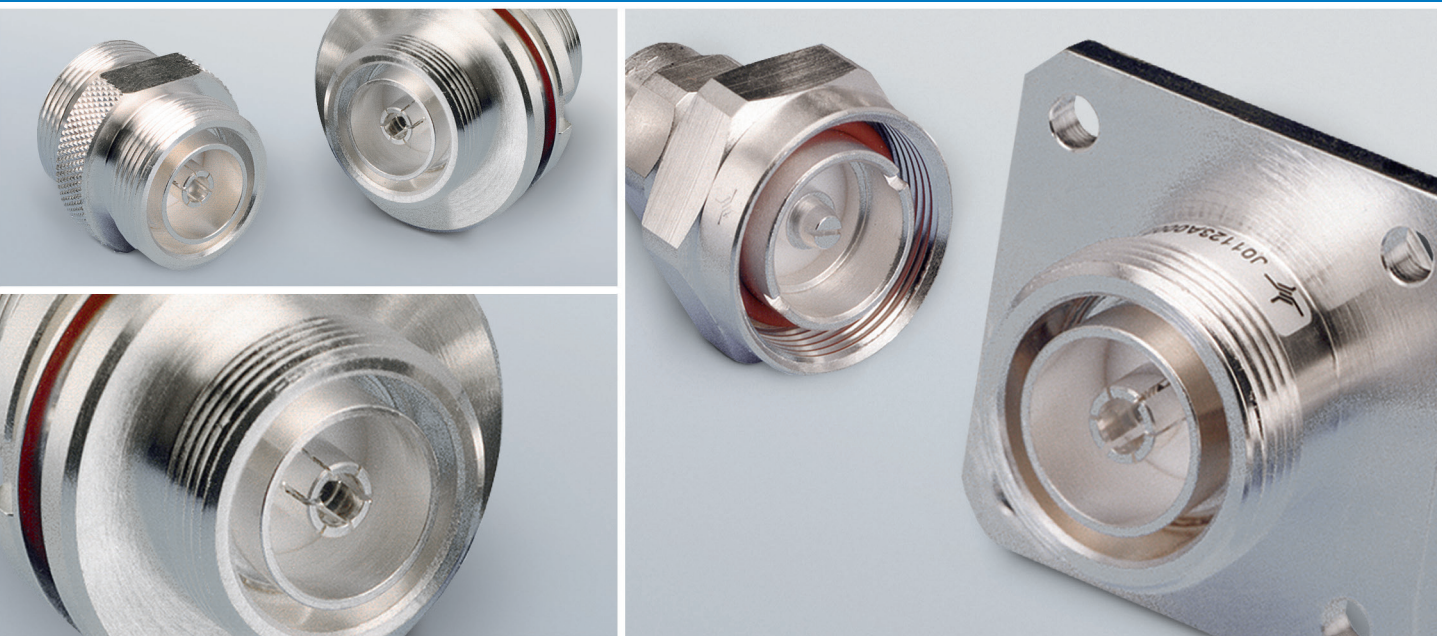
Sawing Guide	Cable	Order no.	Fig.
Sawing Guide for SIMFix Pro/ST 1 1/4"	1 1/4"	N00091A0016	1
Sawing Guide for SIMFix Pro/ST 1 5/8"	1 5/8"	N00091A0017	1
Flare and deburring tool for SIMFix Pro/ST	1 1/4"+1 5/8"	N00099A0005	2

Fixing Kit for $\lambda/4$ Shorting Stubs

For mounting $\lambda/4$ Shorting Stubs on bus bars (earthing). Contents: Bolt, hex., locking nut, lock washer



Fixing kit	Order no.
Mounting kit for $\lambda/4$ Shorting Stubs	H06000A0024



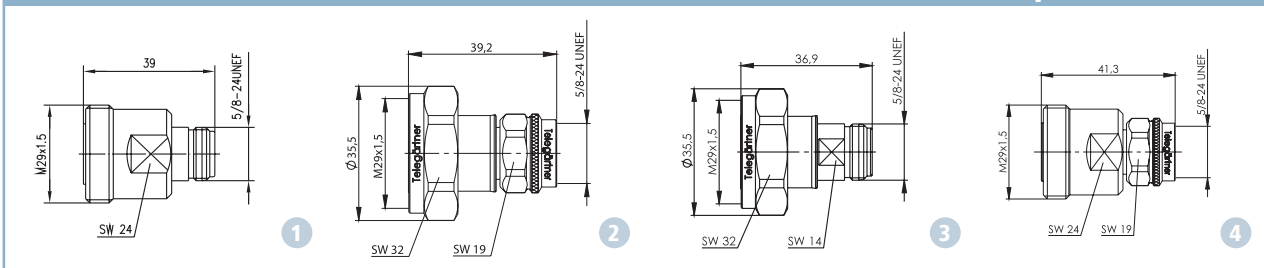
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Adaptors and Dust Caps

The adaptors in the 7-16, N and 4.3-10 series are waterproof and suitable for external use. The connector plug is fitted with a hexagonal nut and should be connected utilizing

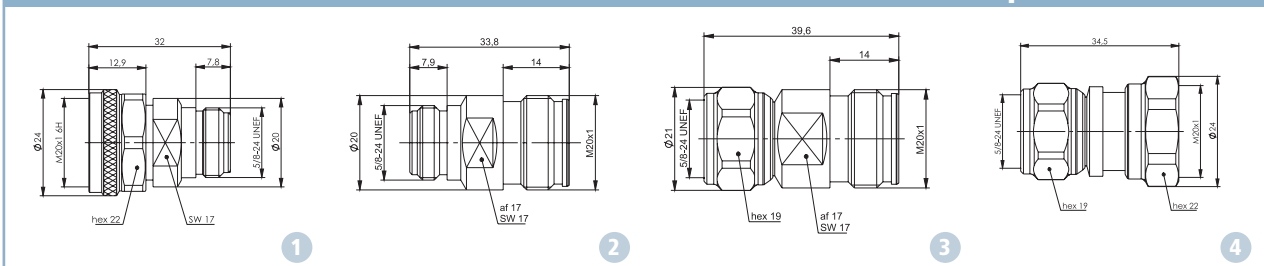
the recommended torque (7-16: 25-35 Nm; N: 4-6 Nm, 4.3-10: 5 Nm). This ensures a lasting connection with low return loss and excellent passive intermodulation (PIM) characteristics.

Inter Series Adaptors 7-16 to N



Series	Design	Order no.	Return Loss	Fig.
7-16 – N	jack-jack	J01122A0008	45 dB/1 GHz; 35 dB/4 GHz; 32 dB/6 GHz	1
7-16 – N	plug-plug	J01122C0009	42 dB/1 GHz; 35 dB/4 GHz; 33 dB/6 GHz	2
7-16 – N	plug-jack	J01122B0010	45 dB/1 GHz; 35 dB/4 GHz; 32 dB/6 GHz	3
7-16 – N	jack-plug	J01122C0011	40 dB/1 GHz; 38 dB/4 GHz; 30 dB/6 GHz	4

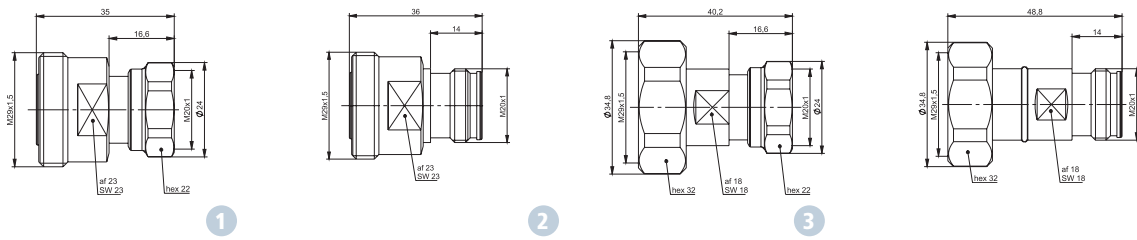
Inter Series Adaptors 4.3-10 to N



Series	Design	Order no.	Return Loss	Fig.
4.3-10 (screw type) – N	plug-jack	J01027A0023	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	1
4.3-10 (push pull type) – N	plug-jack	J01027A0024	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	-
4.3-10 (handscrew type) – N	plug-jack	J01027A0025	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	-
4.3-10 – N	jack-jack	J01027A0026	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	2
4.3-10 – N	jack-plug	J01027A0027	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	3
4.3-10 (screw type) – N	plug-plug	J01027A0028	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	4

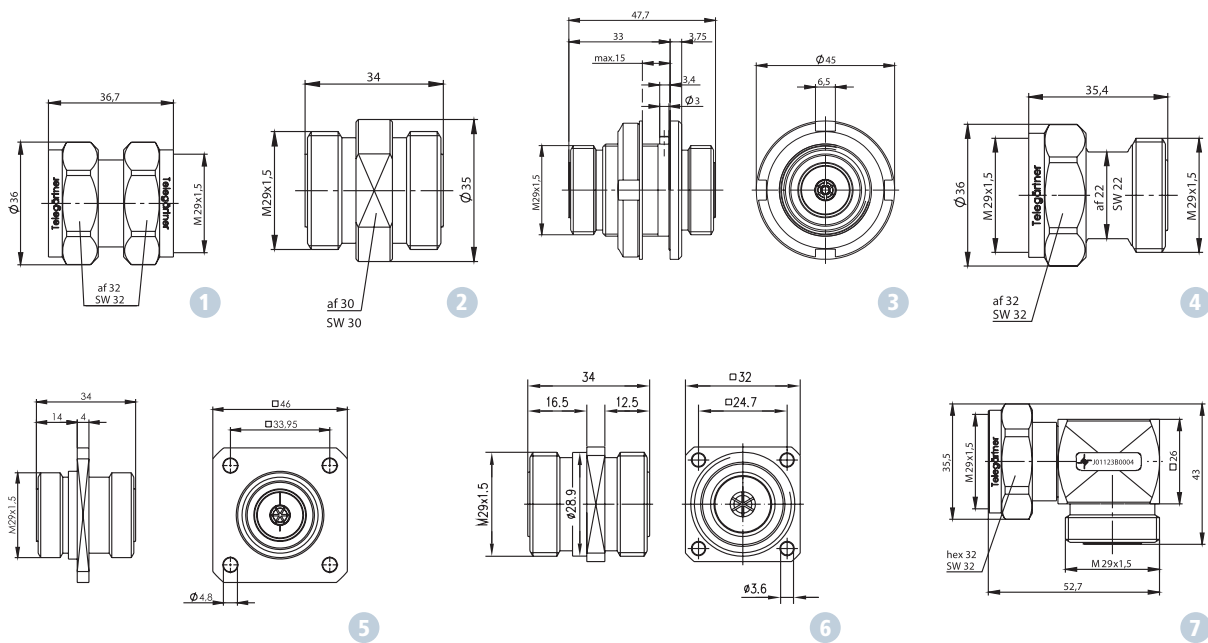
Adaptors and Dust Caps

Inter Series Adaptors 7-16 to 4.3-10



Series	Design	Order no.	Return Loss	Fig.
7-16 – 4.3-10 (screw type)	jack-plug	J01122A0014	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	1
7-16 – 4.3-10	jack-jack	J01122A0015	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	2
7-16 – 4.3-10 (screw type)	plug-plug	J01122A0016	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	3
7-16 – 4.3-10	plug-jack	J01122A0017	40 dB/1 GHz; 35 dB/4 GHz; 28 dB/6 GHz	4

7-16 Adaptors



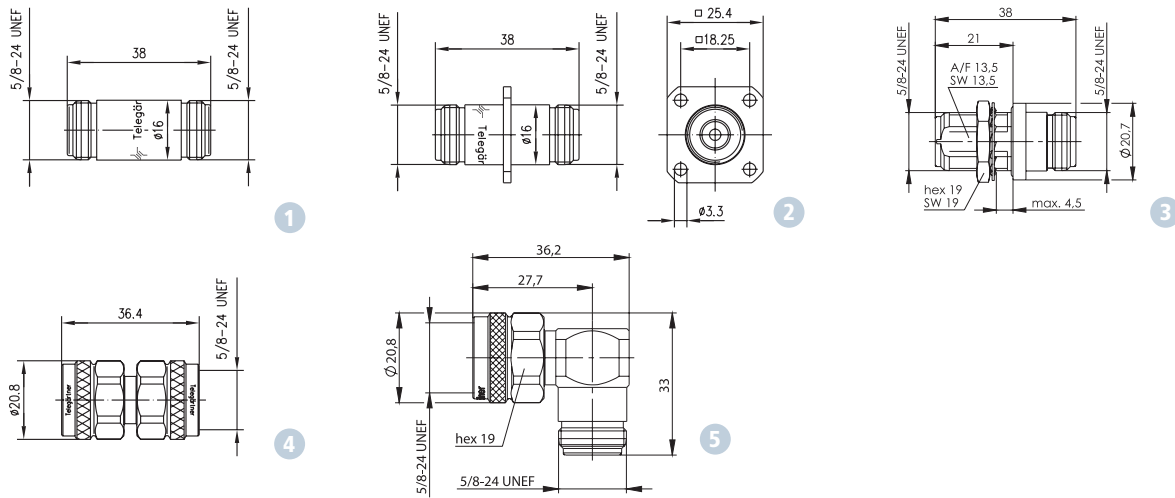
Series	Design	Order no.	Return Loss	Mount. dim.	Fig.
7-16 adaptor	plug-plug	J01123B0000	38 dB/1 GHz; 32 dB/4 GHz		1
7-16 adaptor IEC Type 169-4 IEC-6	jack-jack	J01123B0001	41 dB/1 GHz; 32 dB/4 GHz		2
7-16 adaptor IEC Type 169-4 IEC-8	jack-jack, bulkhead	J01123C0003	44 dB/1 GHz; 28 dB/6 GHz	Z61	3
7-16 adaptor	plug-jack	J01123B0006	43 dB/1 GHz; 29 dB/6 GHz		4
7-16 adaptor with flange IEC Type 169-4 IEC-7	jack-jack, flange	J01123A0002	41 dB/1 GHz; 32 dB/4 GHz	Z60	5
7-16 adaptor with flange	jack-jack	J01123A0007	41 dB/1 GHz; 32 dB/4 GHz	Z12	6
7-16 angle adaptor	plug-jack	J01123B0004	42 dB/1 GHz; 28 dB/6 GHz		7



Packaging: Individually packed in PE foil. Mating-face of 7-16 jacks is protected by a PE-cap.

Adaptors and Dust Caps

N Adaptors

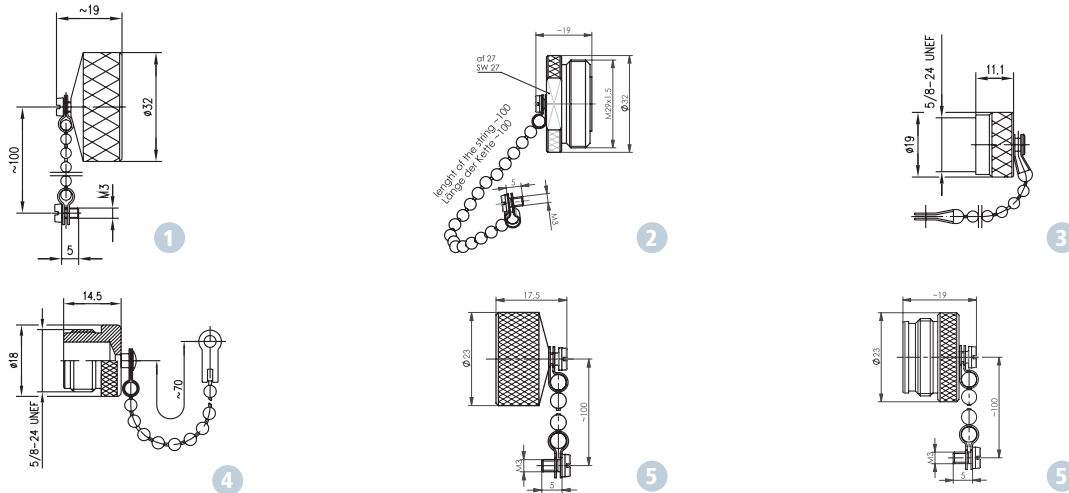


Series	Design	Order no.	Return Loss	Mount. dim.	Fig.
N adaptor	jack-jack	J01024A0004	40 dB/1 GHz; 35 dB/4 GHz		1
N adaptor with flange	jack-jack, flange	J01024A0005	40 dB/1 GHz; 35 dB/4 GHz	Z08	2
N adaptor	jack-jack, bulkhead	J01024A0006	40 dB/1 GHz; 35 dB/4 GHz	Z10	3
N adaptor	plug-plug	J01024J1094	43 dB/1 GHz; 32 dB/4 GHz		4
N angle adaptor	plug-jack	J01024J1096	31 dB/1 GHz; 26 dB/4 GHz		5

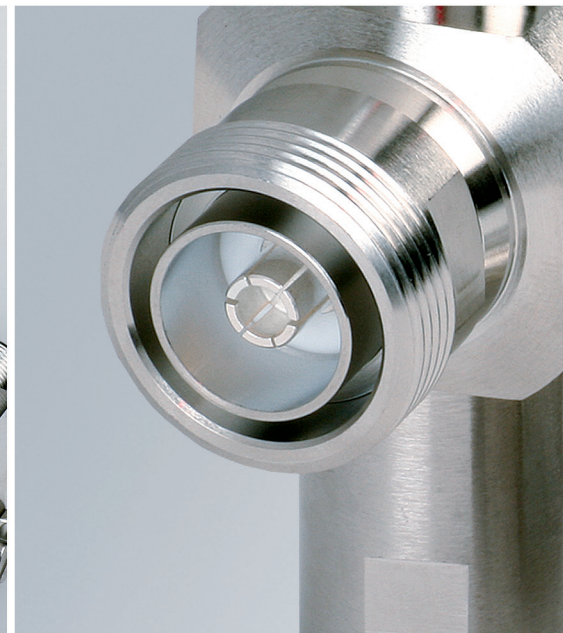


Packaging: Individually packed in PE foil. Mating-face of 7-16 jacks is protected by a PE-cap.

Dust Caps



Series	Design	Order no.	IP Class	Fig.
7-16	Dust cap for jacks, with chain	H00070A0000	IP68	1
7-16	Dust cap for jacks	H00070A0002	IP68	-
7-16	Dust cap for plugs, with chain	H00070B0001	IP68	2
N	Dust cap for jacks, with chain	H00010A1122	IP67	3
N	Dust cap for jacks	H00010A1121	IP68	-
N	Dust cap for plugs, with chain	H00010A0000	IP54	4
4.3-10	Dust cap for jacks, with chain	H00080A0000	IP68	5
4.3-10	Dust cap for jacks	H00080B0000	IP68	-
4.3-10	Dust cap for plugs, with chain	H00080A0001	IP68	6
4.3-10	Dust cap for plugs	H00080B0001	IP68	-



4

EMP Protection

Surge Suppressors

To protect against EMP, Electromagnetic Pulse, caused by lightning strikes in the direct vicinity of base stations, Telegärtner has developed a range of surge suppressors with 7-16- and N-Series interfaces.

There are two different functional designs:

- Quarter Wavelength Shorting Stub – with or without DC pass
- Surge suppressors with Gas Discharge Tube

$\lambda/4$ Shorting Stub Protectors

These surge suppressors act like narrow bandpass filters. Only a narrow bandwidth is allowed to pass; other frequencies are shorted and discharged to ground. The design of these surge suppressors involves a direct and solid short-circuit between the inner and outer conductor of the coaxial device.

This short-circuit path, in the form of a coaxial line and of a precisely defined length, is designed to have an electrical length equivalent to one quarter wavelength ($\lambda/4$) of the signal frequency to be transmitted. As an alternating voltage of the correct frequency passes along the quarter-wavelength shorting stub it experiences a 90° phase angle rotation, is then reflected totally at the short (180° phase angle rotation) and finally travels back along the quarter wavelength stub (a further phase angle rotation of 90°). This represents a total phase angle rotation of 360° . The reflected signal and the incident signal are in phase and the operating signal does not see the short. It is, therefore, not affected by it. However, if an alternating voltage of a different frequency is present, then these special factors are not given and the energy is short-circuited (discharged to ground).

λ/4 Shorting Stubs

λ/4 Shorting Stub Protectors with DC Pass

DC pass types are λ/4 stub protectors, which, as is the case with gas capsule protection devices, allow a DC current to pass in order to feed, for example, mast top antennas (MTAs).

The advantage of these new λ/4 stub protectors, as opposed to the gas discharge types, is that they retain the excellent transmission and passive intermodulation (PIM) characteristics of the λ/4 shorting stub protectors.

Advantages

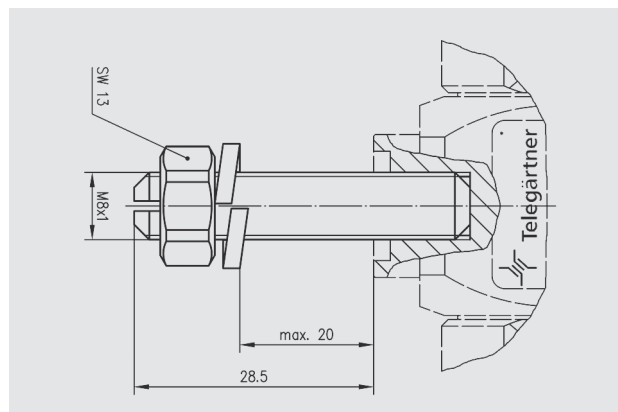
- Very high discharge currents are possible
- Very good transmission and intermodulation characteristics
- Complete discharge of the excess voltage
- Automatically operational again after the surcharge subsides, no special precautions necessary to protect the DC supply current
- Matching of the frequency range up to a range of over 10 GHz possible
- Maintenance-free and waterproof
- Since only the desired frequency range is allowed to pass, there is an additional, useful filter effect (excluding odd multiples of the quarter wavelength frequency)

Applications

λ/4 stub protectors are used particularly in transmission paths between antenna and base station, as well as where transmit and receive signals use a common cable, involving high power signal levels.

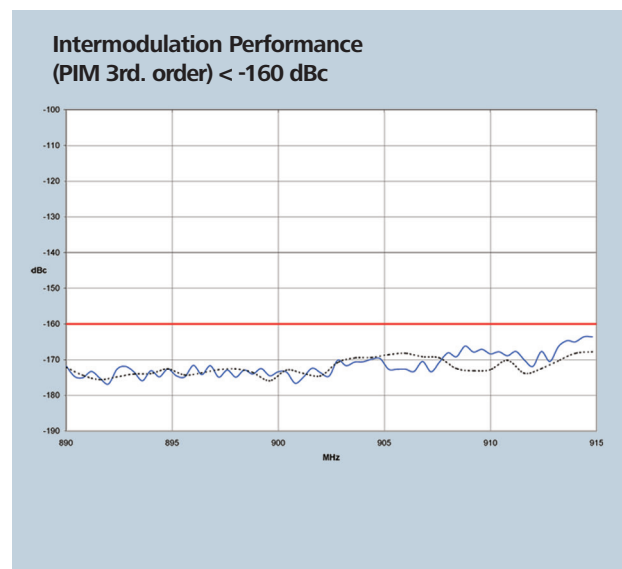
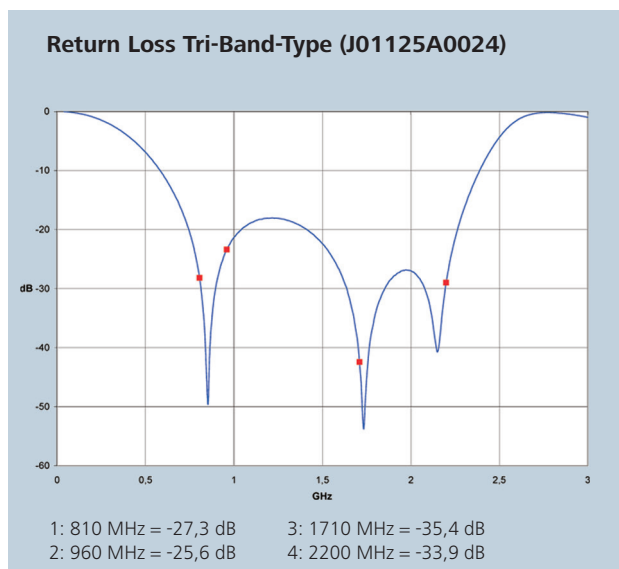
In principle, the use of λ/4 shorting stubs in the receive path can also be recommended. In the event of a pre-amplifier being used at the Rx end, then it would be necessary to use the new special λ/4 shorting stub protector with DC pass.

Accessory: Fixing Kit



Fixing Kit Order Number: H06000A0024

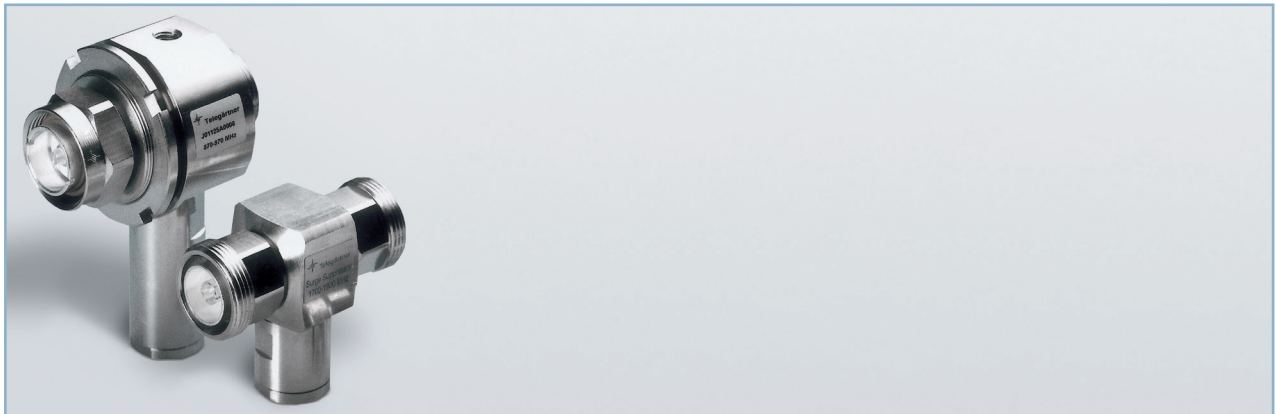
Technical Data



$\lambda/4$ Shorting Stubs

Technical Data

Mechanical Characteristics		Electrical Characteristics	
Materials		VSWR	< 1.15
Spring contact	CuBe2	Insertion loss	< 0.1 dB
Other metal parts	CuZn39Pb3	Intermodulation	
Insulators	PTFE	Intermodulation product 3rd Order (typical) at 800-1000 MHz	-160 dBc
Gaskets	Silicon	2 unmodulated test-signals at 43dBm (20W) at 1600-2000 MHz	-155 dBc
Finish		Max. Power at 2200 MHz	500 W
Spring contact	Cu2Ag5	Max. Discharge Current	
Other metal parts	CuSnZn3	Standard Types of quarterwave shorting stubs	100 kA (8/50 μ s test impulses)
Coupling torque 7-16 Series	25-35 Nm	Types with DC pass	30 kA (8/50 μ s test impulses, multiple)
Coupling torque N Series	4-6 Nm	Maximum Working Voltage for DC pass types	
Durability (mating cycles)	> 500	85 V	
Thermal and Climatic Characteristics			
Category to DIN IEC 68 Part 1			
N Series	40/155/21		
7-16 Series	55/155/56		
Protection level to DIN 40050/IEC 529	IP67		



$\lambda/4$ Shorting Stub Types

Type	Frequency range (MHz)			Fig
	380-512	678-2700	806-960 / 1710-2200	
7-16 m-m			J01125A0022 ⁽²⁾	1
7-16 f-f	J01125A0040 ⁽¹⁾		J01125A0023 ⁽²⁾	2
7-16 m-f	J01125A0039 ⁽¹⁾		J01125A0024 ⁽²⁾	3
7-16 m-f (bulkhead)			J01125B0031 ⁽³⁾	4
7-16 m-m DC pass			J01125A0028	-
7-16 f-f DC-Pass			J01125A0029	-
7-16 f-f bulkhead		J01125A0050		5
7-16 m-f DC pass		J01125A0049	J01125B0030	6
N f-f bulkhead	J01028A0053 ⁽¹⁾			7

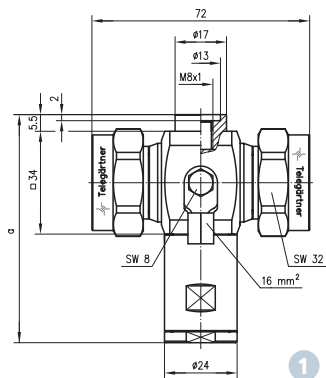


Dimensions (compare to drawings)

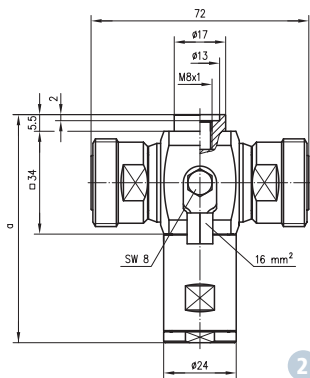
- 1) Dimension a=98 mm
- 2) Dimension a=71-76 mm
- 3) Dimension a=79 mm

λ/4 Shorting Stubs

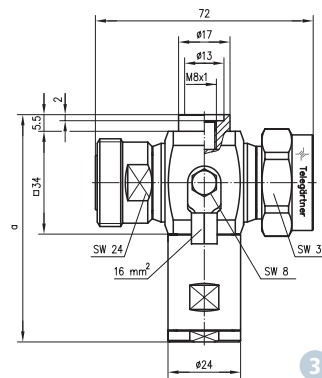
λ/4 Shorting Stub Types



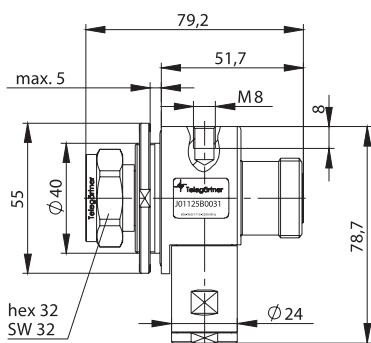
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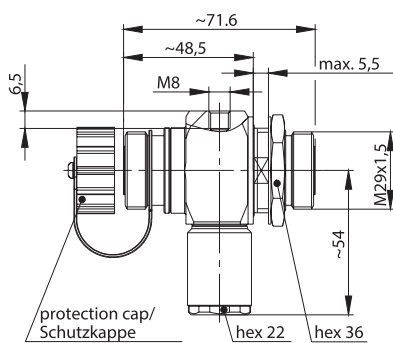
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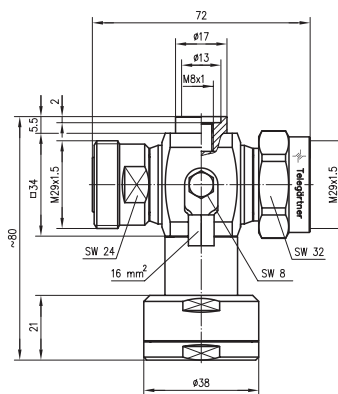
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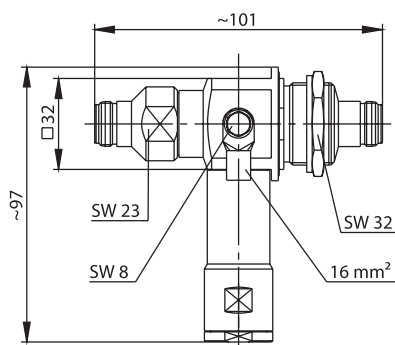
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6



7

Surge Suppressors with Gas Discharge Tube (GDT)

Voltage Surge Protection with Gas Discharge Tube

Essentially the method of operation of this device can be likened to an electrical switch which, when a certain voltage (d.c. sparkover voltage) is reached, switches the inner conductor to ground.

The design of this device consists of a inner gas discharge tube installed directly between the inner and outer conductors of a coaxial line. When a higher voltage than the impulse sparkover voltage (overvoltage) appears on the line, the gas discharge tube will fire and, depending on the prevalent energy, a glow discharge of between 75-90 V (current in milliampere range) or ionisation with an arc voltage of 10-20 V (currents ranging from amps to kiloamps) takes place. When the energy subsides (is converted to heat), the discharge extinguishes itself automatically. After a cooling-down period of 30 seconds, the gas discharge tube is fully operational again. After several very high discharge currents occur within a few seconds of each other, the functionality of the device may be impaired. It is recommended, therefore, that the gas capsules are replaced at certain intervals.

Among the GDT Surge Suppressors there are 2 product lines available:

G27-Series

For frequencies up to **2.7 GHz** and a maximum power of 300 W. The maximum discharge current is 40 KA (8/20 µs). The gas discharge tube can be replaced.

G6-Series

For frequencies up to **6 GHz** and a maximum power of 25 W. The maximum discharge current is 10 kA (8/20 µs).

Advantages

- Broad-band applications
- Transmission of DC voltages possible, e.g. remote feeding of antenna amplifiers over the coaxial cable
- Maximum impulse discharge current up to 40 KA
- Different variants available from 75 to 1400 V
- Installation in a waterproof unit

Applications

The main usage of the surge suppressor with gas discharge tube is between the antenna and the base station. For high power signal transmission lines, $\lambda/4$ surge arrestors are recommended, as the non-linear characteristics of the gas cartridge can produce inter-modulation products.

Selection of suitable lightning protector with gas discharge tube

Generally speaking, the spark-over voltage of the discharge tube should be kept as low as possible. However, in order to avoid an unintentional ignition of the tube, the spark-over voltage should be at least twice the peak voltage occurring under normal working conditions.



Example:

$P = 100 \text{ W}$

$Z = 50 \ \Omega$ (with VSWR 1:1)

Peak voltage = $U_{\max} = \sqrt{P \times Z} = 71 \text{ V}$

Recommended spark-over voltage = $2 \times U_{\max} = 142 \text{ V}$

Most suitable Lightning Protector is 145 V Type

(J01028A0036)

Technical Data (G27-Series)

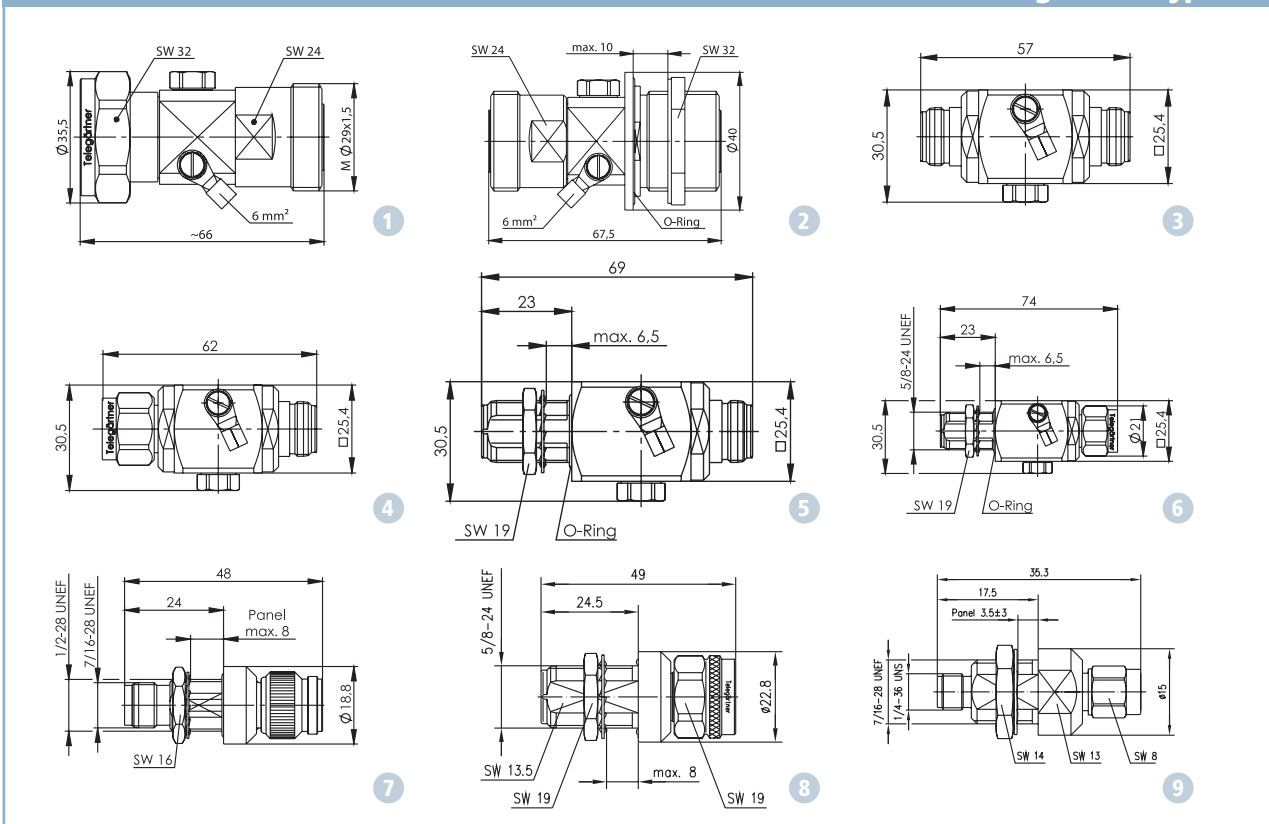
Mechanical Characteristics	
Materials	
Spring contact	CuBe2
Other metal parts	CuZn39Pb3
Insulators	PTFE
Gaskets	Silicon
Finish	
Spring contact	Cu2Ag5
Other metal parts	CuSnZn3
Coupling torque Series 7-16	25-35 Nm
Coupling torque Series N	4-6 Nm
Durability (mating cycles)	> 500

Thermal and Climatic Characteristics connectors		
	7-16 Series	N Series
Category to DIN IEC 68 Part 1	55/155/56	40/155/21
Protection level to DIN 60529	IP68	IP68
Electrical Characteristics		
	N Series	7-16 Series
Max. frequency	2.7 GHz	2.7 GHz
VSWR	< 1.2 (2.7 GHz)	< 1.2 (2.7 GHz)
Insertion loss	< 0.2 dB	< 0.1 dB
Impulse Discharge Current	2500 x 10 A (10/1000 µs)	1000 x 500 A (10/1000 µs)
	1000 x 500 A (10/1000 µs)	5 x 20000 A (8/20 µs)
		1 x 40000 A (8/20 µs)

Surge Suppressors with Gas Discharge Tube (GDT)



Gas Discharge Tube Types



G27-Series

Type	Nominal DC spark-over voltage						Fig.
	75 V	90 V	145 V	230 V	470 V	600 V	
7-16 m-f		J01125A0037		J01125A0035			1
7-16 f-f		J01125A0038		J01125A0036			2
bulkhead							
N f-f	J01028A0031	J01028A0033	J01028A0035	J01028A0037	J01028A0039	J01028A0040	3
N m-f	J01028A0032	J01028A0034	J01028A0036	J01028A0038		J01028A0041	4
N f-f		J01028A0044		J01028A0045			5
bulkhead		J01028A0055*					
N m-f				J01028A0046			6
bulkhead							

* with mounting kit H06000A0024 (see page 28)

G6-Series

Type	BNC m-f	TNC m-f	R-TNC m-f	N m-f	N f-f	SMA m-f	R-SMA m-f
Order No.	J01007A0002	J01017A0004	J01017R0000	J01028A0047	J01028A0048	J01158A0001	J01158R0001
Fig.	-	7	7	8	-	9	9



5

Jumper Cables

Telegärtner jumper cables demonstrate our strength in innovation and are the perfect, reliable connection to the antenna. Our product range encompasses jumper cables manufactured from 1/4", 3/8", 1/2" flex and 1/2" feeder

cables. We use a special induction soldering process to solder 7-16, 4.3-10 or N connectors onto the cable, depending on customer requirements.

Protection Classification IP68

Telegärtner jumper cables are independently tested to IP68 by the British Standards Institute (BSI). To simulate a waterlogged feeder cable's pressure on a jumper cable, the connectors are designed to withstand.

- 25 m head of water
- Pressure 2.5 ± 0.1 bar
- Temperature $20^\circ \text{C} \pm 5^\circ \text{C}$

The 7-16 connectors include a specially profiled O-ring at the mating face, carefully engineered to provide protection against water ingress through the coupling nut. These connectors also incorporate an additional seal between the centre contact and connector housing in the mating face (barrier seal). A 360° inductive solder of the outer conductor provides additional protection against ingress of moisture in the event of the cable sheath being damaged.

No leakage was found after 7 days.

Bending Protection

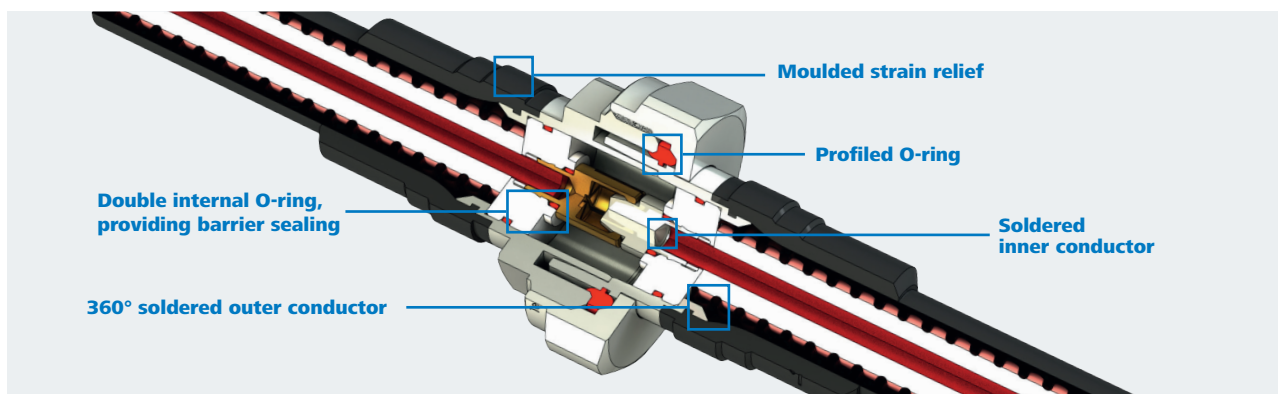
In order to provide long-lasting protection for the solder joint against environmental influences, Telegärtner jumper cables have a stable overmould made from polyamide V0.

This strain relief was mated as in the field and then temperature cycled from -40° to $+80^\circ$ for a week, and showed no effects of this harsh test procedure.



- Very low intermodulation products
- Waterproof, IP68 rated
- Excellent return loss & attenuation

- 360° soldered inner & outer conductors
- Polyamide V0 overmould
- Barrier sealed interface



Jumper Cables

Features

- 360° induction soldered
- Silver plated body, nickel plated nut, profiled O-ring
- 100% tested
- IP68 water ingress protection – unmated!

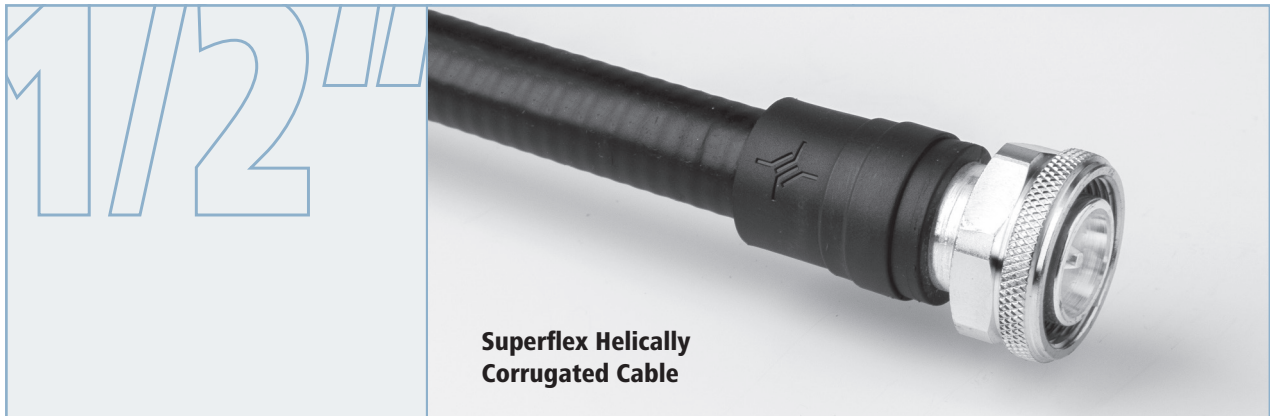
Benefits

- Fewer site visits
- Reduced fault finding time during site construction
- Less network downtime
- Reduced damage if water enters the system via another component or between components

Technical Data 1/2" Flex

	7-16 Types	N Types	4.3-10 Types
Mechanical Characteristics			
Materials			
Spring contact	CuBe2	CuBe2	CuBe2
Other metal parts	CuZn39Pb3	CuZn39Pb3	CuZn39Pb3
Insulator	PTFE	PTFE	PTFE
Gaskets	Silicon	Silicon	Silicon
Finish			
Spring contact	Cu2Ag5	Cu2Ag5	Cu2Ag5
Outer surface	Cu2Ag3	Cu2Ag3	Cu2Ag3
Coupling torque	25-35 Nm	4-6 Nm	5 Nm
Cables			
Cables	1/2" super flexible 50 Ω foam dielectric, helically corrugated; Black PE jacket; halogen free		
Bending Protection			
Overmoulded strain relief	Polyamide with high mechanical strength, heat stabilized, lubricated and nucleated for injection moulding. Its halogen free flame retardant system enhances its flame behavior to V0 - UL certified (IEC 60695-11-10)		
Thermal and Climatic Characteristics			
Temperature range	-40 °C – +60 °C	-40 °C – +60 °C	-40 °C – +60 °C
Relative humidity	0 % – 100 %	0 % – 100 %	0 % – 100 %
Corrosion and UV resistant	IP68	IP68	IP68
Protection to DIN 40050/IEC 60529			
Electrical Characteristics			
Return Loss (VSWR)			
straight connectors:			
800 MHz - 1000 MHz	-38 dB (1.02:1) typ. / -30 dB (1.02:1) min.	-38 dB (1.02:1) typ. / -30 dB (1.02:1) min.	-38 dB (1.02:1) typ. / -30 dB (1.02:1) min.
1000 MHz - 2700 MHz	-32dB (1.02:1) typ. / -28 dB (1.02:1) min.	-32dB (1.02:1) typ. / -28 dB (1.02:1) min.	-32dB (1.02:1) typ. / -28 dB (1.02:1) min.
angle connectors:			
800 MHz - 1000 MHz	-33 dB (1.02:1) typ. / -30 dB (1.02:1) min.	-33 dB (1.02:1) typ. / -30 dB (1.02:1) min.	-33 dB (1.02:1) typ. / -30 dB (1.02:1) min.
1000 MHz - 2700 MHz	-30dB (1.02:1) typ. / -28 dB (1.02:1) min.	-30dB (1.02:1) typ. / -28 dB (1.02:1) min.	-30dB (1.02:1) typ. / -28 dB (1.02:1) min.
Attenuation (dB)			
up to 1000 MHz	0.11 dB/m	0.11 dB/m	0.11 dB/m
up to 2700 MHz	0.19 dB/m	0.19 dB/m	0.19 dB/m
Power handling			
800 - 1000 MHz	770 W (500 W min.)	450 W	700 W
1000 MHz - 2700 MHz	500 W (300 W min.)	300 W	500 W
Impedance			
	50 Ω (±2 Ω)	50 Ω (±2 Ω)	50 Ω (±2 Ω)
Contact potential			
	no dissimilar metal surfaces	no dissimilar metal surfaces	no dissimilar metal surfaces
Voltage rating			
	1100 V	1100 V	1100 V
Velocity of propagation			
	83 %	83 %	83 %
Intermodulation products 3rd order; 2 unmodulated test signals each at 43dBm (20W)			
up to 2700 MHz	-165 dBc (-122 dBm) typ. -157 dBc (-114 dBm) min.	-165 dBc (-122 dBm) typ. -157 dBc (-114 dBm) min.	-165 dBc (-122 dBm) typ. -157 dBc (-114 dBm) min.

Jumper Cables



7-16 to 7-16

Length	Plug - Plug		Plug - Jack		Plug - Angle Plug		Jack - Angle Plug	
	Order no.	Type	Order no.	Type	Order no.	Type	Order no.	Type
0.5 m	L00010D0552	JMPS/0500K	L00010D0550	JMPS/0501K	L00010D0565	JMPS/0502K	L00010D0567	JMPS/0512K
1.0 m	L00010D0553	JMPS/1000K	L00010D0551	JMPS/1001K	L00010D0566	JMPS/1002K	L00010D0568	JMPS/1012K
2.0 m	L00011D0185	JMPS/2000K	L00011D0183	JMPS/2001K	L00011D0187	JMPS/2002K	L00011D0189	JMPS/2012K
3.0 m	L00012D0064	JMPS/3000K	L00012D0062	JMPS/3001K	L00012D0066	JMPS/3002K	L00012D0068	JMPS/3012K
5.0 m	L00013D0059	JMPS/5000K	L00013D0057	JMPS/5001K	L00013D0062	JMPS/5002K	L00013D0064	JMPS/5012K

7-16 to N

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010A1685	JMPS/0504K
1.0 m	L00010A1686	JMPS/1004K
2.0 m	L00011A0420	JMPS/2004K
3.0 m	L00012A0131	JMPS/3004K
5.0 m	L00013A0268	JMPS/5004K

N to N

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010A1687	JMPS/0544K
1.0 m	L00010A1634	JMPS/1044K
2.0 m	L00011A0252	JMPS/2044K
3.0 m	L00012A0116	JMPS/3044K
5.0 m	L00013A0274	JMPS/5044K

4.3-10 to 4.3-10 (Screw Type)

Length	Plug - Plug		Plug - Jack		Plug - Angle Plug	
	Order no.	Type	Order no.	Type	Order no.	Type
0.5 m	L00010A1689	JMPS/0577K	L00010A1691	JMPS/0578K	L00010A1693	JMPS/0579K
1.0 m	L00010A1690	JMPS/1077K	L00010A1692	JMPS/1078K	L00010A1694	JMPS/1079K
2.0 m	L00011A0436	JMPS/2077K	L00011A0437	JMPS/2078K	L00011A0438	JMPS/2079K
3.0 m	L00012A0235	JMPS/3077K	L00012A0236	JMPS/3078K	L00012A0237	JMPS/3079K
5.0 m	L00013A0313	JMPS/5077K	L00013A0314	JMPS/5078K	L00013A0315	JMPS/5079K

4.3-10 (Screw Type) to 7-16

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010A1742	JMPS/0507K
1.0 m	L00010A1743	JMPS/1007K
2.0 m	L00011A0461	JMPS/2007K
3.0 m	L00012A0257	JMPS/3007K
5.0 m	L00013A0339	JMPS/5007K

4.3-10 to 4.3-10 (Push Pull Type)

Length	Plug - Plug		Plug - Angle Plug	
	Order no.	Type	Order no.	Type
0.5 m	L00010A1697	JMPS/05BBK	L00010A1701	JMPS/05BDK
1.0 m	L00010A1698	JMPS/10BBK	L00010A1702	JMPS/10BDK
2.0 m	L00011A0440	JMPS/20BBK	L00011A0442	JMPS/20BDK
3.0 m	L00012A0239	JMPS/30BBK	L00012A0241	JMPS/30BDK
5.0 m	L00013A0317	JMPS/50BBK	L00013A0319	JMPS/50BDK

Jumper Cables



7-16 to 7-16								
	Plug - Plug		Plug - Jack		Plug - Angle Plug		Jack - Angle Plug	
Length	Order no.	Type	Order no.	Type	Order no.	Type	Order no.	Type
0.5 m	L00010A1703	JMPR/0500T	L00010A1705	JMPR/0501T	L00010A1707	JMPR/0502T	L00010A1709	JMPR/0512T
1.0 m	L00010A1704	JMPR/1000T	L00010A1706	JMPR/1001T	L00010A1708	JMPR/1002T	L00010A1710	JMPR/1012T
2.0 m	L00011A0443	JMPR/2000T	L00011A0444	JMPR/2001T	L00011A0445	JMPR/2002T	L00011A0446	JMPR/2012T
3.0 m	L00012A0242	JMPR/3000T	L00012A0243	JMPR/3001T	L00012A0244	JMPR/3002T	L00012A0245	JMPR/3012T
5.0 m	L00013A0321	JMPR/5000T	L00013A0322	JMPR/5001T	L00013A0323	JMPR/5002T	L00013A0324	JMPR/5012T

4.3-10 to 4.3-10 (Screw Type)						
	Plug - Plug		Plug - Jack		Plug - Angle Plug	
Length	Order no.	Type	Order no.	Type	Order no.	Type
0.5 m	L00010A1711	JMPR/0577T	L00010A1713	JMPR/0578T	L00010A1715	JMPR/0579T
1.0 m	L00010A1712	JMPR/1077T	L00010A1714	JMPR/1078T	L00010A1716	JMPR/1079T
2.0 m	L00011A0447	JMPR/2077T	L00011A0448	JMPR/2078T	L00011A0449	JMPR/2079T
3.0 m	L00012A0246	JMPR/3077T	L00012A0247	JMPR/3078T	L00012A0248	JMPR/3079T
5.0 m	L00013A0325	JMPR/5077T	L00013A0326	JMPR/5078T	L00013A0327	JMPR/5079T

4.3-10 to 4.3-10 (Hand Screw Type)				
	Plug - Plug		Plug - Angle Plug	
Length	Order no.	Type	Order no.	Type
0.5 m	L00010A1717	JMPR/05AAT	L00010A1721	JMPR/05ACT
1.0 m	L00010A1718	JMPR/10AAT	L00010A1722	JMPR/10ACT
2.0 m	L00011A0450	JMPR/20AAT	L00011A0452	JMPR/20ACT
3.0 m	L00012A0249	JMPR/30AAT	L00012A0251	JMPR/30ACT
5.0 m	L00013A0328	JMPR/50AAT	L00013A0330	JMPR/50ACT

4.3-10 to 4.3-10 (Push Pull Type)				
	Plug - Plug		Plug - Angle Plug	
Length	Order no.	Type	Order no.	Type
0.5 m	L00010A1719	JMPR/05BBT	L00010A1723	JMPR/05BDT
1.0 m	L00010A1720	JMPR/10BBT	L00010A1724	JMPR/10BDT
2.0 m	L00011A0451	JMPR/20BBT	L00011A0453	JMPR/20BDT
3.0 m	L00012A0250	JMPR/30BBT	L00012A0252	JMPR/30BDT
5.0 m	L00013A0329	JMPR/50BBT	L00013A0331	JMPR/50BDT

Jumper Cables



7-16 to 7-16

Length	Plug - Plug		Plug - Jack		Plug - Angle Plug		Jack - Angle Plug	
	Order no.	Type	Order no.	Type	Order no.	Type	Order no.	Type
0.5 m	L00010A1725	JMPR/0500L	L00010A1727	JMPR/0501L	L00010A1729	JMPR/0502L	L00010A1731	JMPR/0512L
1.0 m	L00010A1726	JMPR/1000L	L00010A1728	JMPR/1001L	L00010A1730	JMPR/1002L	L00010A1732	JMPR/1012L
2.0 m	L00011A0454	JMPR/2000L	L00011A0455	JMPR/2001L	L00011A0456	JMPR/2002L	L00011A0457	JMPR/2012L
3.0 m	L00012A0253	JMPR/3000L	L00012A0254	JMPR/3001L	L00012A0255	JMPR/3002L	L00012A0256	JMPR/3012L
5.0 m	L00013A0332	JMPR/5000L	L00013A0333	JMPR/5001L	L00013A0334	JMPR/5002L	L00013A0335	JMPR/5012L

7-16 to N

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010Q0124	JMPR/0504L
1.0 m	L00010Q0125	JMPR/1004L
2.0 m	L00011Q0139	JMPR/2004L
3.0 m	L00012Q0139	JMPR/3004L
5.0 m	L00013Q0218	JMPR/5004L

N to N

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010Q0134	JMPR/0544L
1.0 m	L00010Q0135	JMPR/1044L
2.0 m	L00011Q0149	JMPR/2044L
3.0 m	L00012Q0149	JMPR/3044L
5.0 m	L00013Q0233	JMPR/5044L

4.3-10 to 4.3-10 (Screw Type)

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010Q0143	JMPR/0577L
1.0 m	L00010Q0141	JMPR/1077L
2.0 m	L00011Q0155	JMPR/2077L
3.0 m	L00012Q0154	JMPR/3077L
5.0 m	L00013Q0239	JMPR/5077L

4.3-10 to 4.3-10 (Push Pull Type)

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010Q0144	JMPR/05BBL
1.0 m	L00010Q0145	JMPR/10BBL
2.0 m	L00011Q0157	JMPR/20BBL
3.0 m	L00012Q0155	JMPR/30BBL
5.0 m	L00013Q0240	JMPR/50BBL

4.3-10 (Screw Type) to 4.3-10 (Push Pull Type)

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010Q0146	JMPR/057BL
1.0 m	L00010Q0147	JMPR/107BL
2.0 m	L00011Q0158	JMPR/207BL
3.0 m	L00012Q0156	JMPR/307BL
5.0 m	L00013Q0241	JMPR/507BL

N to 4.3-10 (Screw Type)

Length	Plug - Plug	
	Order no.	Type
0.5 m	L00010Q0148	JMPR/0547L
1.0 m	L00010Q0149	JMPR/1047L
2.0 m	L00011Q0159	JMPR/2047L
3.0 m	L00012Q0157	JMPR/3047L
5.0 m	L00013Q0242	JMPR/5047L

Jumper Cables

N to 4.3-10 (Push Pull Type)

Plug - Plug		
Length	Order no.	Type
0.5 m	L00010Q0150	JMPR/054BL
1.0 m	L00010Q0151	JMPR/104BL
2.0 m	L00011Q0160	JMPR/204BL
3.0 m	L00012Q0158	JMPR/304BL
5.0 m	L00013Q0243	JMPR/504BL

7-16 to 4.3-10 (Screw Type)

Plug - Plug		
Length	Order no.	Type
0.5 m	L00010Q0152	JMPR/0507L
1.0 m	L00010Q0153	JMPR/1007L
2.0 m	L00011Q0161	JMPR/2007L
3.0 m	L00012Q0159	JMPR/3007L
5.0 m	L00013Q0244	JMPR/5007L

7-16 to 4.3-10 (Push Pull Type)

Plug - Plug		
Length	Order no.	Type
0.5 m	L00010Q0154	JMPR/050BL
1.0 m	L00010Q0155	JMPR/100BL
2.0 m	L00011Q0162	JMPR/200BL
3.0 m	L00012Q0160	JMPR/300BL
5.0 m	L00013Q0245	JMPR/500BL



7-16 to 7-16

Plug - Plug		
Length	Order no.	Type
0.5 m	L00010A3552	JMPS/0500D
1.0 m	L00010A3553	JMPS/1000D
2.0 m	L00011A3185	JMPS/2000D
3.0 m	L00012A3064	JMPS/3000D
5.0 m	L00013A0320	JMPS/5000D

7-16 to 4.3-10 (Screw Type)

Plug - Plug		
Length	Order no.	Type
0.5 m	L00010Q0156	JMPS/0507D
1.0 m	L00010Q0157	JMPS/1007D
2.0 m	L00011Q0163	JMPS/2007D
3.0 m	L00012Q0161	JMPS/3007D
5.0 m	L00013Q0246	JMPS/5007D

4.3-10 to 4.3-10 (Screw Type)

Plug - Plug		
Length	Order no.	Type
0.5 m	L00010Q0158	JMPS/0577D
1.0 m	L00010Q0159	JMPS/1077D
2.0 m	L00011Q0164	JMPS/2077D
3.0 m	L00012Q0162	JMPS/3077D
5.0 m	L00013Q0247	JMPS/5077D



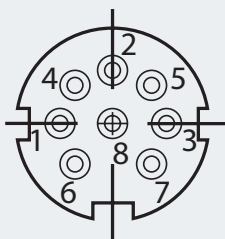
6 RET Cables (Remote Electrical Tilt)

RET Cables provide a direct connect option from the Master Control Unit (MCU) to a RET module. These cables are offered in a variety of lengths, with the shorter lengths also being available to “daisy chain” multiple RET modules

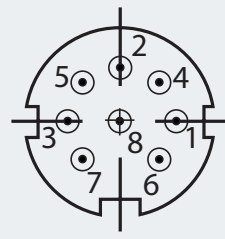
together at the top of the tower or building. By connecting the modules together, you reduce the number or cables required from the MCU to the antennas.

General Description

Power supply and control interface cable for AISG Standard Version 2 Compliant Remote Electrical Tilt Components, offering protection to IP67.



Connecting side
female



Connecting side
male

i Contact Arrangement to AISG Standard 1.1 and 2.0

- | | |
|--------------------|--------------------|
| 1. +12V DC Nominal | 5. RS485 A |
| 2. Spare | 6. +24V DC Nominal |
| 3. RS485 B | 7. DC Ground |
| 4. Spare | 8. Spare |

Connector Style

8 pin male and female connectors according to IEC 60130-9. Fully soldered contacts. Connector bodies constructed from nickel plated brass. Male contacts are silver plated brass. Female contacts are constructed from silver plated bronze. Plastic components PBT (UL94 V-0).

Cable Type

1 x twisted pair 0.25 mm², 2 x power cores and 1 ground core 0.75 mm². Outer sheath in black PUR with overall diameter 8 mm. Halogen free, flame retardant and UV stable.

Specification of Terminated RET Cables

Rated Current	5 A
Temperature Range	-40° C to +80° C
Protection Class	IP67 Mated
Overall Diameter	8 mm
Minimum Bending Radius	60 mm (single), 120 mm (repeat)
Flammability	Halogen Free, Flame Retardant
Relative Humidity	Up to 100%



- Different cable lengths easily accommodated
- Length tolerance = ±2% of length
- M12 4 pole ASC version also available

RETC



Series	Design	Type	Protection Class	Order no.	Length
RET	AISG F - AISG M	RETC/0005	IP67	L00010A1733	0.5 m
RET	AISG F - AISG M	RETC/0010	IP67	L00010A1734	1.0 m
RET	AISG F - AISG M	RETC/0020	IP67	L00011A0458	2.0 m
RET	AISG F - AISG M	RETC/0030	IP67	L00012A0268	3.0 m
RET	AISG F - AISG M	RETC/0050	IP67	L00013A0336	5.0 m
RET	AISG F - AISG M	RETC/0100	IP67	L00015A0078	10.0 m
RET	AISG F - AISG M	RETC/0200	IP67	L00016A0165	20.0 m
RET	AISG F - AISG M	RETC/0500	IP67	L00016A0171	50.0 m
RET	AISG F - AISG M	RETC/1000	IP67	L00016A0167	100.0 m

RET Cables

RET Cables with Waterproof D Sub

General Description

This AISG multiwire cable is used to connect the Remote Radio Unit with the Remote Control Unit and to transmit the base station signals for controlling the RET antenna and offers protection to IP67.

Connector Style

8 pin female connector according to IEC 60130-9. 9 way D Sub waterproof male connector. Fully soldered contacts. All connectors are UL94 V-0.

Specification of Terminated RET Cables

Rated Current	5 A
Temperature Range	-40° C to +80° C
Protection Class	IP67 Mated
Overall Diameter	8 mm
Minimum Bending Radius	60 mm (single), 120 mm (repeat)
Flammability	Halogen Free, Flame Retardant
Relative Humidity	Up to 100%

Variations

RET cables with waterproof D Subs can be required depending on the OEM interconnect. Variation 1 (RETD/) uses a rectangular formed gasket to create the IP67 seal, which seals directly against the mating half. Variation 2 (RETK/) uses a skirt to create the IP67 seal to allow for a raised mating half.

Cable Type

1 x twisted pair 0.25 mm², 2 x power cores and 1 ground core 0.75 mm². Outer sheath in black PUR with overall diameter 8 mm. Halogen free, flame retardant and UV stable.



- Different cable lengths easily accommodated
- Length tolerance = ±2% of length

RETD



Series	Design	Type	Protection Class	Order no.	Length
RET	AISG F - DB9 W/Proof M	RETD/0005	IP67	L00010A1735	0.5 m
RET	AISG F - DB9 W/Proof M	RETD/0010	IP67	L00010A1736	1.0 m
RET	AISG F - DB9 W/Proof M	RETD/0020	IP67	L00011A0459	2.0 m
RET	AISG F - DB9 W/Proof M	RETD/0030	IP67	L00012A0267	3.0 m
RET	AISG F - DB9 W/Proof M	RETD/0050	IP67	L00013A0337	5.0 m
RET	AISG F - DB9 W/Proof M	RETD/0100	IP67	L00015A0079	10.0 m
RET	AISG F - DB9 W/Proof M	RETD/0200	IP67	L00016A0140	20.0 m
RET	AISG F - DB9 W/Proof M	RETD/0500	IP67	L00016A0158	50.0 m
RET	AISG F - DB9 W/Proof M	RETD/1000	IP67	L00016A0163	100.0 m

RET Cables



Series	Design	Type	Protection Class	Order no.	Length
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0005	IP67	L00010A1737	0.5 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0010	IP67	L00010A1738	1.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0020	IP67	L00011A0460	2.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0030	IP67	L00012A0230	3.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0050	IP67	L00013A0338	5.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0100	IP67	L00015A0080	10.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0200	IP67	L00016A0142	20.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/0500	IP67	L00016A0147	50.0 m
RET	AISG F - DB9 W/Proof M with Skirt	RETK/1000	IP67	L00016A0152	100.0 m



7.1

TOC Outdoor Connectors IP68

TOC stands for Telecommunications Outdoor Connectors and offers cabling professionals the reliability and flexibility they need for toughest applications.

The handy, easy to install TOC connectors are used for data- and telecommunications in mobile radio, process-, utility- and traffic automation, or security applications but also in the harsh environment of machine and plant engineering. The TOC series is available in nickel-plated brass for RJ45 Cat.6_A and FO LC Duplex and MPO/MTP® connectors. Compliance

with the specifications of protection class IP68 and due to its excellent material properties, the TOC series can be installed even in harsh conditions within a temperature range from -40° C to 85° C*. To lock, relief of strain and seal the connection, one turning movement is necessary and no further procedures are required. Customers benefit: fast, error free and easy installation, high transmission reliability and resilience and more flexibility in the network design.

TOC Series RJ45

The TOC series RJ45 coming with the field-assembly RJ45 plug MFP8 Cat.6_A and RJ45 keystone AMJ-S Module Cat.6_A is available as a set. They can be connected to cables with stranded and solid wires and an outer diameter of max. 9.5 mm on site

without the need for special tools. For line extensions, the TOC Coupler IP68 is your first choice. It can be easily integrated with no negative effects on performance of the connection.

Performance Characteristics TOC Series RJ45

- suitable for 10 Gigabit Ethernet acc. to IEEE 802.3an
- suitable for PoE+ acc. to IEEE 802.3at
- 360° shielding
- temperature range: -40° C to +85° C*
- protection class IP68 acc. to IEC 60529
- protection cap with protection class IP68

TOC bulkhead set IP68 / outlet IP68

- RJ45 AMJ-S Module Cat.6_A
acc. to IEC 60603-7-51 (500 MHz)
- Cu-conductor:
solid: 0.41-0.64 mm (AWG26/1 – AWG22/1)
stranded: 0.46-0.76 mm (AWG27/7 – AWG22/7)
- insulation diameter: 0.9-1.6 mm
- RJ45 AMJ-S Module Cat.6_A UL listet (E244889)

TOC plug set IP68 MFP8 T568B Cat.6_A

- RJ45 plug MFP8 Cat.6_A
acc. to IEC 60603-7-51 (500 MHz)
- RJ45 plug MFP8 Cat.6_A UL listed (E244889)
- Cu-conductor:
solid: 0.51-0.64 mm (AWG24/1 – AWG22/1)
stranded: 0.46-0.76 mm (AWG27/7 – AWG22/7)
- insulation diameter: 1.0-1.6 mm
- cable outer diameter: 4.0 - 9.5 mm

TOC coupler IP68 AMJ Coupler K

- RJ45 AMJ Coupler K acc. to IEC 60603-7-5 (500 MHz)
- RJ45 jack to RJ45 jack
- suitable for TOC plug set RJ45 IP68
- optional adaptor TH35 (H06000A0056) for DIN rail mount

*Operating temperature depending on choice of cable and wire/fiber design

TOC Outdoor Connectors IP68

TOC Series LC Duplex / MPO/MTP®

The TOC Series with LC Duplex resp. MPO/MTP® offers flexibility and ease of installation. Customer can install pre-terminated cables and feed them into the TOC housing. With the elongated release latch the plugs can be mated & unmated with SFP transceivers or adaptors effortlessly even in confined installation

environments. The different installation positions of SFP transceivers are not a problem anymore. For line extensions, the TOC Coupler IP68 is your first choice. It can be easily integrated with no degradation of the link performance.

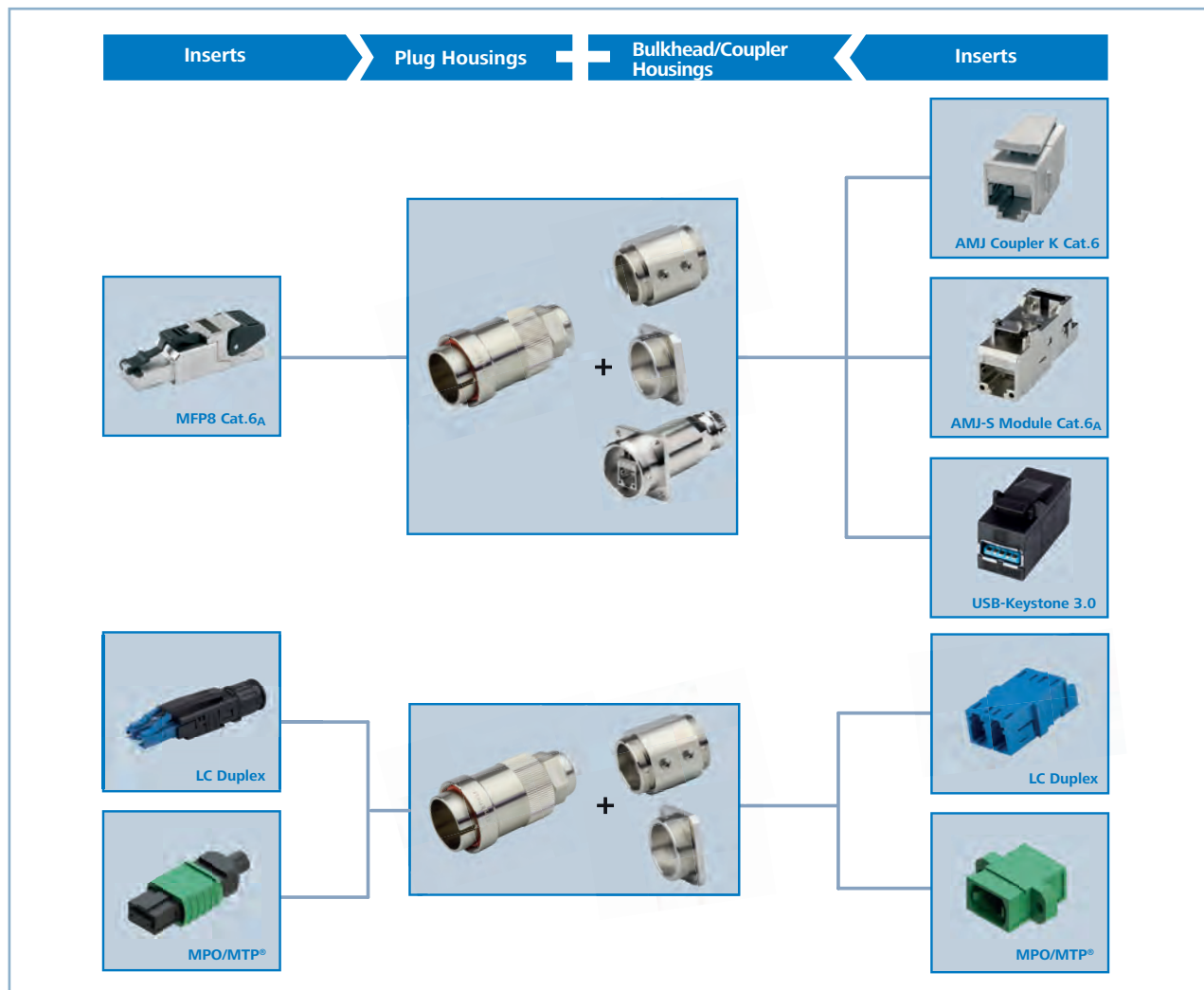
Performance Characteristics TOC Series LC Duplex

- plug & adaptor acc. to IEC 61754-20 (circonia ceramics)
- multimode (PC) & singlemode (APC) types
- insertion loss:
 - plug: multimode max. 0.4 dB, singlemode APC max. 0.5 dB
 - adaptor: multimode max. 0.2 dB, singlemode APC max. 0.5 dB
- return loss:
 - plug: Multimode min. 30 dB, Singlemode APC min. 60 dB
- temperature range: -40° C to +85° C*
- plug set LC Duplex: simplex cable diameter: 2.0 mm
cable outer diameter: 4.0-9.5 mm
- protection class IP68 acc. to IEC 60529
- protection cap with protection class IP68

Performance Characteristics TOC Series MPO/MTP®

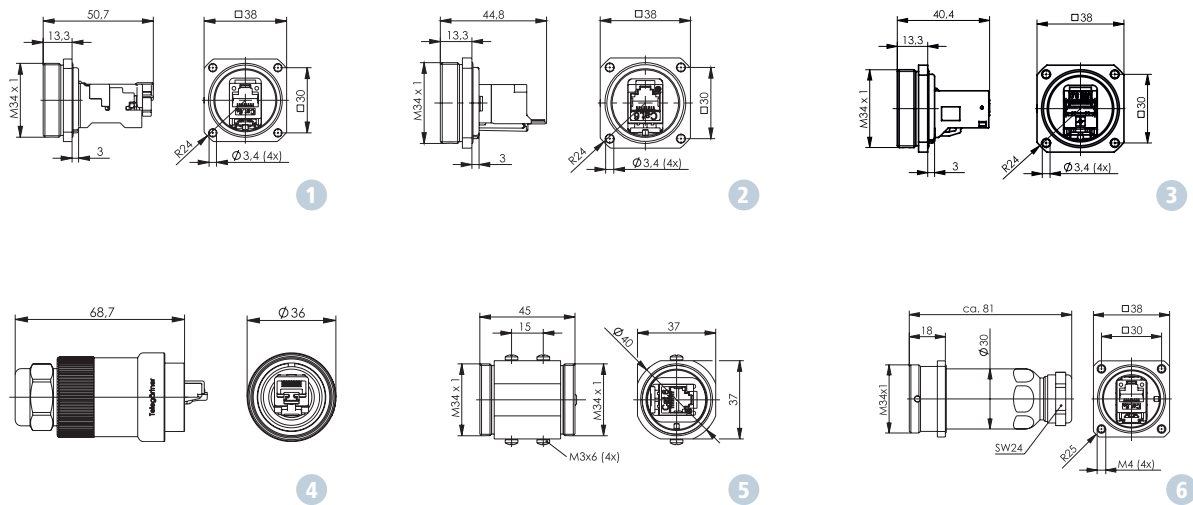
- plug & adaptor acc. to IEC 61755-3-1
- multimode (PC) & singlemode (APC) types
- insertion loss:
 - plug: multimode max. 0.5 dB (typ. 0.2)
 - singlemode APC max. 0.7 dB (typ. 0.25)
- return loss:
 - plug: multimode min. 30 dB, singlemode APC min. 60 dB
- temperature range: -40° C to +85° C*
- plug set MPO/MTP®: simplex cable diameter: 3.0 mm
cable outer diameter: 4.0 - 9.5 mm
- protection class IP68 acc. to IEC 60529
- protection cap with protection class IP68

Overview TOC Series



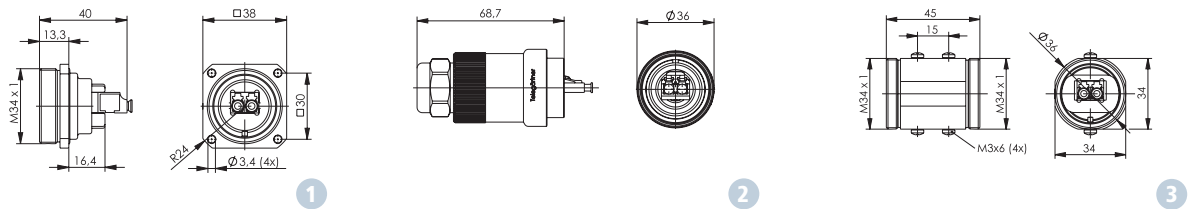
TOC Outdoor Connectors IP68

TOC Series RJ45



Order no.	Short name	Description	Fig.
J60020A0000	TOC bulkhead set IP68	AMJ-S Module T568B Cat.6A	1
J60020A0002	TOC bulkhead set IP68	AMJ Coupler K Cat.6 Class EA	2
J60020A0004	TOC bulkhead set IP68	USB-Keystone 3.0 (f-f) Type A	3
J60026A0000	TOC plug set IP68	MFP8 T568B Cat.6A AWG22-27	4
J60029A0000	TOC coupler IP68	AMJ Coupler K Cat.6 Class EA	5
J60023A0000	TOC bulkhead outlet IP68	AMJ-S Module T568B Cat.6A	6
H06000A0074	TOC bracket	gauge 38 mm and TH35	-

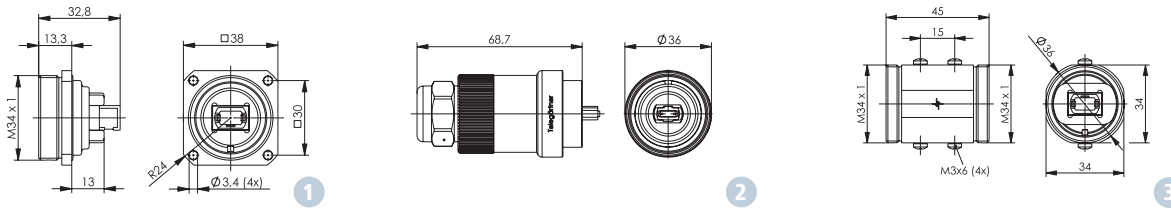
TOC Series LC Duplex



Order no.	Short name	Description	Fig.
J68071A0000	TOC bulkhead set IP68	LC Duplex adaptor multimode	1
J68071A0001	TOC bulkhead set IP68	LC Duplex adaptor APC singlemode	1
J68070A0000	TOC plug set IP68	LC Duplex multimode	2
J68070A0001	TOC plug set IP68	LC/APC Duplex singlemode	2
J68071A0004	TOC coupler IP68	LC Duplex adaptor singlemode/multimode	3

TOC Outdoor Connectors IP68

TOC Series MPO/MTP®



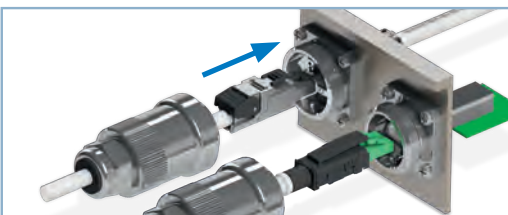
Order no.	Short name	Description	Fig.
J68071A0006	TOC bulkhead set IP68	MPO/MTP® adaptor singlemode/multimode	1
J68070A0004	TOC plug set IP68	MPO/MTP® male, multimode	2
J68070A0005	TOC plug set IP68	MPO/MTP® male, APC singlemode	2
J68070A0006	TOC plug set IP68	MPO/MTP® female, multimode	2
J68070A0007	TOC plug set IP68	MPO/MTP® female, APC singlemode	2
J68071A0007	TOC coupler IP68	MPO/MTP® adaptor singlemode/multimode	3

Accessories for TOC Series



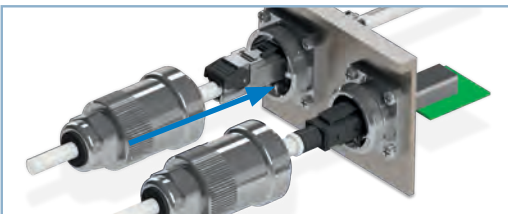
Order no.	Short name	Description	Fig.
H60030A0000	TOC bulkhead protection cap IP68	nickel-plated brass, with chain	1
H60030A0001	TOC plug protection cap IP68	nickel-plated brass, with chain	2

Assembly steps



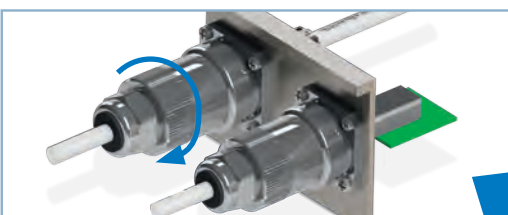
Step 1:
Slide plug into bulkhead

Slide plug into bulkhead insert regardless of the connector alignment.



Step 2:
Push housing over plug insert

Push the plug housing over the plug insert.



Step 3:
Lock - Seal - Strain relief

Screw the plug to the bulkhead - interface is locked, sealed and strain relieved by one turning movement.





7.2

Patch Cords, Plugs and Cables

Technical Data

Patch Cords shielded 500 MHz/Cat.6_A S/FTP LSZH

Mechanical Characteristics	
Cable Structure	Li02YSCH 4x2xAWG27/7 PiMF
Stranded wire	AWG27 (7/0.14 mm)
Insulation	PE, Ø 1.04 mm (±0.05 mm)
Outer jacket	5.7 mm (±0.02 mm)
Thermal and Climatic Characteristics	
Flame retardancy test	IEC 60332-1
UL	E344985
Operating temperature	-40°C...75°C
Electrical Characteristics	
Current rating at 50°C	1 A
PoE+ acc. to IEEE 802.3at	Compliant
Transmission Characteristics	
10 Gigabit Ethernet acc. to IEEE 802.3an	Compliant
Standard	
Connectors	IEC 60603-7-51

Patch Cords shielded 100 MHz/Cat.5e F/UTP LSZH

Mechanical Characteristics	
Cable Structure	Li-2Y(St)H 4x2xAWG26/7
Stranded wire	AWG26/7 Ø 0.48 mm
Insulation	PE, Ø 0.92 mm (Ø 0.036 in.)
Outer jacket	5.5 mm (±0.02 mm)
Thermal and Climatic Characteristics	
Flame retardancy test	IEC 60332-1
Operating temperature	-20°C...60°C
Electrical Characteristics	
Current rating at 50°C	1 A
PoE+ acc. to IEEE 802.3at	Adequate
Transmission Characteristics	
10 Gigabit Ethernet acc. to IEEE 802.3an	Adequate
Standard	
Connectors	IEC 60603-7-3

Patch Cords unshielded 500 MHz/Cat.6_A U/UTP LSZH

Mechanical Characteristics	
Cable Structure	LI-2YH 4x2x0.58 LSZH
Stranded wire	AWG24/7 (Ø 0.58)
Outer diameter	6.1 mm (±0.02 mm)
Thermal and Climatic Characteristics	
Flame retardancy test	IEC 60332-1
Operating temperature	-20°C...75°C

Electrical Characteristics	
Current rating at 50°C	1 A
PoE+ acc. to IEEE 802.3at	Adequate
Transmission Characteristics	
10 Gigabit Ethernet acc. to IEEE 802.3an	Adequate
Standard	
Connectors	IEC 60603-7-41

Patch Cords

Patch Cords shielded 500 MHz/Cat.6_A S/FTP PE

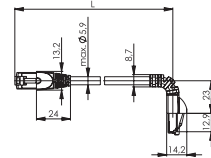
Mechanical Characteristics	
Cable Structure	Li02YSCH
Stranded wire	4x2xAWG26/7 PiMF AWG26/7 Ø 0,48
Outer diameter	6,2 mm (±0.02 mm)
Thermal and Climatic Characteristics	
Operating temperature	-20°C...+60°C

Electrical Characteristics	
Current rating at 50°C	1 A
PoE+ acc. to IEEE 802.3at	Adequate
Transmission Characteristics	
10 Gigabit Ethernet acc. to IEEE 802.3an	Adequate
Standard	
Connectors	IEC 60603-7-41

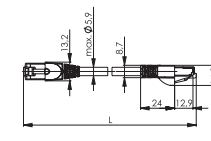


Patch Cords MP8 FS 500 Cat.6_A S/FTP LSZH

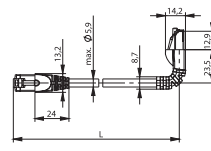
90°	Order no.						
Length	grey	green	red	blue	yellow	black	white
0,5 m	L00000A0189	L00000A0193	L00000A0195	L00000A0197	L00000A0199	L00000A0201	L00000A0203
1,0 m	L00000A0192	L00000A0194	L00000A0196	L00000A0198	L00000A0200	L00000A0202	L00000A0204
2,0 m	L00001A0155	L00001A0156	L00001A0157	L00001A0159	L00001A0162	L00001A0163	L00001A0164
3,0 m	L00002A0173	L00002A0174	L00002A0176	L00002A0177	L00002A0179	L00002A0175	L00002A0180
5,0 m	L00003A0119	L00003A0121	L00003A0123	L00003A0124	L00003A0125	L00003A0126	L00003A0127



180°	Order no.						
Length	grey	green	red	blue	yellow	black	white
0,25 m	L00000A0230	L00000A0231	L00000A0232	L00000A0233	L00000A0234	L00000A0235	L00000A0236
0,5 m	L00000A0072	L00000A0073	L00000A0074	L00000A0075	L00000A0076	L00000A0077	L00000A0130
1,0 m	L00000A0081	L00000A0082	L00000A0083	L00000A0084	L00000A0085	L00000A0086	L00000A0131
2,0 m	L00001A0084	L00001A0085	L00001A0086	L00001A0087	L00001A0088	L00001A0089	L00001A0123
3,0 m	L00002A0112	L00002A0113	L00002A0114	L00002A0115	L00002A0116	L00002A0117	L00002A0141
5,0 m	L00003A0055	L00003A0056	L00003A0057	L00003A0058	L00003A0059	L00003A0060	L00003A0085

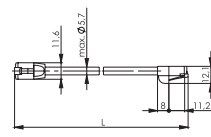


270°	Order no.						
Length	grey						
0,5 m	L00000A0253						
1,0 m	L00000A0254						
2,0 m	L00001A0199						
3,0 m	L00002A0203						
5,0 m	L00003A0157						



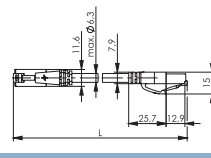
Patch Cords MP8 FS 100 Cat.5e F/UTP LSZH short boot, colour: grey

Length	0.25 m	0.5 m	1.0 m	2.0 m	3.0 m	5.0 m
Order no.	L00000A0307	L00000A0308	L00000A0309	L00001A0244	L00002A0244	L00003A0217



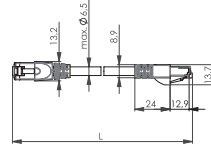
Patch Cords MP8 500 Cat.6_A U/UTP LSZH, Colour: blue

Length	0.25 m	0.5 m	1.0 m	2.0 m	3.0 m	5.0 m
Order no.	-	L00000A0340	L00000A0341	L00001A0264	L00001A0259	L00003A0230



Patch Cords MP8 FS 500 Cat.6_A S/FTP PE, Colour: black

Length	0.25 m	0.5 m	1.0 m	2.0 m	3.0 m	5.0 m
Order no.	-	L00000A0415	L00000A0416	L00001A0324	L00002A0299	L00003A0267



Other lengths and types on request

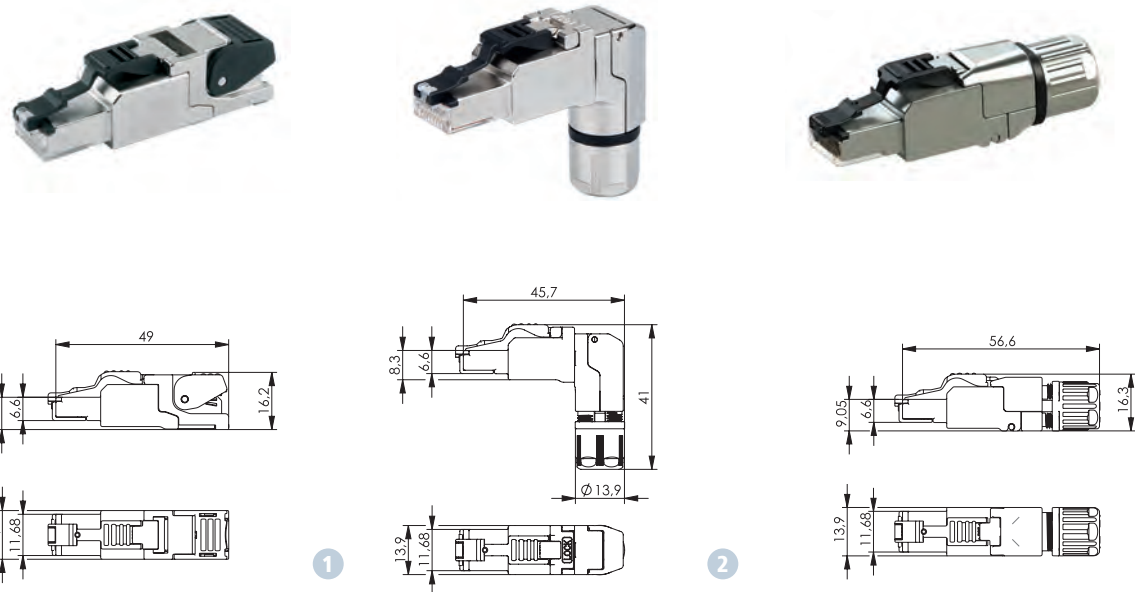


- T568B wiring
- 90° / 180° / 270° moulded boot with latch protection
- colours: grey, green, red, blue, yellow, black, white, purple
- variants with very short boot available
- variants with jacket LSZH, PVC, PUR, PE available

Plugs

	MFP8 Cat.6A AWG27-22	UFP8 Cat.6A AWG27-23	Plug MP8(8) Cat.6A
Standards			
Connectors	IEC 60603-7-51	IEC 60603-7-41	IEC 60603-7-51
Mechanical Characteristics			
Reusable contacts	≤4 cycles	≤4 cycles	-
Insertion force	≤30 N	≤30 N	≤30 N
Durability (mating cycles)	≥750	≥750	≥750
Mating Requirements Cu-Conductor diameter: solid	0.51 - 0.64 mm (AWG24/1-22/1)	0.51 - 0.57 mm (AWG24/1-23/1)	0.40 - 0.51 mm (AWG26/1-24/1)
Mating Requirements Cu-Conductor diameter: stranded	0.46 - 0.76 mm (AWG27/7-22/7)	0.46 - 0.65 mm (AWG27/7-23/7)	0.46 - 0.61 mm (AWG27/7-24/7)
Mating Requirements Cu-Conductor diameter: stranded*	0.61 - 0.78 mm (AWG24-22/19)*	0.51 mm (AWG26/19)*	-
Wire diameter	1.0 - 1.6 mm	0.85 - 1.1 mm	0.85 - 1.05 mm
Cable outer diameter	5.0 - 9.0 mm	5.5 - 8.5 mm	5.5 - 7.3 mm
Climatic Characteristics			
Operating temperature	-40°C ... +85°C	-40°C ... +70°C	-40°C ... +70°C
UL	E244889	E244889	E244889
Electrical Characteristics			
Current rating at 50°C	1 A	1 A	1 A
PoE+ acc to IEEE 802.3at	Adequate for Power over Ethernet+		
Transmission Characteristics			
Category 6A (component)	ISO/IEC 11801, DIN EN 50173-1		

Shielded field assembly RJ45 plug MFP8



Order no.	Short name	Description	Fig.
J00026A2001	MFP8 T568B Cat.6A	AWG24/1-22/1, AWG27/7-22/7 incl.a pre-assembled dust protection cap	1
J00026A2111	MFP8 T568B Cat.6A	AWG24/1-22/1, AWG27/7-22/7 incl.a pre-assembled dust protection cap, blister package	1
J00026A4111	MFP8-4x90 T568B Cat.6A	AWG24/1-22/1, AWG27/7-22/7 incl.a pre-assembled dust protection cap	2
J00026A4004	MFP8-4x90 T568B Cat.6A	AWG24/1-22/1, AWG27/7-22/7 incl.a pre-assembled dust protection cap, blister package	2
J00026A5001	MFP8 IE T568B Cat.6A	AWG24/1-22/1, AWG27/7-22/7 incl.a pre-assembled dust protection cap	3
J00026A5111	MFP8 IE T568B Cat.6A	AWG24/1-22/1, AWG27/7-22/7 incl.a pre-assembled dust protection cap, blister package	3
F00020A2131	MFP8 wire manager T568B	AWG24/1-22/1, AWG27/7-22/7	-



• Category 6A acc. to ISO/IEC 11801

• Plug: IEC 60603-7-51 compliant

• Durability: ≥ 750 mating cycles

• Contact finish material: Ni1,2Au0,8

• Shielding housing material: die-cast nickel-plated zinc

• Reusable IDC: ≤ 4 cycles

• Operating temperature: -40°C to 85°C

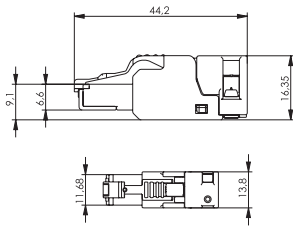
• Power over Ethernet plus (PoE+) acc. to IEEE 802.3at

• IP20

• MFP8-4x90: cable entry from 4 directions (4x90°)

Plugs

Unshielded field assembly RJ45 plug UFP8



1



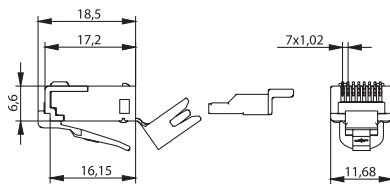
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Order no.	Short name	Description	Fig.
J00026A3001	UFP8 T568B Cat.6 _A	AWG24/1-23/1, AWG27/7-23/7 incl.a pre-assembled dust protection cap	1
J00026A3111	UFP8 T568B Cat.6 _A	AWG24/1-23/1, AWG27/7-23/7 incl.a pre-assembled dust protection cap, blister package	1
F00020A3131	UFP8 wire manager T568B	AWG24/1-23/1, AWG27/7-23/7	2

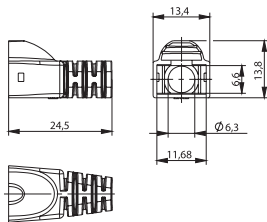


- Category 6_A acc. to ISO/IEC 11801
- Plug: IEC 60603-7-41 compliant
- Durability: ≥ 750 mating cycles
- Contact finish material: Ni1.2Au0.8
- Housing material: PC UL94-V0 black
- Reusable IDC: ≤ 4 cycles
- Operating temperature: -40°C to 70°C
- Power over Ethernet plus (PoE+) acc. to IEEE 802.3at
- UL listed
- IP20

RJ45 Plug MP8(8) FS Cat.6_A and Cable Boots



1

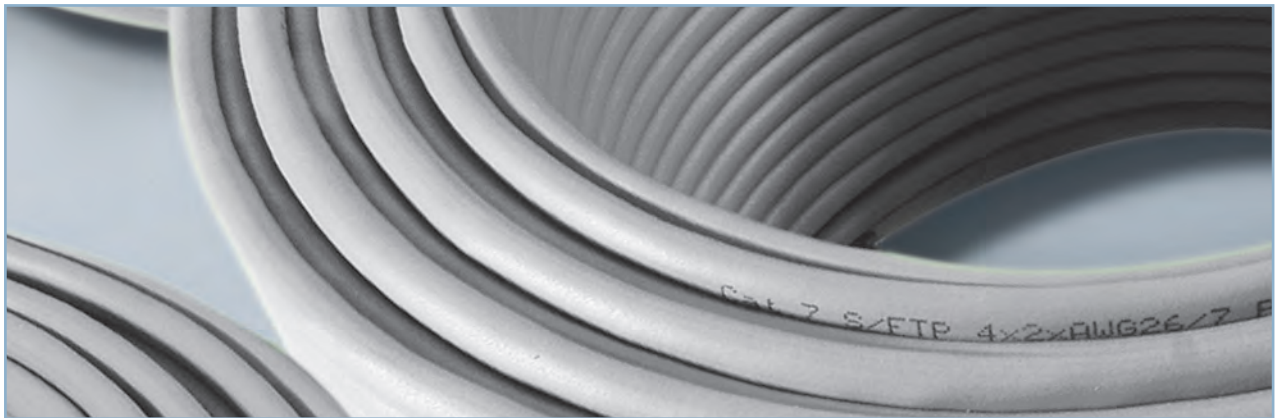


2



Order no.	Short name	Description	Fig.
J00026A0165	RJ45 plug MP8(8) FS Cat.6 _A	8-way fully shielded with wire presorting; AWG24-27 (stranded and solid)	1
B00080A0089	Cable boot for MP8(8) FS	cable boot, grey RAL 7035, Ø 6.3 mm, with latch protection	2
B00080B0089	Cable boot for MP8(8) FS	cable boot, red RAL 3017, Ø 6.3 mm, with latch protection	2
B00080C0089	Cable boot for MP8(8) FS	cable boot, blue RAL 5015, Ø 6.3 mm, with latch protection	2
B00080D0089	Cable boot for MP8(8) FS	cable boot, yellow RAL 1021, Ø 6.3 mm, with latch protection	2
B00080E0089	Cable boot for MP8(8) FS	cable boot, green RAL 6016, Ø 6.3 mm, with latch protection	2
B00080F0089	Cable boot for MP8(8) FS	cable boot, black RAL 9011, Ø 6.3 mm, with latch protection	2

Cables

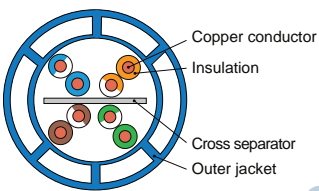


	AMJ 1000 S/FTP Cat.7	AMJ 1000 Outdoor S/FTP Cat.7	TOC 900 S/FTP Cat.7	AMJ 600 Flex S/FTP Cat.7
Construction				
Conductor	Bare copper wire Ø 0.56 mm (AWG 23)	Bare copper wire Ø 0.56 mm (AWG 23)	Bare copper wire Ø 0.56 mm (AWG 23)	Stranded anneal copper wire Ø 0.43 mm (AWG27/7)
Insulation	Foam skin polyethylene, Ø 1.35 mm	Foam skin polyethylene, Ø 1.4 mm	Foam skin polyethylene, Ø 1.4 mm	PE-Foam-PE, Ø1.04±0.05 mm
Twisting	2 cores to the pair	2 cores to the pair	2 cores to the pair	2 cores to the pair
Cable lay up	4 pairs (PIMF)	4 pairs (PIMF)	4 pairs (PIMF)	4 pairs with different pitches
Pair screening	Alu laminated plastic foil	Alu laminated plastic foil	Alu laminated plastic foil	Alu-foil laminated mylar tape wrapped over twinning, with the alu side facing out
Overall screening	Copper braid, tinned	Copper braid, tinned	Copper braid, tinned	Tinned copper wire braiding, normally with min. 60% coverage
Outer jacket	FRNC, RAL 7035	PE, wall thickness 1.2 mm, for outdoor installation, UV stable	LSHF-FR (SHF1), light grey RAL 7035	LSZH
Mechanical Properties				
Bending radius	≥40 mm without load ≥80 mm with load	≥40 mm without load ≥80 mm with load	≥40 mm without load ≥80 mm with load	≥25 mm without load ≥50 mm with load
Operating temperature	during operation: -20°C...60°C during installation: 0°C...50°C	during operation: -55°C...70°C during installation: -20°C...50°C	during operation: -40°C...85°C during installation: -15°C...50°C	during operation: -20°C...60°C during installation: 0°C...50°C
Transmission characteristics (at 20°C)				
Acc. to	IEC 61156-5 Cat.7	IEC 61156-5 Cat.7	IEC 61156-5 Cat.7	IEC 61156-5 Cat.7

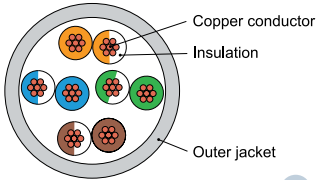
Order no.	Short name	Construction	Category	AWG/mm	Jacket	Colour	Length	Fig.
L02002A0181	AMJ 1000	S/FTP	Cat.7	AWG23/1	LSZH	blue	500 m	1
L02002A0146	AMJ 1000 Outdoor	S/FTP	Cat.7	AWG23/1	PE	black	500 m	2
L02002A0061	AMJ 600 Flex	S/FTP	Cat.7	AWG27/7	LSZH	grey	305 m	3
L02002A0175	TOC 900	S/FTP	Cat.7	AWG23/1	FRNC-C	grey	500 m	4

Cables

	UMJ 500 U/UTP Cat.6A	UMJ 250 U/UTP Cat.6
Construction		
Conductor	Bare copper wire Ø 0.576 mm (AWG 23/1)	Bare copper wire Ø 0.58 mm (AWG24/7)
Insulation	Polyethylene, Ø 1.10 mm	Polyethylene, Ø1.0 mm
Twisting	2 cores to the pair	2 cores to the pair
Cable construction	4 pairs with non-metallic cross separator (spline)	4 pairs
Outer jacket	LSZH, blue RAL 5015	PVC grey RAL 7035
Mechanical Properties		
Bending radius	≥32 mm without load ≥64 mm with load	≥20 mm without load ≥40 mm with load
Operating temperature	during operation: -20°C...60°C during installation: 0°C...50°C	during operation: -20°C...60°C during installation: -10°C...60°C
Transmission characteristics (at 20°C)		
Acc. to	IEC 61156-5 Cat.6A	IEC 61156-6 Cat.6



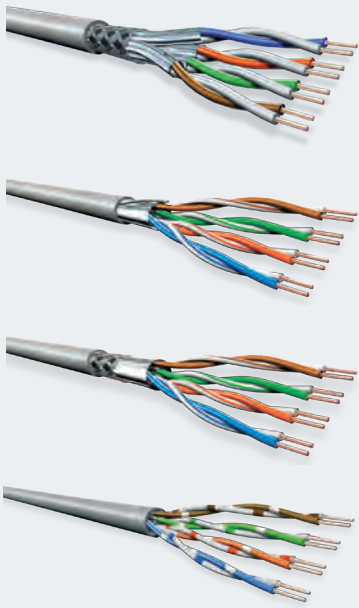
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Order no.	Short name	Construction	Category	AWG/mm	Jacket	Colour	Length	Fig.
L02002A0176	UMJ 500	U/UTP	Cat.6A	AWG23/1	LSZH	blue	305 m	1
L02002A0062	UMJ 250	U/UTP	Cat.6	AWG24/7	PVC	grey	305 m	2

i Different types of twisted pair cables



S/FTP:
overall braid screen (S),
elements foil screened (FTP)

F/UTP:
overall foil screen (F),
elements unscreened (UTP)

SF/UTP:
overall braid and foil screen (SF),
elements unscreened (UTP)

U/UTP:
no overall screen (U),
elements unscreened (UTP)

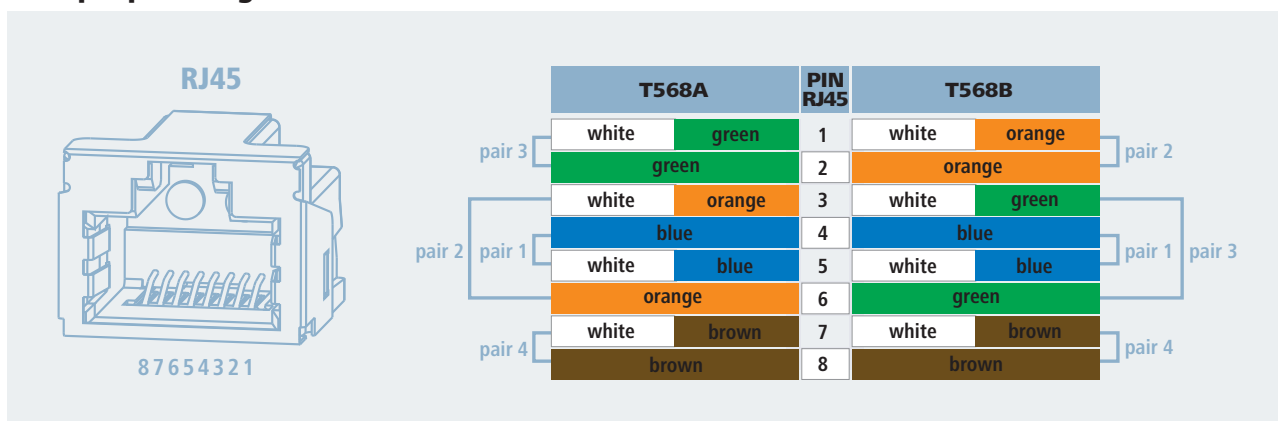


7.3

Modular System AMJ-S/AMJ/UMJ

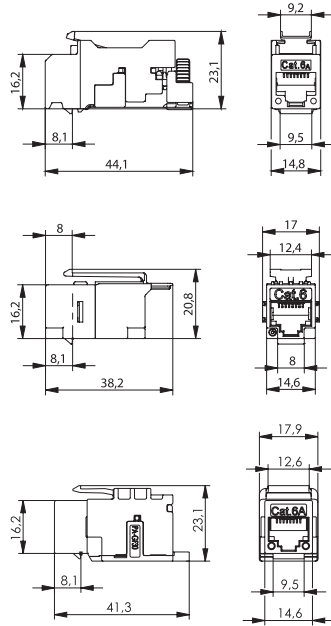
	AMJ-S Module Cat.6 _A	AMJ Coupler Cat.6	UMJ Module K Class E _A 500
Standards			
Connectors	IEC 60603-7-51	IEC 60603-7-5	IEC 60603-7-41
Mechanical Characteristics			
Insertion force	≤ 30N	≤ 30N	≤ 30N
Durability (mating cycles)	≥ 750	≥ 750	≥ 750
Cu-Conductor diameter: solid	0.4 - 0.64 mm (AWG26/1-22/1)	-	0.41 - 0.64 mm (AWG26/1-22/1)
Cu-Conductor diameter: stranded	0.46 - 0.76 mm (AWG27/7-22/7)	-	0.46 - 0.76 mm (AWG27/7-22/7)
Insulation Diameter	0.9 - 1.6 mm	-	0.9 - 1.6 mm
Wire diameter	max. 9 mm		max. 9 mm
Climatic Characteristics			
Operating temperature	-40°C ... 70°C	-40°C ... 70°C	-40°C ... 70°C
Electrical Characteristics			
Current rating at 50°C	1 A	1 A	1 A
PoE+ acc to IEEE 802.3at		Adequate for Power over Ethernet+	
Transmission Characteristics			
Category 6 _A (component)	ISO/IEC 11801, DIN EN 50173-1	-	-
Class E _A (permanent link)		ISO/IEC 11801, DIN EN 50173-1	
10 Gigabit Ethernet acc. to IEEE 802.3an		Adequate for 10 Gigabit Ethernet	

RJ45 pin/pair assignment T568A and T568B



Modular System AMJ-S/AMJ/UMJ

AMJ-S Module / AMJ Coupler / UMJ Module



Order No.	Short name	Remarks	Type	Fig
J00029A2001	AMJ-S Module T568B Cat.6A	tool-free connectivity, suitable for RJ45/11/12 plugs		1
J00029A2111	AMJ-S Module T568B Cat.6A	tool-free connectivity, suitable for RJ45/11/12 plugs	blister package (24 pcs.)	1
J00029A0061	AMJ Coupler K Cat.6, f-f	suitable for RJ45/11/12 plugs		2
J00029B0061	AMJ Coupler K Cat.6, f-f	suitable for RJ45/11/12 plugs	blister package (24 pcs.)	2
J00029K0078	UMJ Module K T568B Class EA 500	tool-free connectivity, suitable for RJ45/11/12 plugs		3
J00029L0078	UMJ Module K T568B Class EA 500	tool-free connectivity, suitable for RJ45/11/12 plugs	blister package (24 pcs.)	3

Applications



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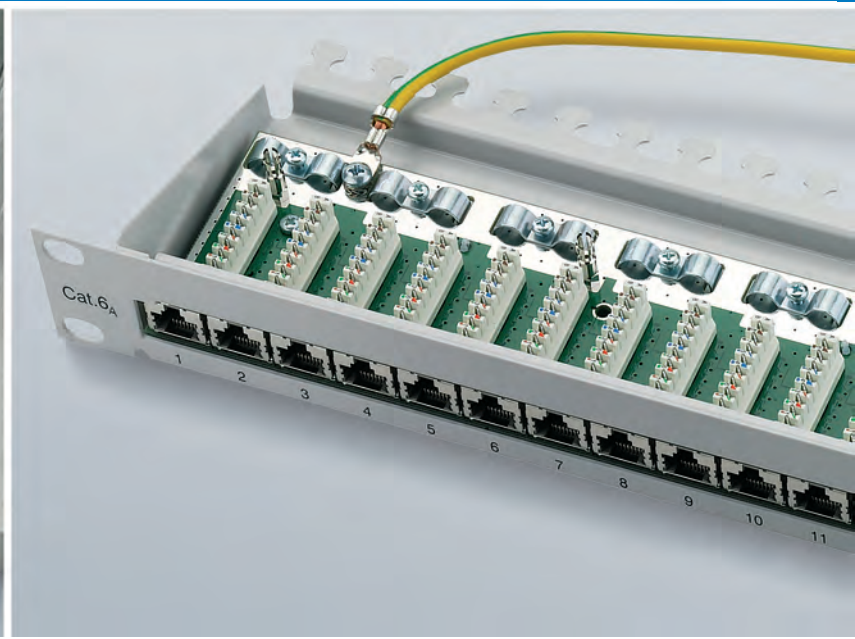


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5

Order No.	Short name	Type	Remarks	Fig
H02000A0070	Outlet IP44 AP	double gang incl. faceplate, without module/coupler	for AMJ / UMJ modules	1
H02025A0167	19" Frontplate 1 HU	incl. cable strain relief and grounding kit, w/o module/coupler	24 ports, light grey	2
H02000A0103	MPD8 AMJ/UMJ	Mini Distributor w/o module/coupler	8 ports	3
H02025A0236	19" Frontplate 1 HU	incl. cable strain relief and grounding kit, w/o module/coupler	48 ports, sheet steel zinc-plated	4
H02025A0260	MPD24 AMJ/UMJ	Mini Distributor w/o module/coupler, incl. cable management	24 ports, pure white	5

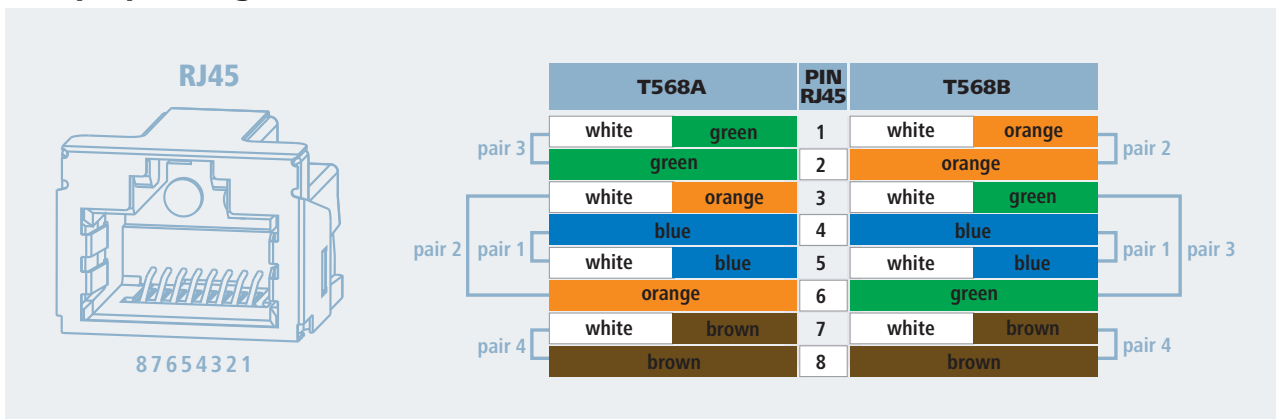


7.4

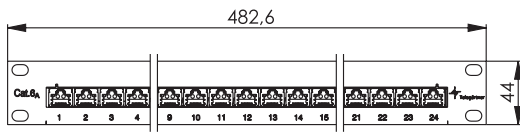
Patch Panels and Distributors

	19" Patch Panels Cat.6 _A	19" Feedthrough Panel	16 Port Cross Connect Panel	Mini Distributor Cat.6 _A
Standards				
Connectors	IEC 60603-7-51	IEC 60603-7-5	IEC 60603-7-5	IEC 60603-7-51
Mechanical Characteristics				
Insertion force	≤ 30 N	≤ 30 N	≤ 30 N	≤ 30 N
Durability (mating cycles)	≥ 750	≥ 750	≥ 750	≥ 750
LSA Plus: Cu conductor diameter	solid 0.40 - 0.65 mm AWG26/1 - AWG22/1	-	-	solid 0.40 - 0.65 mm AWG26/1 - AWG22/1
LSA Plus: Wire diameter	0.7 - 1.6 mm	-	-	0.7 - 1.6 mm
Environmental Requirements				
Operating temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
Electrical Characteristics				
Current rating at 50°C	1 A	1 A	1 A	1 A
PoE+ acc. to IEEE 802.3at	suitable for PoE+	suitable for PoE+	suitable for PoE+	suitable for PoE+
Transmission Characteristics				
Category 6 _A (Component)	ISO/IEC 11801, DIN EN 50173-1			
10 Gigabit Ethernet acc. to IEEE 802.3an	fulfilled	fulfilled	fulfilled	fulfilled

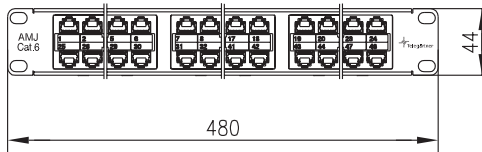
RJ45 pin/pair assignment T568A and T568B



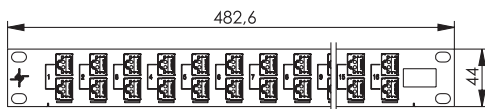
Patch Panels and Distributors



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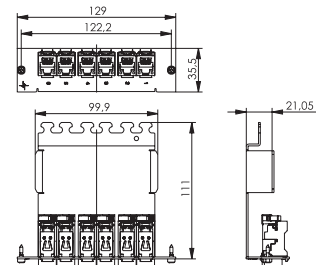
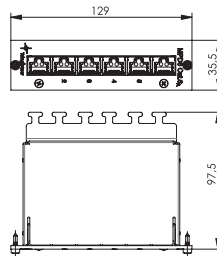
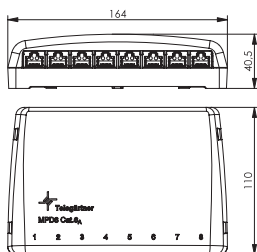
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5



6



Order No.	Short name	Type	Colour	Fig
J02023A0050	MPP24-HS K Cat.6 _A	24x RJ45 shielded	light grey RAL 7035	1
J02023S0050	MPP24-HS K Cat.6 _A	24x RJ45 shielded	black	1
J02024A0007	19" Feedthrough panel, 1 HU	incl. 48 AMJ Coupler K Cat.6 (4x12) shielded	light grey RAL 7035	2
J02024C0007	19" Feedthrough panel, 1 HU	incl. 48 AMJ Coupler K Cat.6 (4x12) shielded	black	2
J02022A0059	16 Port Cross Connect Panel	32x RJ45 feedthrough shielded	black	3
J02021A0030	MPD8-HS K Cat.6 _A	shielded, mounting onto DIN Rail TH35 w/o adaptor	alpine white	4
J02021A0054	MPD6-HS K Cat.6 _A 3 HU	shielded, 6x RJ45, 3 HU / 7 PU	front panel anodized alu	5
J02021A0037	3 HU / 7 PU frontplate	incl. 6 AMJ-S Modules Cat.6 _A T568A	aluminium	6



7.5

Connection Module VM-Pro Class F_A IP67

Connection Module VM-Pro Class F _A IP67	
Wire connection	
Cu-conductor diameter	solid 0.51 - 0.64 mm AWG 24/1 - AWG 22/1; stranded 0.48 - 0.76 mm AWG 26/7 - AWG 22/7
Reusable IDC	≤ 4 cycles
Wire diameter	0.85 - 1.6 mm
Cable diameter	5.5 - 9.0 mm
Environmental Requirements	
Protection against particulate ingress	IP6X
Protection against water / immersion	IPX7
Operating temperature	-40°C to +85°C
Electrical Characteristics	
PoE+ acc. to IEEE 802.3at	Adequate for Power over Ethernet+
Transmission Characteristics	
10 Gigabit Ethernet acc. to IEEE 802.3an	Adequate for 10 Gigabit Ethernet
Category 6 _A	ISO/IEC 11801; EN 50173-1
Class F _A	ISO/IEC 11801; EN 50173-1
Category 6A	ANSI/TIA-568-C.2

Order no.	Description	Remarks	Colour
J80060A0000	VM-Pro 8-8 Class F _A IP67	AWG27-22	black



- Class F_A (1000 MHz)
- Real-time re-embedded tested
- Suitable for 100 / 250 / 500 / 1000 MHz installation and patch cables
- Connection via IDC termination
- Insulated construction (insulating resistance 30x 1012 Ω)
- Connection of 4-pair shielded/unshielded installation and patch cables from AWG27-22
- Pairs can be brought directly up to the terminal without untwisting the pairs
- EMC compatible acc. to EN 61000-6-1 and EN 61000-6-2
- Suitable for PoE+ acc. to IEEE 802.3at
- Operating temperature from -40° C to + 70° C
- Reconnectable up to 4 times
- Reusable IDC: ≤ 4 cycles



Components for Mounting Rails

7.6

1. Mounting rail outlet TS45 AMJ-S: Dimensions include 63.4mm height, 78.8mm width, and 17.8mm depth. Includes a 3D perspective view.

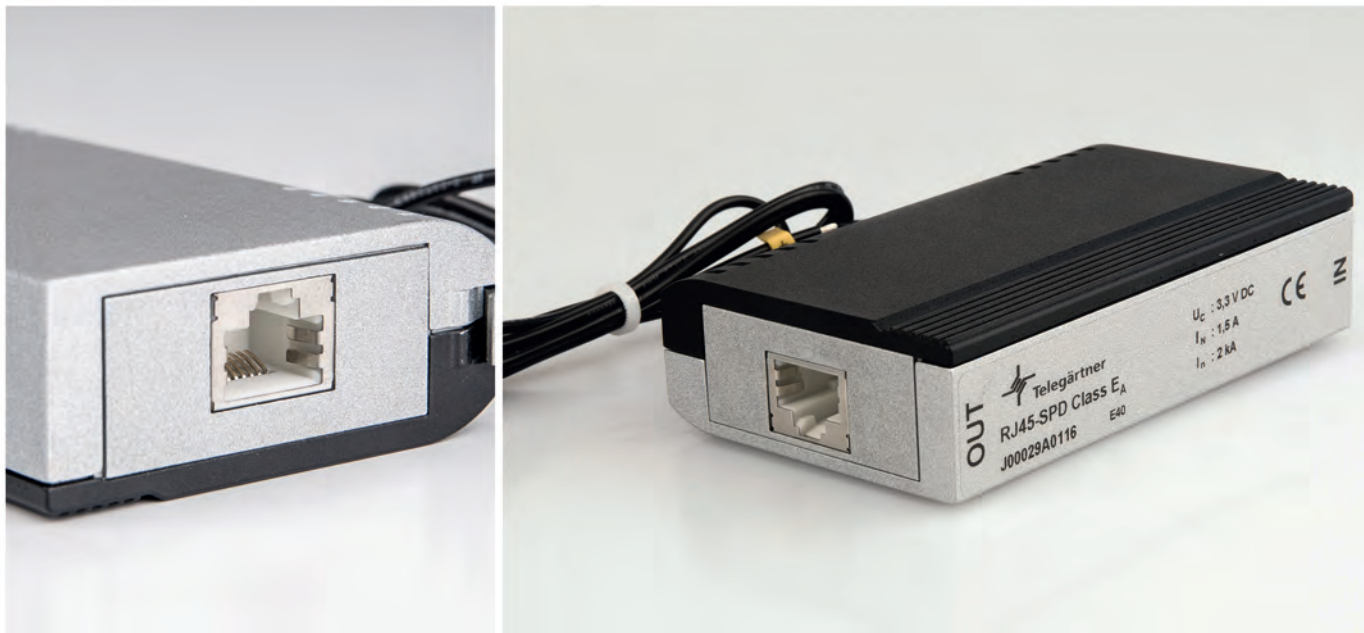
2. MPD6-HS K Cat.6_A: Dimensions include 22.6mm height, 95.8mm width, and 75.3mm depth. Includes a 3D perspective view.

3. STX Mounting Rail Outlet: Dimensions include 67.1mm height and 59.5mm width. Includes a 3D perspective view.

4. STX Mounting Rail Outlet: Dimensions include 67.1mm height, 59.5mm width, and 17.5mm depth. Includes a 3D perspective view.


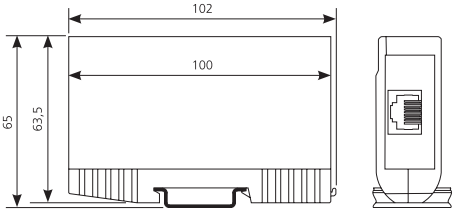
5. Mounting rail adaptor: Dimensions include 14.8mm width, 1.5mm thickness, 19.4mm height, 20mm base width, 50.4mm length, 43.4mm depth, and 47.9mm total height. Includes a 3D perspective view.

Order No.	Short name	Type	Remarks	Fig
J00023A0206	Mounting rail outlet TS45 AMJ-S	incl. AMJ-S Module Cat.6 _A T568B	for mounting rail TH35	1
J02021A0055	MPD6-HS K Cat.6 _A	6-port mini distributor metal incl. 2 mounting rail adaptors	for mounting rail TH35	2
J80023A0003	STX Mounting Rail Outlet	incl. RJ45 coupler Cat.6	for mounting rail TH35	3
J80023A0004	STX Mounting Rail Outlet	incl. USB coupler type A f-f	for mounting rail TH35	4
H06000B0045	Mounting rail adaptor	metal, without module	for mounting rail TH35	5



RJ45 Surge Protection Device

RJ45 Surge Protection Device	
Standards	
Standards and Regulations	IEC 61643-21, EN 50173-1, ISI/IEC 11801
Mechanical Characteristics	
Housing	Zinc die-cast
Color	silver / black
Mounting type	DIN rail mounting
Dimension	103x25x63 mm
Weight	315 g
Connection equipotential bonding	Cable connection
Environmental Requirements	
Operation Temperature	-40°C to 70°C
Protection class acc. to IEC 60529	IP20
Electrical Characteristics	
PoE+ acc. to IEEE 802.3 at	Adequate for Power over Ethernet +

			
Order no.	Description	Remarks	
J00029A0116	RJ45 surge protection device	Class E _A up to 10 Gigabit Ethernet	



- Reliable transmission speeds up to 10 Gigabit Ethernet
- Protective adapter for eight signal paths via RJ45 connectors

- Suitable for Class E_A high-speed data networks
- Suitable for PoE and PoE+



Accessories & Tools

7.8

Accessories



1



2



3

Order No.	Short name	Colour	Fig
B00001A0016	Retrofit dust protection flap for AMJ-S, UMJ	black (other colours on request)	1
H00030F0014	Dust cover for RJ45	black (other colours on request)	2
B00081A0047	Captive RJ45 plug protective cap	black	3

Tools



1



2

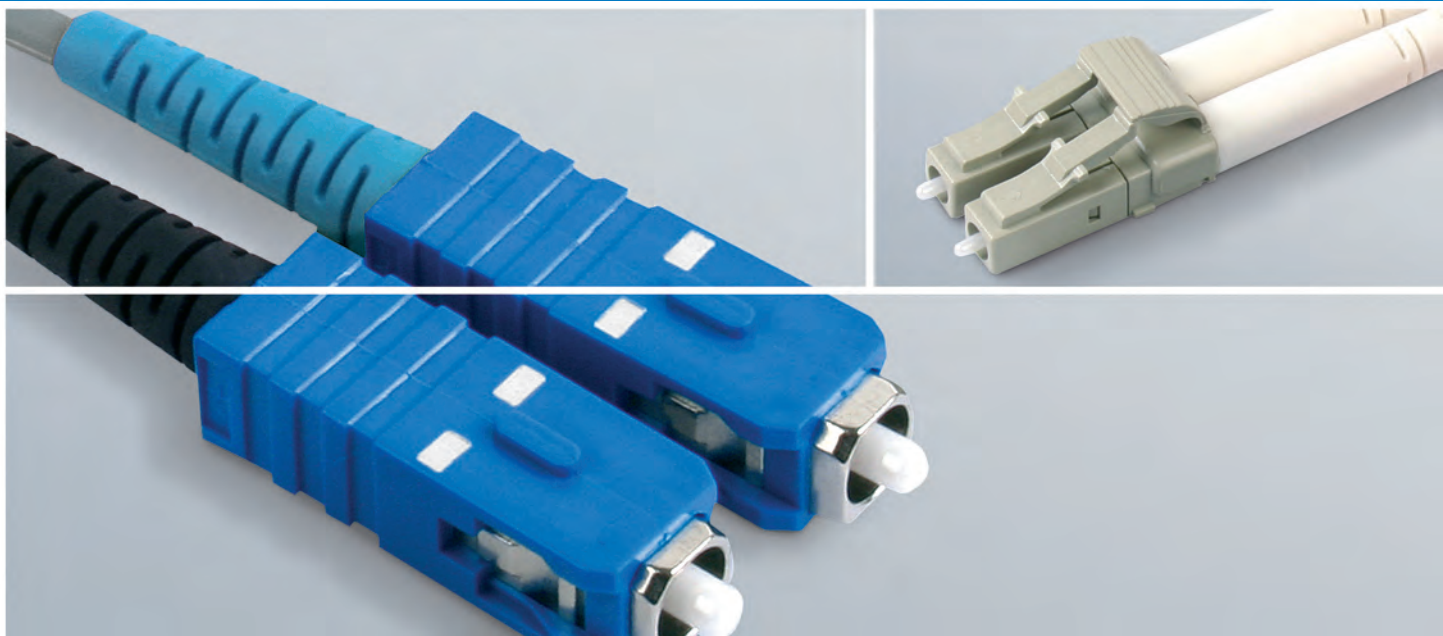


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4

Order No.	Short name	Remarks	Fig
N01002A0001	LSA Plus IDC termination tool	with wire cutter	1
N00000B0020	Parallel pressing tool	for AMJ, UMJ, and MFP8/UFP8 plug assembly	2
N00001A0002	Crimp Tool Professional (for frequent use)	with insert for shielded MP8 FS plug J00026A0165	3
N00000A0013	Plier wrench 1 3/8 inch	auxiliary tool for AMJ and UMJ Module, MFP8/UFP8	4



8.1

FO Patch Cords

1	Connector Type 1st End SC Duplex – 2nd End SC Duplex				
Length					
Fiber type	1.0 m	2.0 m	3.0 m	5.0 m	10.0 m
E9/125 OS2	L00880A0006	L00881A0006	L00882A0002	L00883A0002	L00885A0002
G50/125 OM2	L00880C0007	L00881C0007	L00882C0003	L00883C0003	L00885C0003
G50/125 OM3	L00880C0010	L00881C0023	L00882C0015	L00883C0017	L00885C0000

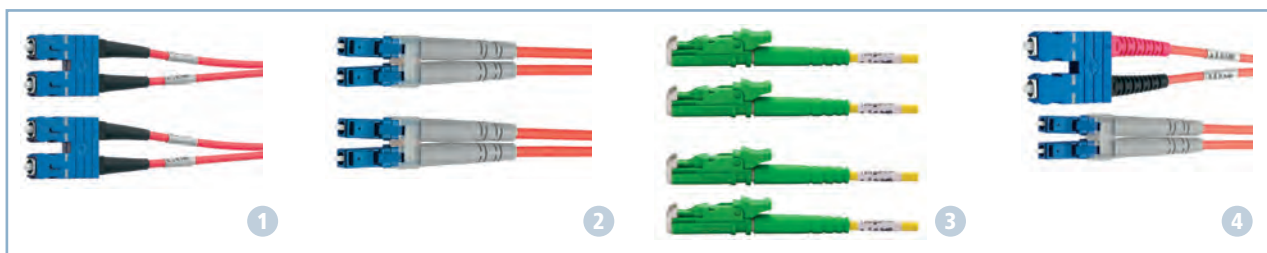
2	Connector Type 1st End LC Duplex – 2nd End LC Duplex				
Length					
Fiber type	1.0 m	2.0 m	3.0 m	5.0 m	10.0 m
E9/125 OS2	L00870A0002	L00871A0003	L00872A0002	L00873A0002	L00875A0002
G50/125 OM2	L00870A0000	L00871A0004	L00872A0000	L00873A0000	L00875A0000
G50/125 OM3	L00870A0003	L00870A0006	L00872A0003	L00873A0003	L00875A0003

2	Connector Type 1st End LC/APC Duplex – 2nd End LC/APC Duplex				
Length					
Fiber type	1.0 m	2.0 m	3.0 m	5.0 m	10.0 m
E9/125 OS2	L00870A0024	L00871A0026	L00872A0024	L00873A0031	L00875A0034

3	Connector Type 1st End E2000/APC Duplex – 2nd End E2000/APC Duplex				
Length					
Fiber type	1.0 m	2.0 m	3.0 m	5.0 m	10.0 m
E9/125 OS2	L00850A0001	L00851A0008	L00852A0000	L00853A0001	L00855A0001

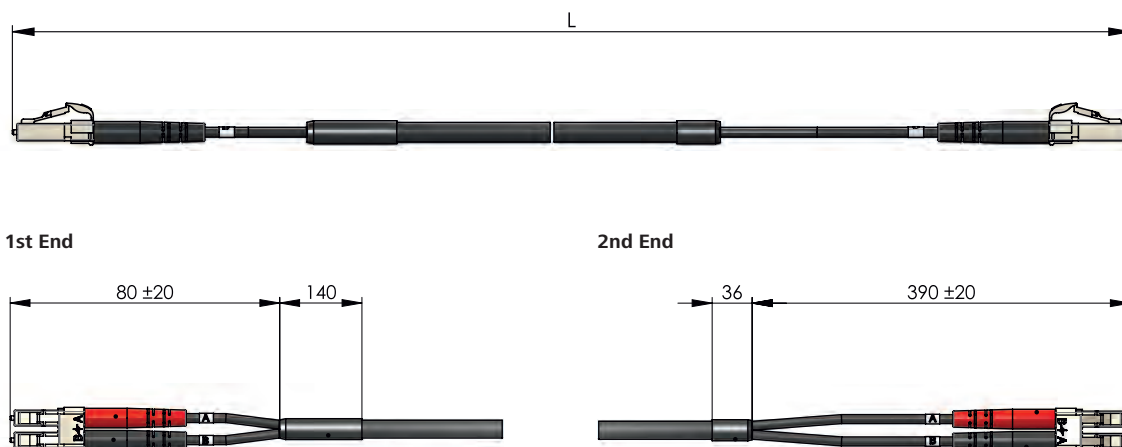
4	Connector Type 1st End SC Duplex – 2nd End LC Duplex				
Length					
Fiber type	1.0 m	2.0 m	3.0 m	5.0 m	10.0 m
E9/125 OS2	L00890A0041	L00891A0017	L00892A0040	L00893A0043	L00895A0040
G50/125 OM2	L00890C0038	L00891C0018	L00892C0037	L00893C0040	L00895C0037
G50/125 OM3	L00890C0055	L00891C0042	L00892C0024	L00893C0022	L00895C0021

FO Patch Cords



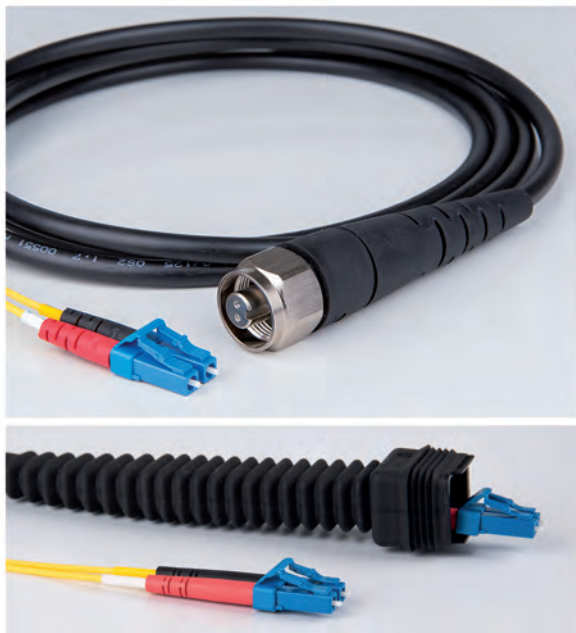
Other lengths and types on request

FO Patch Cords - Outdoor LC – LC Duplex



Order No.	Description	Housing Colour	Length
L00875A0035	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	10.0 m
L00876A0104	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	15.0 m
L00876A0101	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	20.0 m
L00876A0105	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	30.0 m
L00876A0106	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	40.0 m
L00876A0102	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	50.0 m
L00876A0107	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	60.0 m
L00876A0103	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	70.0 m
L00876A0108	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	80.0 m
L00876A0109	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	90.0 m
L00876A0110	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	100.0 m
L00876A0111	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	125.0 m
L00876A0112	FTTA Duplex Cable 2G50/125 OM2 2x LC/PC	beige	150.0 m

Order No.	Description	Housing Colour	Length
L00875A0040	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	10.0 m
L00876A0147	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	15.0 m
L00876A0148	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	20.0 m
L00876A0149	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	30.0 m
L00876A0150	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	40.0 m
L00876A0151	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	50.0 m
L00876A0152	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	60.0 m
L00876A0153	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	70.0 m
L00876A0154	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	80.0 m
L00876A0155	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	90.0 m
L00876A0156	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	100.0 m
L00876A0157	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	125.0 m
L00876A0158	FTTA Duplex Cable 2E9/125 OS2 2x LC/PC	blue	150.0 m



8.2

TOC - Fiber To The Antenna Connectivity Solutions

TOC TDC



Order No.	Short name	Remarks
U01100A0339	TOC TDC Singlemode, 2 Fiber, female	manufactured
U01100A0347	TOC TDC Multimode, 2 Fiber, female	manufactured
U01100A0349	TOC TDC Singlemode, 4 Fiber, female	manufactured
U01100A0351	TOC TDC Multimode, 4 Fiber, female	manufactured
U01100A0346	TOC TDC Singlemode, 2 Fiber, male	manufactured
U01100A0348	TOC TDC Multimode, 2 Fiber, male	manufactured
U01100A0350	TOC TDC Singlemode, 4 Fiber, male	manufactured
U01100A0352	TOC TDC Multimode, 4 Fiber, male	manufactured

TOC FXC



Order No.	Short name	Remarks
U01100A0353	TOC FXC Singlemode, LC/PC Duplex	manufactured
U01100A0353	TOC FXC Multimode, LC/PC Duplex	manufactured

TOC RBC



Order No.	Short name	Remarks
U01100A0340	TOC RBC Singlemode, LC/PC Duplex	manufactured
U01100A0345	TOC RBC Multimode, LC/PC Duplex	manufactured

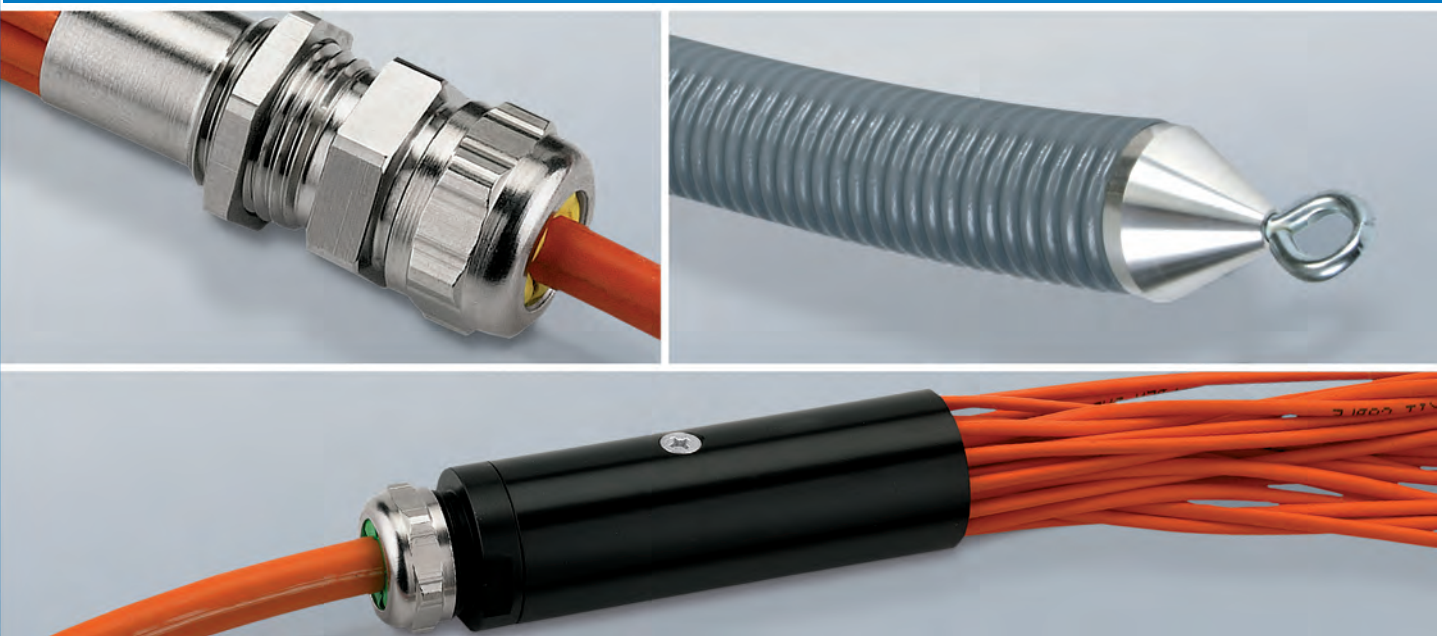
TOC FEM



Order No.	Short name	Remarks
H02052A0252	TOC FEM LC/PC Duplex adaptor	Singlemode
H02052A0253	TOC FEM LC/PC Duplex adaptor	Multimode
H02052A0254	TOC FEM MPO/MTP adaptor	Single-/Multimode

TOC Cable

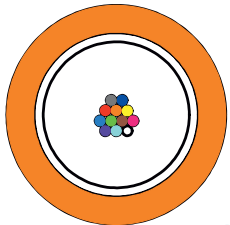
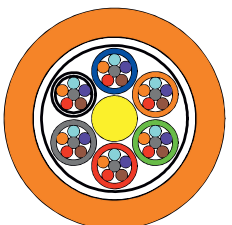
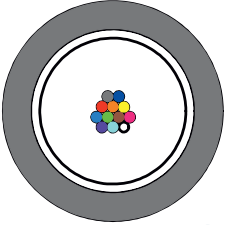
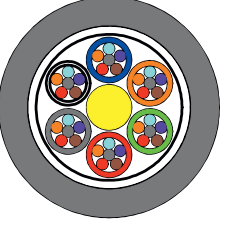
Order No.	Short name	Jacket material
L08020A2702	TOC FTTA Cable AT-V(ZN)H11Y 2xE9/125, OS2	TPE/PUR
L08021A2702	TOC FTTA Cable AT-V(ZN)H11Y 2xG50/125, OM2	TPE/PUR
L08022A2702	TOC FTTA Cable AT-V(ZN)H11Y 2xG62,5/125, OM1	TPE/PUR
L08020A2802	TOC FTTA Cable AT-V(ZN)H11Y 2xE9/125, OS2	TPU
L08021A2802	TOC FTTA Cable AT-V(ZN)H11Y 2xG50/125, OM2	TPU



8.3

FO Indoor/Outdoor Cable

	Central Tube A/I-DQ(ZN)BH	Central Tube A-DQ(ZN)B2Y	Multi Tube A/I-DQ(ZN)BH	Multi Tube A-DQ(ZN)B2Y
Mechanical Characteristics				
Calbe structure acc. DIN/VDE 0888	A/I-DQ(ZN)BH	A-DQ(ZN)B2Y	A/I-DQ(ZN)BH	A-DQ(ZN)B2Y
Cable diameter	max. 6.1 mm	max. 6.1 mm	max. 14 mm	max. 14 mm
Max. pulling tension short-term/long-term acc. to IE 60794-1-21	1250 N / 420 N	1250 N / 420 N	6600 N / 2200 N	6600 N / 2200 N
Min. bending radius short-term/long-term acc. to IE 60794-1-21	10 x Ø / 20 x Ø	10 x Ø / 20 x Ø	20 x Ø / 20 x Ø	20 x Ø / 20 x Ø
Cable jacket	LSZH	PE	LSZH	PE
Climatic Characteristics				
Installation temperature in °C			-5 to +50	
Operating temperature in °C			-30 to +70	
Storage temperature in °C			-30 to +70	

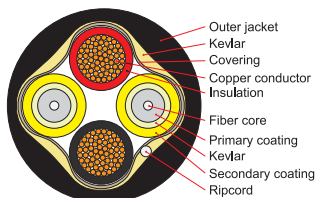
Order no.	Description	Colour	Fiber Count	Fiber Type	Length in m	Fig.
L08020T0014	A/I-DQ(ZN)BH 1x12E9/125 OS2	yellow	12	Singlemode OS2	2.000	1
L08020T0015	A/I-DQ(ZN)BH 1x24E9/125 OS2	yellow	24	Singlemode OS2	2.000	1
L08021T0124	A/I-DQ(ZN)BH 1x12G50/125 OM2	orange	12	Multimode OM2	2.000	1
L08021T0125	A/I-DQ(ZN)BH 1x24G50/125 OM2	orange	24	Multimode OM2	2.000	1
L08020T1016	A/I-DQ(ZN)BH 4x12E9/125 OS2	yellow	48	Singlemode OS2	2.000	2
L08021T1126	A/I-DQ(ZN)BH 4x12G50/125 OM2	orange	48	Multimode OM2	2.000	2
L08020D0004	A-DQ(ZN)B2Y 1x12E9/125 OS2	black	12	Singlemode OS2	2.000	3
L08020D0005	A-DQ(ZN)B2Y 1x24E9/125 OS2	black	24	Singlemode OS2	2.000	3
L08021D0104	A-DQ(ZN)B2Y 1x12G50/125 OM2	black	12	Multimode OM2	2.000	3
L08021D0105	A-DQ(ZN)B2Y 1x24G50/125 OM2	black	24	Multimode OM2	2.000	3
L08020D1006	A-DQ(ZN)B2Y 4x12E9/125 OS2	black	48	Singlemode OS2	2.000	4
L08021D1106	A-DQ(ZN)B2Y 4x12G50/125 OM2	black	48	Multimode OM2	2.000	4



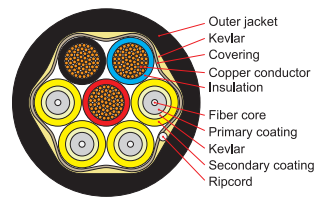
8.4

Hybrid Cable

	2x FO Singlemode / 2x Power	4x FO Singlemode / 3x Power
Construction		
Cable diameter	≤ 9.00 mm	≤ 14.00 mm
Color	black	black
Fiber	Singlemode G657.A1	Singlemode G657.A1
Cable diameter / colour	2.00 mm / yellow	2.00 mm / yellow
Power / colour	2.5 mm ² / black/red	2.5 mm ² / black/red/blue
Ripcord	Yes	Yes
Mechanical Characteristics		
Max. pulling tension	short term: 1300 N; long term 400 N	short term: 2000 N; long term 600 N
Min. bending radius	short term: 15x Ø; long term 10x Ø	short term: 15x Ø; long term 10x Ø
Climatic Characteristics		
Operating / storage temperature	-25° C to +70° C	-25° C to +70° C
Installation temperature	-15° C to +65° C	-15° C to +65° C
Flame retardancy	IEC 60332-1	IEC 60332-1
Halogen free	IEC 60754-2	IEC 60754-2
Watertightness	IEC 60794-1	IEC 60794-1
UV resistance	IEC 4892-2	IEC 4892-2
Application	In / Outdoor	In / Outdoor

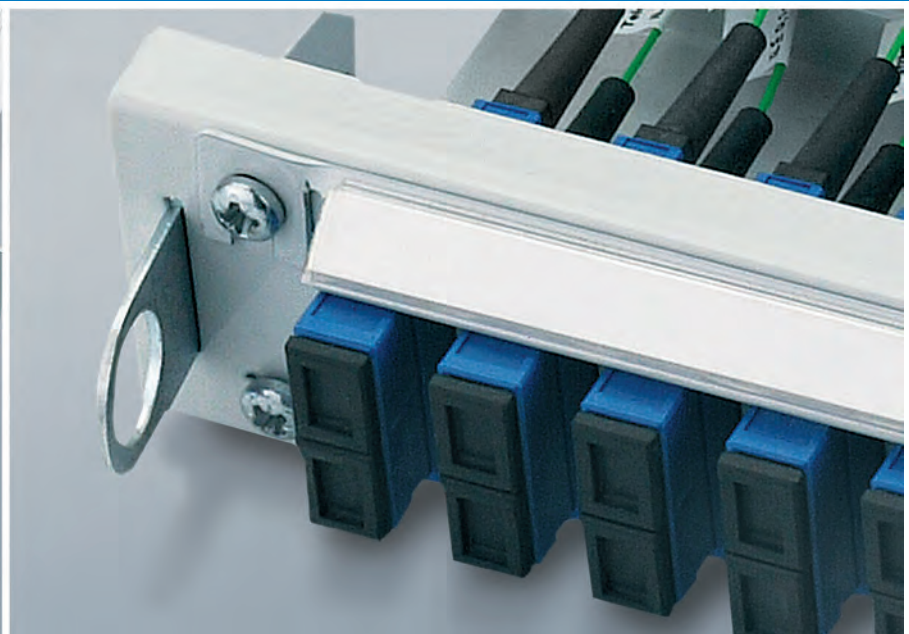


1






2

Description	Remarks	Fig.
Hybrid Fiber Optic / Power Cable	2x FO singlemode, 2x power	1
Hybrid Fiber Optic / Power Cable	4x FO singlemode, 3x power	2



FO Patch Panels

8.5

	ECONOMY V	BASIS V	PROFI V
			
Mechanical Characteristics			
Housing	sheet steel 1 mm, powder-laminated, light grey RAL 7035		
Protection class acc. to IEC 60529	IP20	IP20	IP20
Front plates	sheet aluminium 1.5 mm, powder-laminated, light grey RAL 7035, port no. imprinted, marking strip with plastic cover optional		
Cable entries	strain relief bar for cable ties	M20 for 5-9 mm, M25 for 9-20 mm, cable diameter in 4 steps	
Panel piercings	for ST, SC, SC Duplex, E2000, LC Duplex, FC		
Dimensions in mm	1 HU	1 HU	1 HU
Width	482	482	482
Height	44	44	44
Depth	175	265	300

1	ECONOMY V 1 HU		
	Fiber		
Adaptors	E9/125 OS2	G50/125 OM2	G50/125 OM3
SC Duplex (6 Adaptors)	H02030A0016	H02030M0016	H02030T0016
SC Duplex (12 Adaptors)	H02030A0019	H02030M0019	H02030T0019
SC Duplex (24 Adaptors)	H02030A0022	H02030M0022	H02030T0022
LC Duplex (6 Adaptors)	H02030A0608	H02030M0608	H02030T0608
LC Duplex (12 Adaptors)	H02030A0609	H02030M0609	H02030T0609
LC Duplex (24 Adaptors)	H02030A0610	H02030M0610	H02030T0610

FO Patch Panels

2	BASIS V 1 HU		
Fiber			
Adaptors / Pigtailes	E9/125 OS2	G50/125 OM2	G50/125 OM3
SC Duplex (6x)	H02030E0008	H02030F0008	H02030K0008
SC Duplex (12x)	H02030E0009	H02030F0009	H02030K0009
SC Duplex (24x)	H02030E0034	H02030F0034	H02030K0034
LC Duplex (6x)	H02030E0590	H02030F0590	H02030K0590
LC Duplex (12x)	H02030E0491	H02030F0491	H02030K0491
LC Duplex (24x)	H02030E0492	H02030F0492	H02030K0492
E2000/APC (12x)	H02030E0554	-	-
E2000/APC (24x)	H02030E0594	-	-

3	PROFI V 1 HU		
Fiber			
Adaptors / Pigtailes	E9/125 OS2	G50/125 OM2	G50/125 OM3
SC (12x)	H02030E0006	H02030F0006	H02030K0006
SC (24x)	H02030E0007	H02030F0007	H02030K0007
SC Duplex (6x)	H02030E0010	H02030F0010	H02030K0010
SC Duplex (12x)	H02030E0011	H02030F0011	H02030K0011
SC Duplex (24x)	H02030E0036	H02030F0036	H02030K0036
LC Duplex (6x)	H02030E0591	H02030F0591	H02030K0591
LC Duplex (12x)	H02030E0506	H02030F0506	H02030K0506
LC Duplex (24x)	H02030E0507	H02030F0507	H02030K0507
E2000/APC (12x)	H02030E0555	-	-
E2000/APC (24x)	H02030E0595	-	-

STX Mounting Rail Distributors



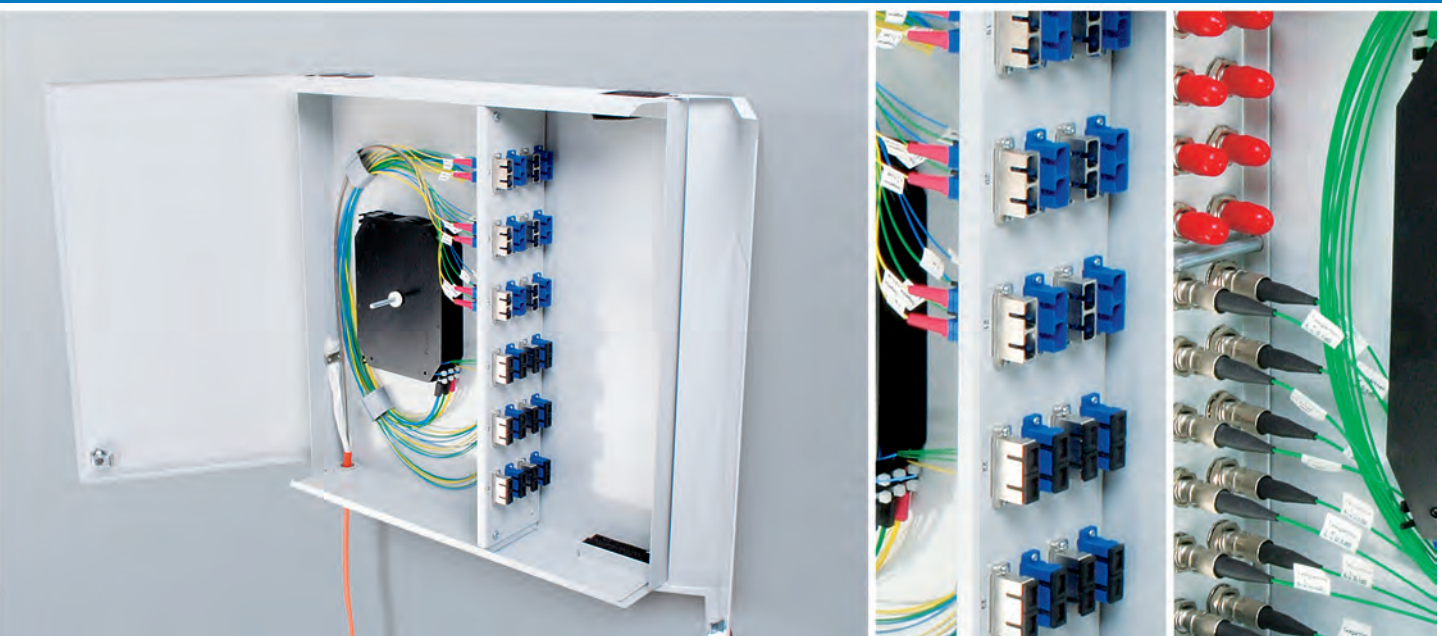
1



2

Coloured, with cable strain relief, stripped for splicing

Order No.	Description	Fiber Pigtailes	Fig.
H82050E0003	STX mounting rail distributor with 6x SC Duplex, splice cassette, pigtailes, metal housing	12x E9/125 OS2, SC	1
H82050F0002	STX mounting rail distributor with 6x SC Duplex, splice cassette, pigtailes	12x G50/125 OM2, SC	1
H82050E0005	STX mounting rail distributor with 6x LC Duplex, splice cassette, pigtailes	12x E9/125 OS2, LC	1
H82050F0005	STX mounting rail distributor with 6x LC Duplex, splice cassette, pigtailes	12x G50/125 OM2, LC	1
H82050E0007	STX mounting rail distributor with 6x E2000 Compact, splice cassette, pigtailes	12x E9/125 OS2, E2000	1
H82050E0102	STX mounting rail distributor with 12x SC Duplex, splice cassette, pigtailes	24x E9/125 OS2, SC	2
H82050F0102	STX mounting rail distributor with 12x SC Duplex, splice cassette, pigtailes	24x G50/125 OM2, SC	2
H82050E0105	STX mounting rail distributor with 12x LC Duplex, splice cassette, pigtailes	24x E9/125 OS2, LC	2
H82050F0105	STX mounting rail distributor with 12x LC Duplex, splice cassette, pigtailes	24x G50/125 OM2, LC	2



FO Wall Distributors and Splice Boxes

8.6

	FO Compact Splice Box	Wall Distributor ODB 54	FO Splice Box IP66 S-V	FO Distribution Box TOC ODB 68
Mechanical Characteristics				
Housing	sheet steel 1mm, powderlaminated, light grey RAL 7035	thermoplastic PC-ABS, non-halogen, flame retardant, pure white RAL 9010	thermoplastic, non-halogen, flame retardant, light grey RAL 7035	PPE, UV resistant, flame retardant, thermally stable, black
Distribution plates	aluminum sheet 1:5 mm, powder-laminated, light grey RAL 7035	Aluminium sheet 1:5 mm, anodized	aluminum sheet 1:5 mm, powder-laminated, light grey RAL 7035	Aluminium sheet 1:5 mm, anodized
Cable entries / Strain relief	strain relief bar for cable ties	2x M20 cable gland for cables Ø 5 - 9 mm	M12; M16; M20; M25; for Ø 4 - 15.5 mm	for Ø 4 - 13 mm, ODS cable splitters
Protection class acc. To IEC 60529	IP 30	IP54	IP66	IP68
Dimension: Width	265 mm	250 mm	254 mm	220 mm
Dimension: Height	150 mm	200 mm	180 mm	65 mm
Dimension: Depth	55 mm	56 mm	90 mm	185 mm

FO Compact Splice Box



1



2

Order No.	Short name	Remarks	Fig
H02050A0013	FO Compact Splice Box	Housing with lockable cover, with 2 cable entry openings for incoming and outgoing cables to be fixed by cable ties, with sealing straps, for storage of max. 4 splice cassettes or 1 cassette and 1 distribution plate	1
H02025A0350	Distribution plate	6x E2000	2
H02025A0115	Distribution plate	6x LC Duplex	2
H02025A0363	Distribution plate	8x SC Duplex	2

FO Wall Distributors and Splice Boxes

FO Splice Box IP66



1



2

Order No.	Short name	Remarks	Fig
H02050A0087	FO Splice Box IP66 S-V	Housing with embossed holes M20/M25, for storage of up to 5 splice cassettes Telekom or 2 splice cassettes Telekom and 1 distribution plate	1
H02025A0368	Distribution plate	12x E2000	2
H02025A0330	Distribution plate	12x LC Duplex	2
H02025A0114	Distribution plate	12x SC Duplex	2

Wall Distributor ODB 54



1



2



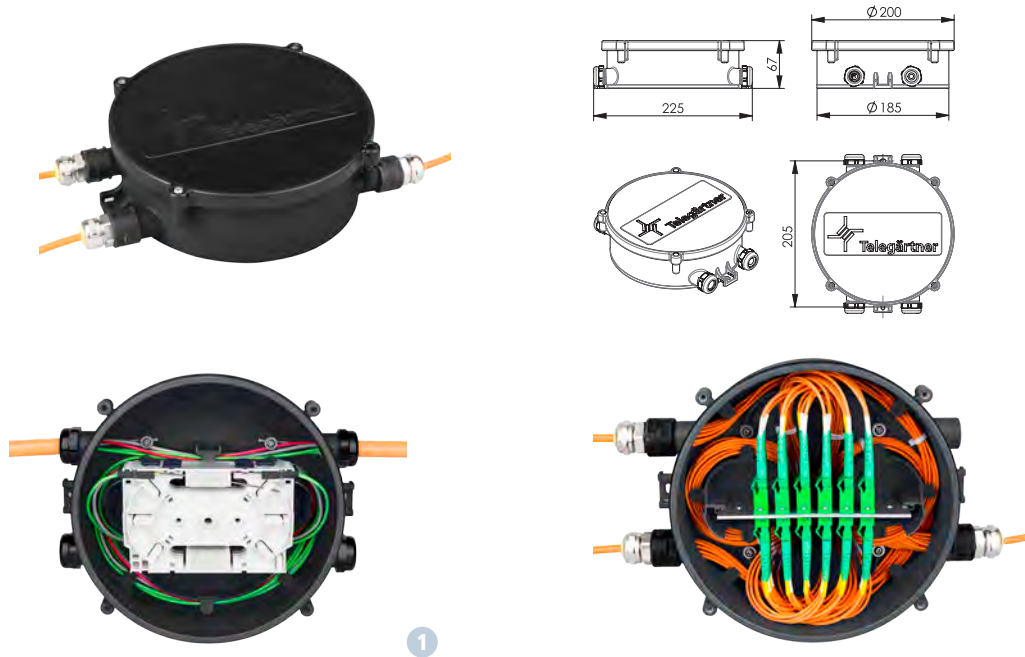
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Order No.	Short name	Remarks	Fig
H02050A0190	ODB 54 housing	for splicing of max. 24 fibers	1
H02050A0279	ODB 54 - TICNET	for max. 6x SC Duplex / LC Quad / ST Duplex adaptors	2
H02050A0280	ODB 54 - TICNET	for max. 6x LC duplex adaptors	2
H02050A0281	ODB 54 - TICNET	for max. 12x E2000 adaptors	2
H02050A0193	ODB 54	6x SC Duplex adaptor, singlemode, blue, 12x E9/125 OS2 pigtails	1
H02050A0191	ODB 54	6x SC Duplex adaptor, multimode, beige, 12x G50/125 OM2 pigtails	1
H02050A0197	ODB 54	6x LC Duplex adaptor, singlemode, blue, 12x E9/125 OS2 pigtails	1
H02050A0195	ODB 54	6x LC Duplex adaptor, multimode, beige, 12x G50/125 OM2 pigtails	1
H02050A0205	ODB 54	12 x E2000/APC adaptor, singlemode, green, 12x E9/125 OS2 pigtails	1
H02050A0282	ODB 54	equipped with 8x SC cassettes; for max. 4 fibers per cassette; for crimp/shrink splice protector	3
H02050A0283	ODB 54	equipped with 4x SE cassettes; for max. 12 fibers per cassette; for crimp/shrink protector	3

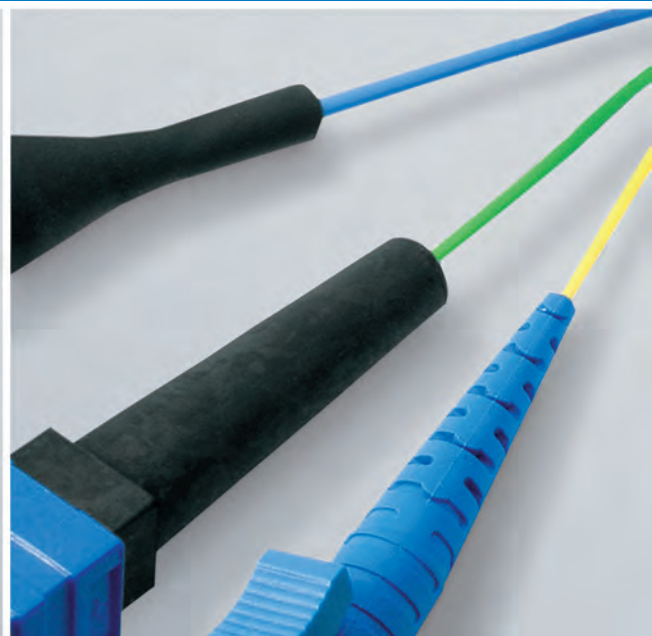
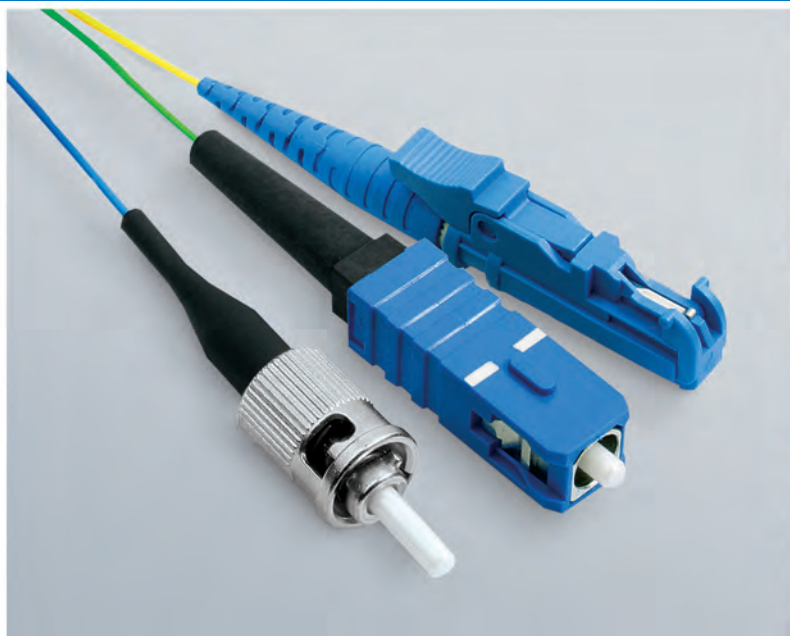
other solutions on request

FO Wall Distributors and Splice Boxes

FO Distribution Box TOC ODB 68



Order No.	Description	Remarks	Fig
H02050A0306	TOC ODB 68 for splicing of max. 12 fibers	with 1 splice cassette; for 2 cables with \varnothing 5 - 8 mm	1
H02050A0307	TOC ODB 68 for splicing of max. 24 fibers	with 2 splice cassettes; for 2 cables with \varnothing 5 - 8 mm	1
H02050A0308	TOC ODB 68 for splicing of max. 36 fibers	with 3 splice cassettes; for 2 cables with \varnothing 9 - 13 mm	1
H02050A0309	TOC ODB 68 for splicing of max. 48 fibers	with 4 splice cassettes; for 2 cables with \varnothing 9 - 13 mm	1
H02050A0311	TOC ODB 68 TICNET	for 2 TICNET cables - ODS/M20	2
H06011A0018	TOC ODB 68 TICNET adaptor	ODS/M20	-
H02024A8101	Front plate 3 HU / 7 PU	for 6x SC Duplex/LC Quad, Z93	-
H02024A8111	Front plate 3 HU / 7 PU	for 12x ST, Z64	-
H02024A8105	Front plate 3 HU / 7 PU	for 6x LC Duplex, Z99	-
H02024A8125	Front plate 3 HU / 7 PU	for 12x LC dDuplex, Z99	-
A37143A0034	Cable gland w/o sleeve		-
B01012A0052	Sealing sleeve	cable \varnothing 13 - 9 mm	-
B01012A0053	Sealing sleeve	cable \varnothing 10,5 - 7 mm	-
B01012A0054	Sealing sleeve	cable \varnothing 9,5 - 6,5 mm	-
B01012A0055	Sealing sleeve	cable \varnothing 8 - 5 mm	-
B01012A0056	Sealing sleeve	cable \varnothing 6,5 - 4 mm	-



8.7

FO Fiber Pigtails

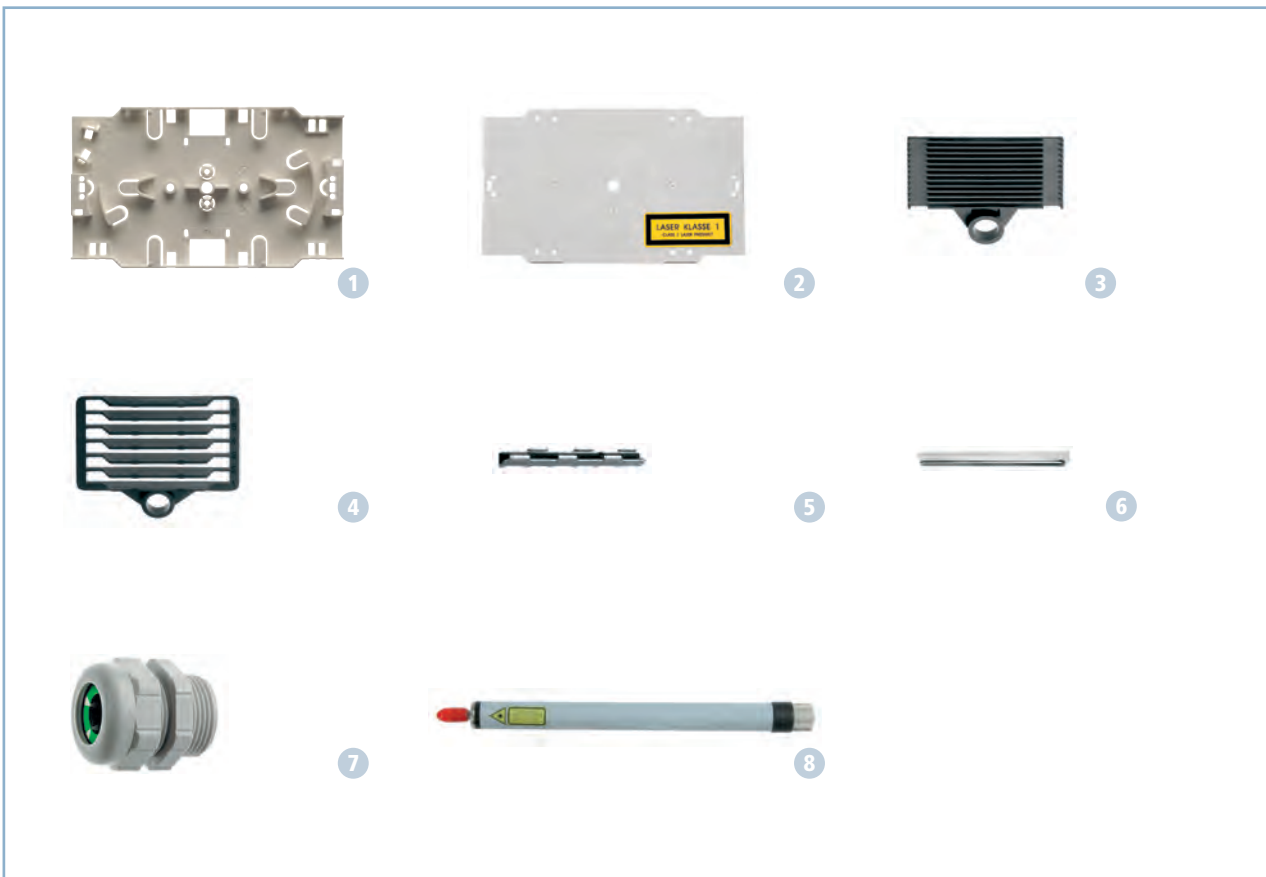


Order No.	Description	Pigtails	Housing Colour	Remarks
L00889W0056	Pigtail Set	12x E9/125 OS2, 2 m, SC	blue	colour code acc. to VDE 0888
L00889W0029	Pigtail Set	12x E9/125 OS2, 2 m, SC/APC	green	colour code acc. to VDE 0888
L00879A0009	Pigtail Set	12x E9/125 OS2, 2 m, LC	blue	colour code acc. to VDE 0888
L00879A0017	Pigtail Set	12x E9/125 OS2, 2 m, LC/APC	green	colour code acc. to VDE 0888
L00859A0013	Pigtail Set	12x E9/125 OS2, 2 m, E2000/APC	green	colour code acc. to VDE 0888
L00889W0033	Pigtail Set	12x G50/125 OM2, 2 m, SC	beige	colour code acc. to VDE 0888
L00879A0008	Pigtail Set	12x G50/125 OM2, 2 m, LC	beige	colour code acc. to VDE 0888
L00889W0027	Pigtail Set	12x G50/125 OM3, 2 m, SC	aqua	colour code acc. to VDE 0888
L00879A0010	Pigtail Set	12x G50/125 OM3, 2 m, LC	aqua	colour code acc. to VDE 0888

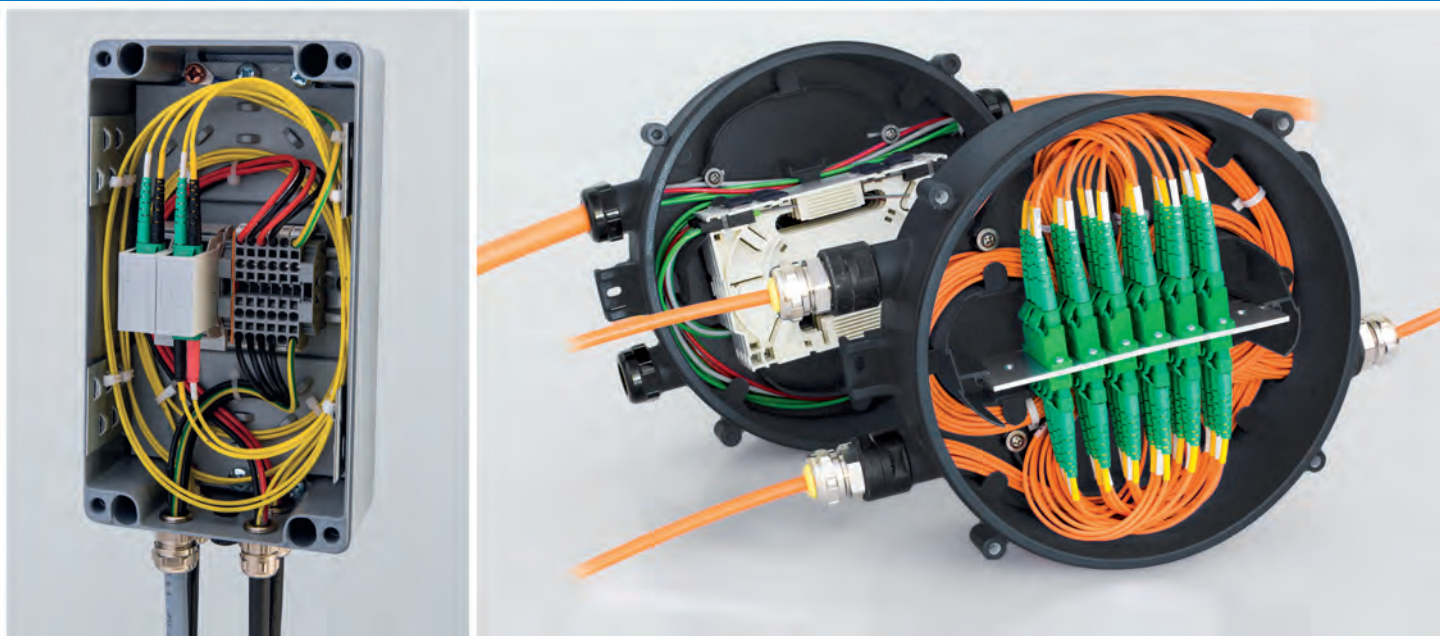


FO Accessories

8.8



Order No.	Description	Remarks	Fig
H02050A0061	Splice cassette Telekom	155 x 92 x 8 mm, for 2x splice holders	1
B06015A0086	Cover for splice cassette Telekom	155 x 92 x 2 mm	2
F08000A0002	Splice holder for 12x crimp splice protectors	System Telekom	3
F08000A0008	Splice holder for 6x shrink splices	for shrink splice protector Ø 3 mm	4
F08000A0014	Crimp splice protector	System Telekom	5
F08000A0010	Splice protector for shrink splice	Ø 3 mm; L=45 mm	6
F08000A0011	Splice protector for shrink splice	Ø 3 mm; L=60 mm	6
H01011A0027	Cable gland M20 (for cable Ø 6 - 10 mm)	Polyamide PA6, grey	7
H01012A0050	Cable gland M20 (for cable Ø 7 - 13.5 mm)	Polyamide PA6, grey	7
N04001A0081	Fiber tester with adaptors for ST, SC, FC, LC	for visual fault locating in FO links	8



Customized Solutions for FTTA Products

With the massive increase in mobile data usage, and the resulting upgrade of 3G networks and installation of 4G and LTE networks, remote radio systems have come to be the dominant technology in the mobile communications industry. Boosting network capacity is a must for a network operator in today's competitive market and to do so brings a number of

installation challenges with more complex systems than ever before. It is for this reason that Telegärtner actively works together with network operators, system integrators and installers to design the right solution for their requirements.

Please ask for technical details and order information.

Distribution Boxes

IP68 Fiber Distribution Box



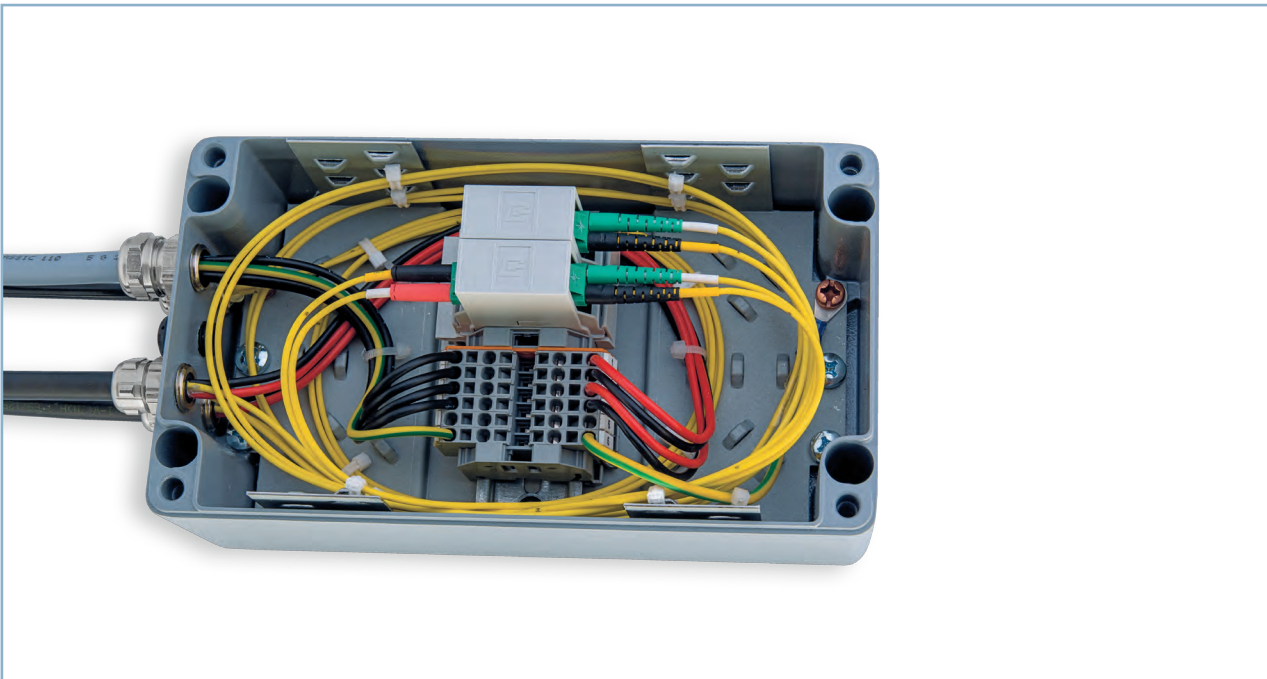
This box is IP68 rated and equipped with a 24-fiber cable and 12 LC Duplex jumper cables. The 24-fiber riser cable can be either orange or black in this product. The IP68 box has capacity for 2-24 fiber cables with LC connectors or 2-12 fiber cables with SC connectors, jumper cable/riser cable type: SM or MM, other types on request.



- **Box: protection class: IP68**
- **Black; UV-resistant**
- **Suitable for pole mounting (pole mounting kit should be ordered separately and for direct burial)**
- **Cover is sealed from 4 points with screws**

Customized Solutions for FTTA Products

IP66 Hybrid Power & FO Distribution Box

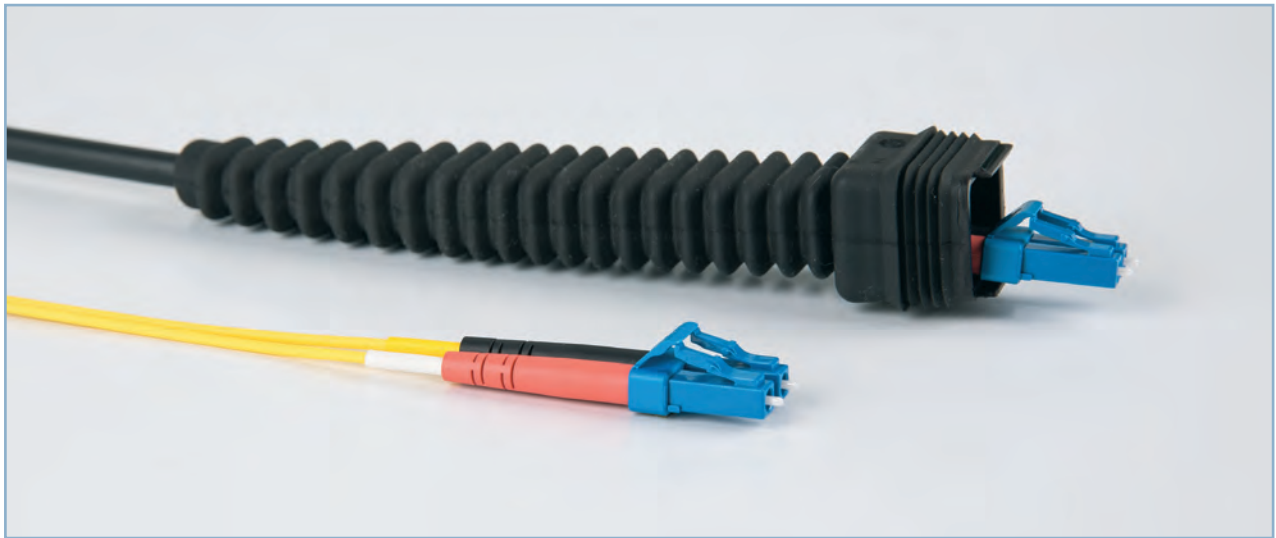


Hybrid Power & FO Cable



Customized Solutions for FTTH Products

Fiber Optic Outdoor Cables (FTTH)



Rubber Boot 90° LC Duplex to Rubber Boot 90° LC Duplex



Rubber Boot 90° LC Duplex to LC Duplex IP20

These cables, available in straight and right angle, come with a special rubber boot designed for watertightness on NSN equipment.

Customer specific variants are available, for example LC Duplex to LC Duplex, with one or both ends going through the special rubber boot.



- Black; UV-resistant
- Cable jacket TPU / flame retardant
- Various cable lengths possible
- Both singlemode and multimode fibers available

Telegärtner RF Components: The complete product range with plus points for...

... Customer Orientation

Fast response times, short development times,
qualified consulting and quick delivery

... Variety

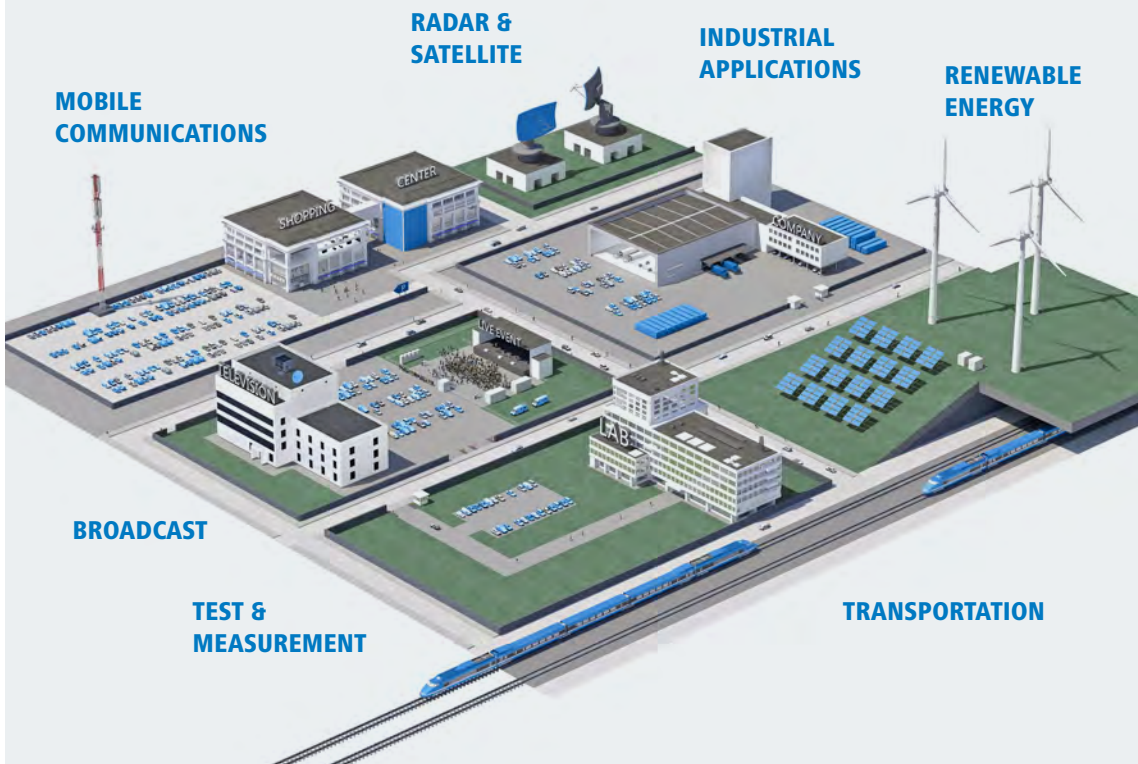
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A wide standard range of RF connectors as well as more
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... Reliability

Lower failure rates and greater power reserves



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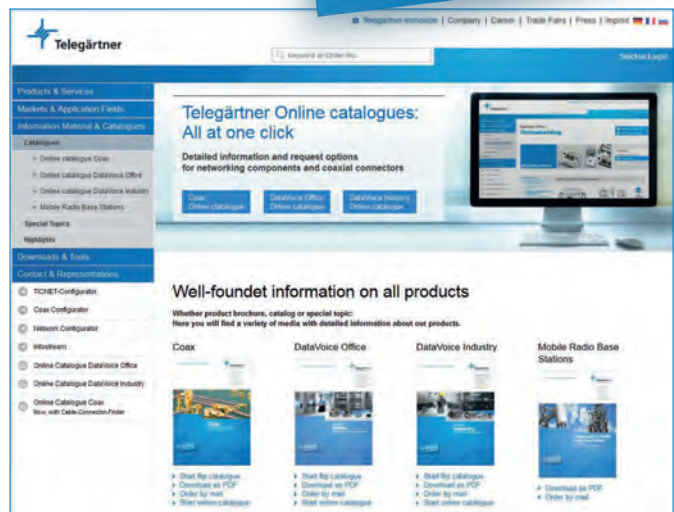
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Jumper Cables

Coax Components

Example of Mobile Radio Base Station Installations

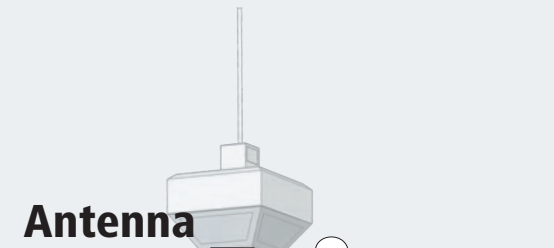
DataVoice Components



FTTA Cables



RET Cables



TOC Connectors



Connectors



Adaptors

Remote Radio Head

FO Distribution Box



FO Distribution Box



FO Patch Cables



Feeder



Connectors



Hybrid Cables



FO Patch Panel



Surge Suppressors



Jumper Cables

Base Station



Patch Cables



RJ45 Surge Protection

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