

BEST CONTACTS FOR YOUR SUCCESS



KARL GÄRTNER GMBH

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NETWORKING COMPONENTS

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COAXIAL CONNECTORS

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CABLE ASSEMBLIES

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PRECISION TURNED PARTS

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PLASTIC INJECTION MOULD PARTS

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INDUSTRIAL ELECTRONICS

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# Components for Mobile Communication Networks

RF Components

Fiber Optic and RJ45 Components



All products are shown in our  
**online catalogue**  
[www.telegaertner.com](http://www.telegaertner.com)

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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...

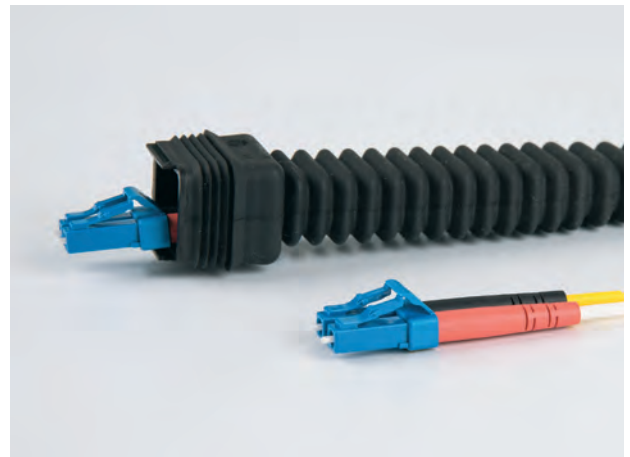
### Coaxial Cabling Solutions

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

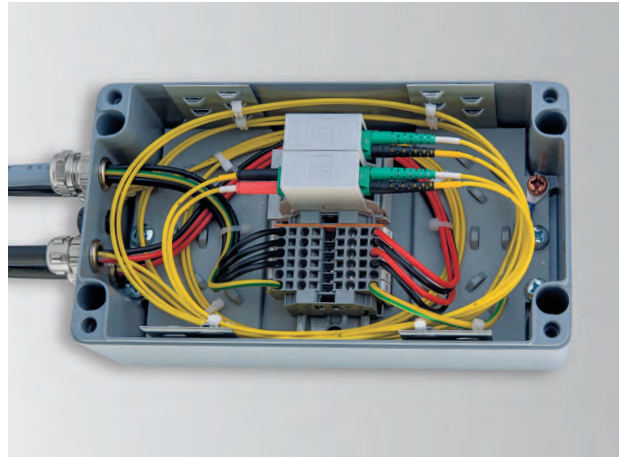
Would you like to dig up the roads of a big city or the stony ground in the mountains? No need, as microwave links offer a cost-effective solution with cutting-edge performance. To work properly, they need a free line of sight and a reliable connection to the network.



## ...MOBILE COMMUNICATION NETWORKS

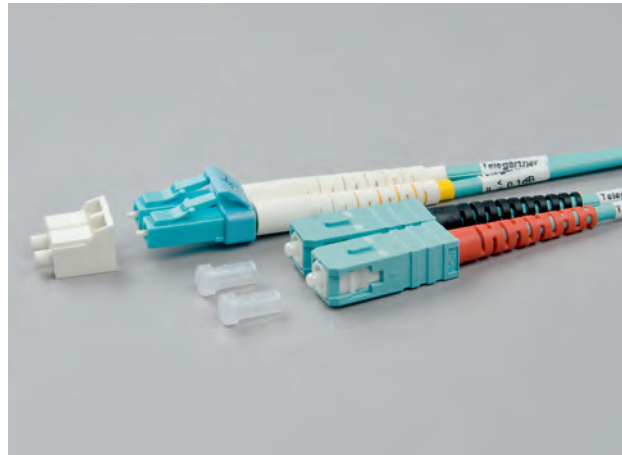
### Cabling and Distribution Hardware

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.



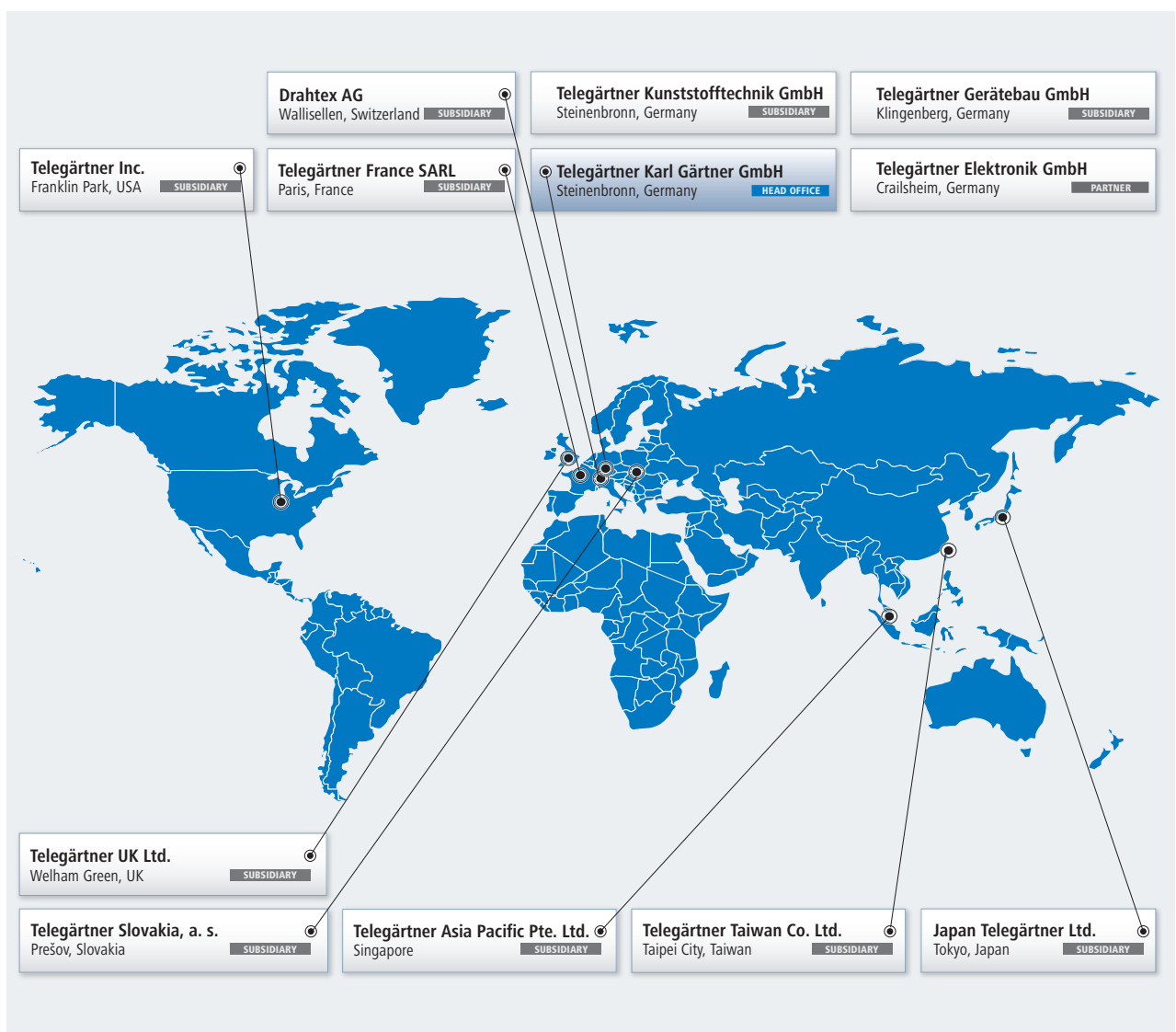
# GLOBAL PRESENCE

**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](http://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

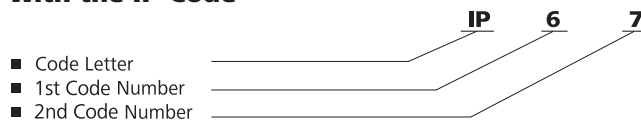
protection against the ingress of solid bodies (first code number) and the ingress of water (second code number).

| 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

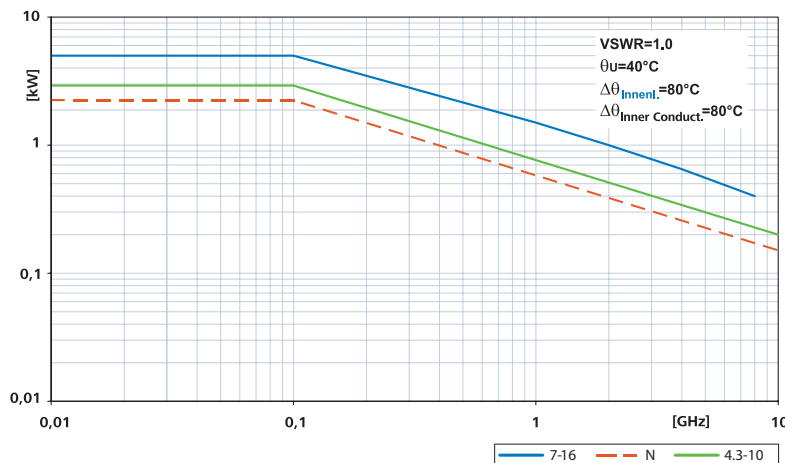


A housing with IP Classification

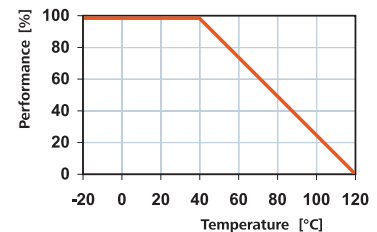
6 No ingress of dust

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](http://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:

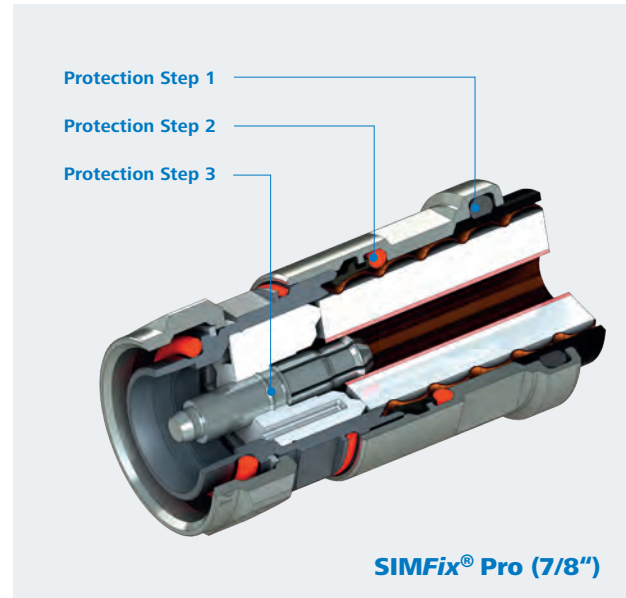
An O-ring on the outer jacket of the cable guarantees reliable protection against the ingress of water in normal applications of an undamaged cable.

#### 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

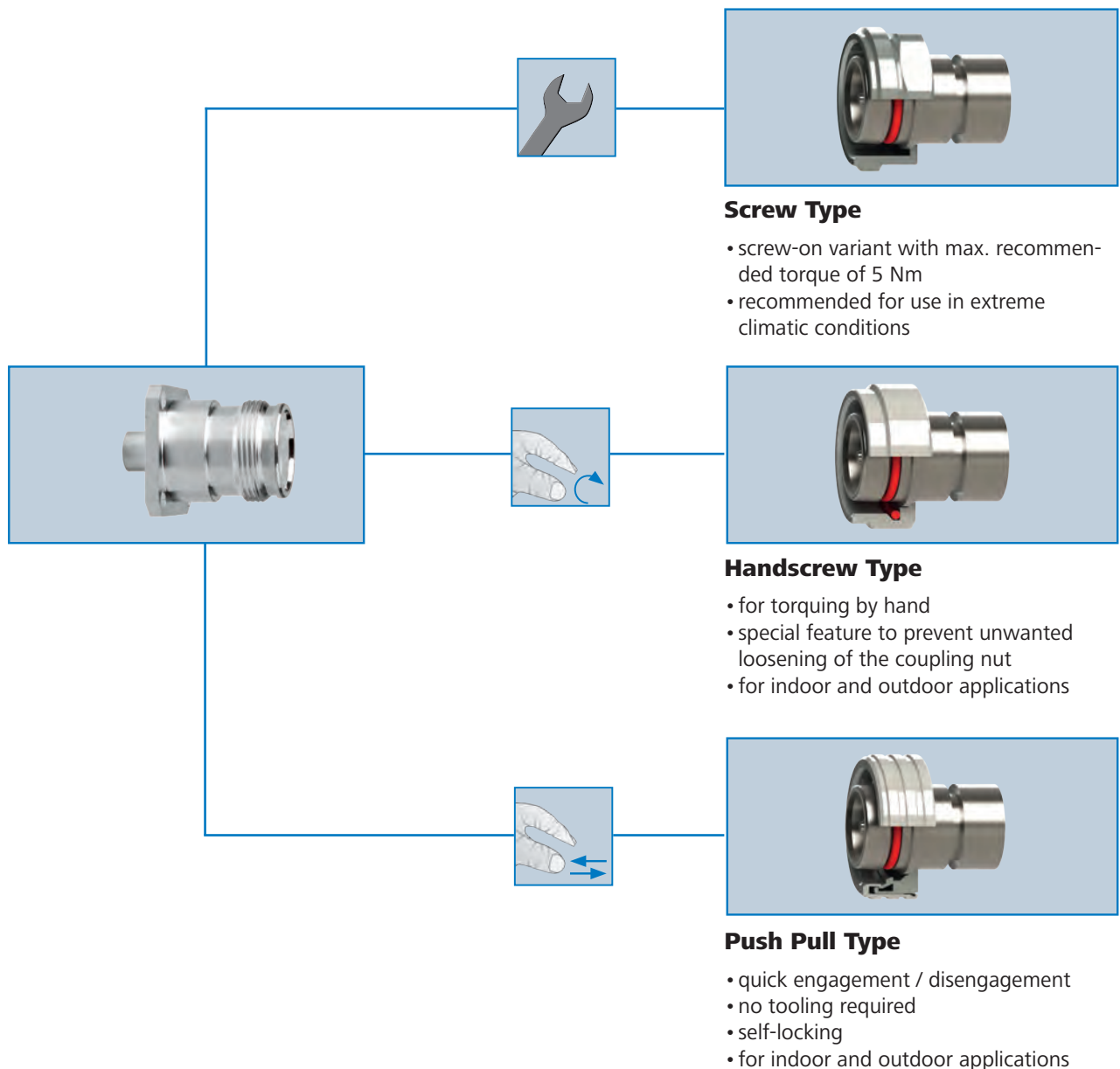
The compact, installation-friendly 4.3-10 RF connectors have been specially developed to meet the ever increasing demands in mobile radio communication applications. The small size and low weight of these connectors is a perfect example of the miniaturisation of mobile radio network components. Despite 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  $-40^{\circ}\text{C}$  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.

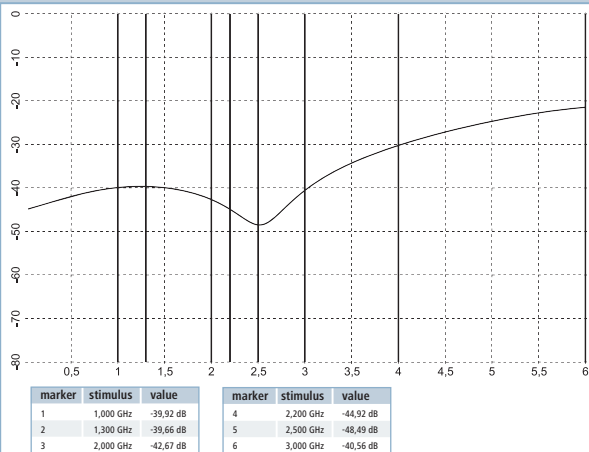
The screw designs are more rugged because of the threaded mating and, despite the use of high-quality materials, are less expensive because of the simpler and cost-effective design.



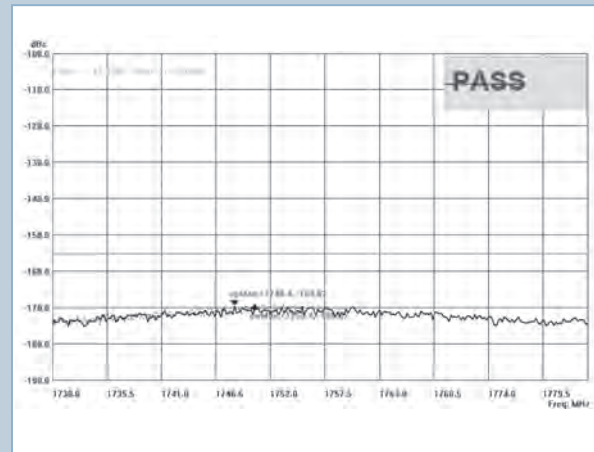
## Technical Data 4.3-10 Series

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

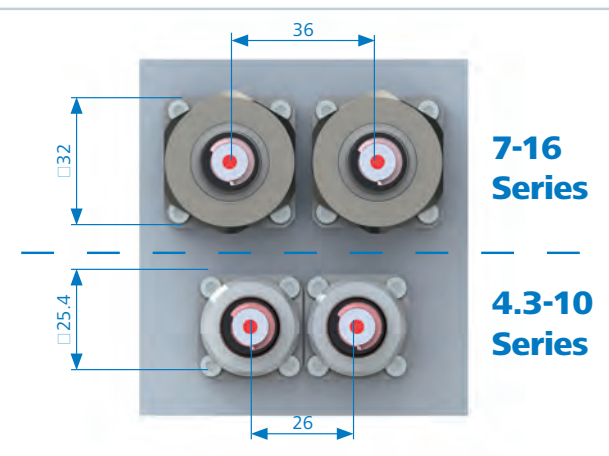
|   |   |
|---|---|
| Category to DIN IEC 68 Part 1                                 | 40/85/26  |
| Protection to IEC 60529                                       |   |
| SIMFix Pro types  | IP68 (2.5 bar, axially and radially watertight) |
| SIMFix ST, short type with shrink sleeving and Standard types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

### Electrical Characteristics

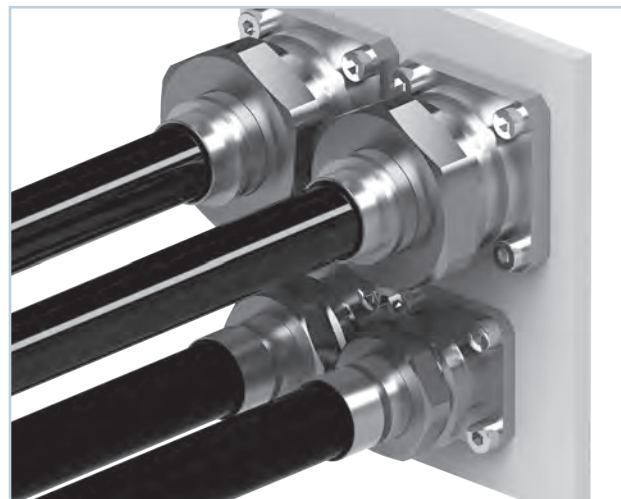
|  |                                |
|--|--------------------------------|
| Contact resistance (only) inner contact    | < 0.2 mΩ                       |
| Contact resistance (overall) inner contact | < 1 mΩ                         |
| Contact resistance (only) outer contact    | < 0.2 mΩ                       |
| Contact resistance (overall) outer contact | < 1 mΩ                         |
| Insulation resistance                      | > 5 GΩ                         |
| Voltage proof                              | 2.5 kV <sub>eff</sub> /50 Hz   |
| Impedance                                  | 50 Ω                           |
| Working voltage                            | 500 V <sub>eff</sub> /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.) |



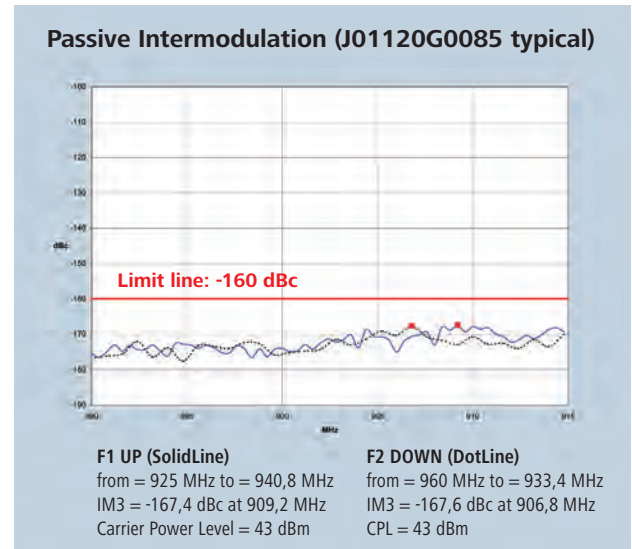
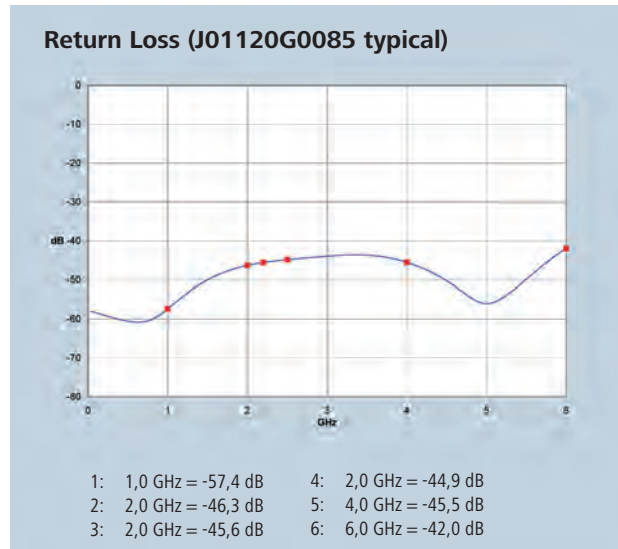
The compact design allows space saving of 37%.



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.



### 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 <sub>eff</sub> /50 Hz     |
| Impedance                                  | 50 Ω                           |
| Working voltage                            | < 2.7 kV <sub>eff</sub> /50 Hz |
| Power handling                             | 1.8 kW/1 GHz                   |

### Intermodulation

|   |                 |
|---|-----------------|
| Two unmodulated test signals at 43 dBm (2x20 W)<br>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

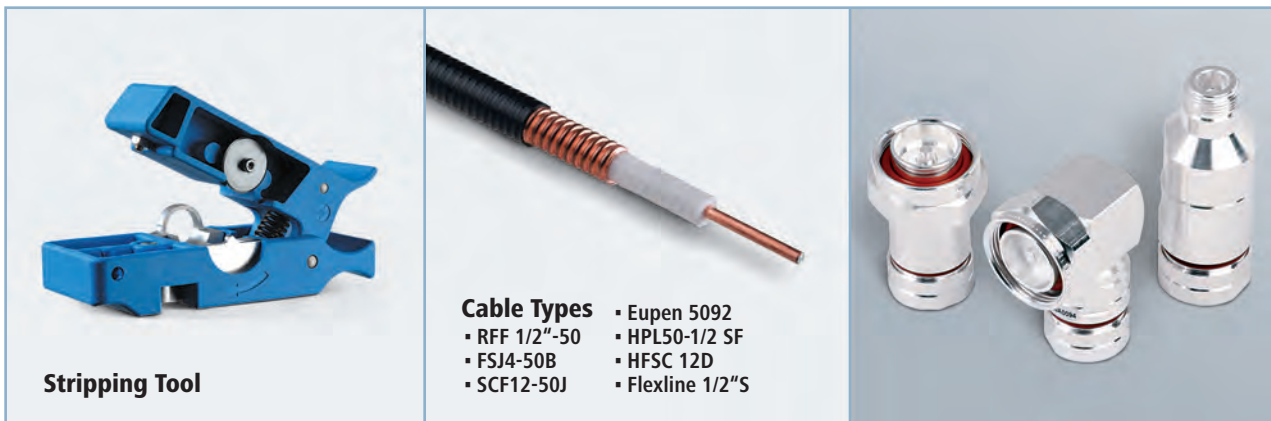
|  |                              |
|--|------------------------------|
| Contact resistance (overall) inner contact | < 2 mΩ                       |
| Contact resistance (overall) outer contact | < 0.5 mΩ                     |
| Insulation resistance                      | > 5 GΩ                       |
| Voltage proof                              | 2.5 kV <sub>eff</sub> /50 Hz |
| Impedance                                  | 50 Ω                         |
| Working voltage                            | < 1 kV <sub>eff</sub> /50 Hz |

### Intermodulation

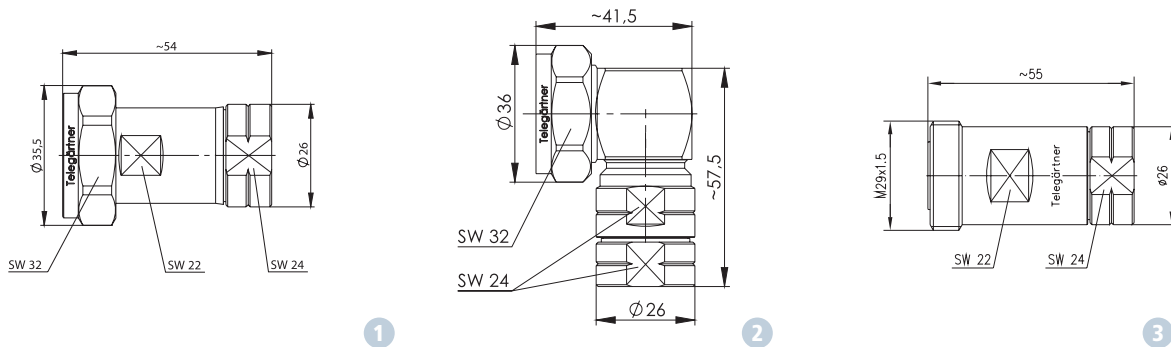
|   |                 |
|---|-----------------|
| Two unmodulated test signals at 43 dBm (2x20 W)<br>0.4 to 4 GHz | -155 dBc (typ.) |
|---|-----------------|



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

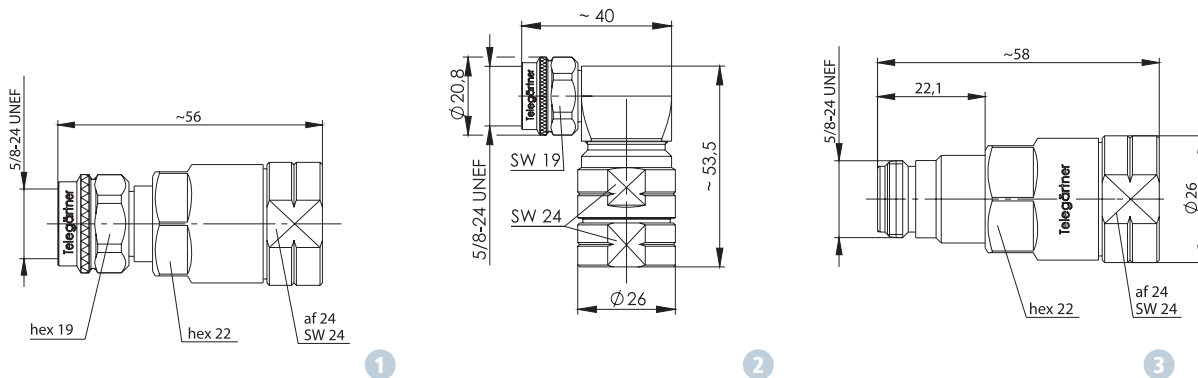
**1/2"  
FLEX**


## 7-16 Series



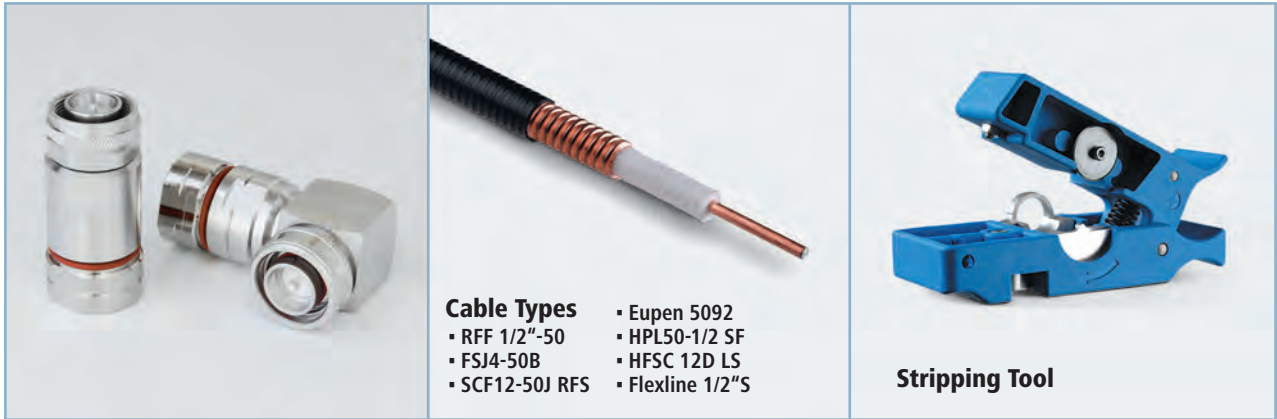
| Series | Design        | Type       | Protection Class | Order no.   | Tool        | Fig. |
|--------|---------------|------------|------------------|-------------|-------------|------|
| 7-16   | Straight plug | SIMFix Pro | IP68             | J01120B0077 | N00091A0013 | 1    |
| 7-16   | Straight 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

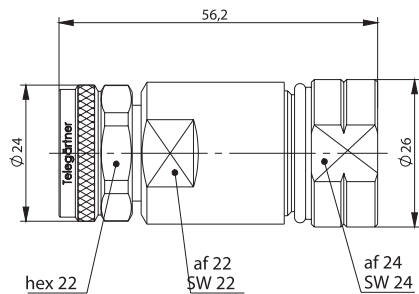


| Series | Design        | Type       | Protection Class | Order no.   | Tool        | Fig. |
|--------|---------------|------------|------------------|-------------|-------------|------|
| N      | Straight plug | SIMFix Pro | IP68             | J01020C0105 | N00091A0013 | 1    |
| N      | Straight 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 | -    |

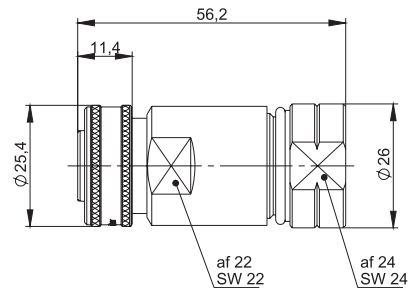
## 4.3-10 Connectors for 1/2" Highly Flexible Cables



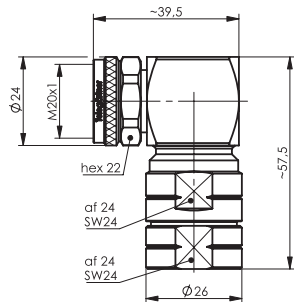
## 4.3-10 Series



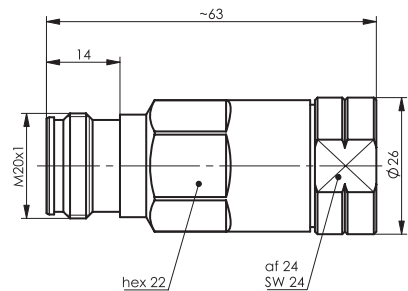
1



2



3

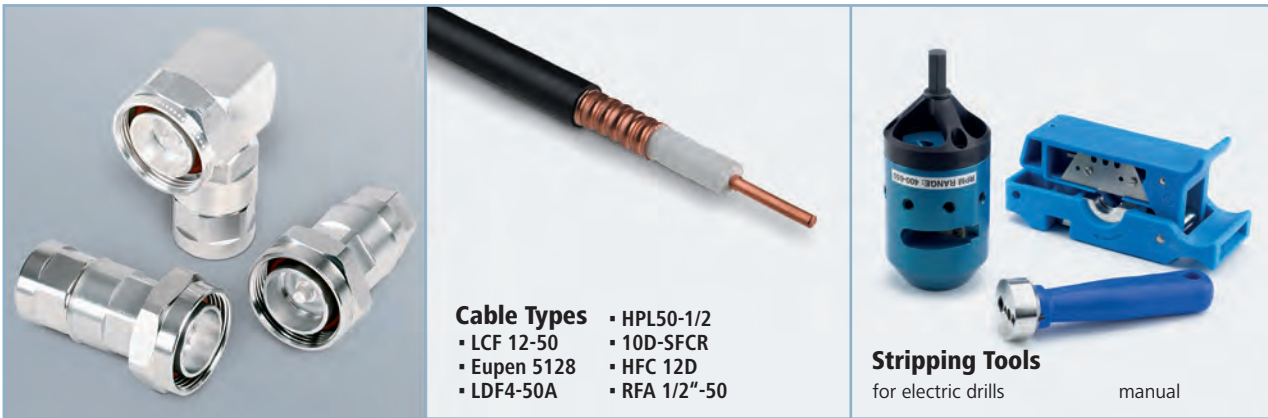


4

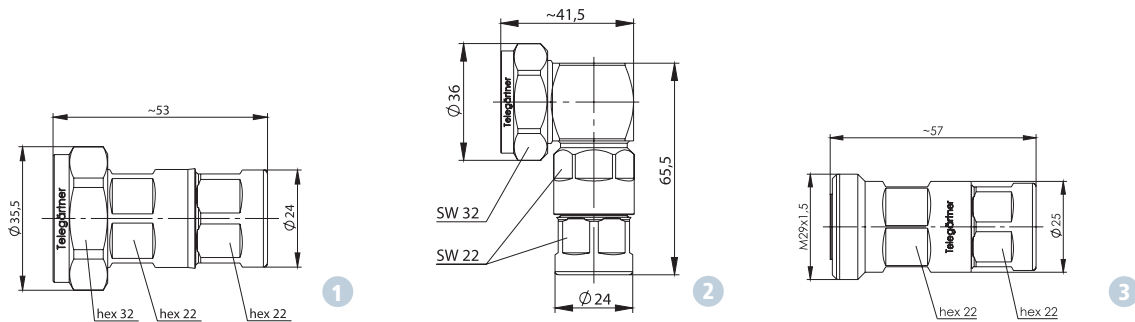
| Series | Design                   | Type       | Protection Class | Order no.   | Tool        | Fig. |
|--------|--------------------------|------------|------------------|-------------|-------------|------|
| 4.3-10 | Straight plug, screw     | SIMFix Pro | IP68             | J01440A0005 | N00091A0013 | 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"

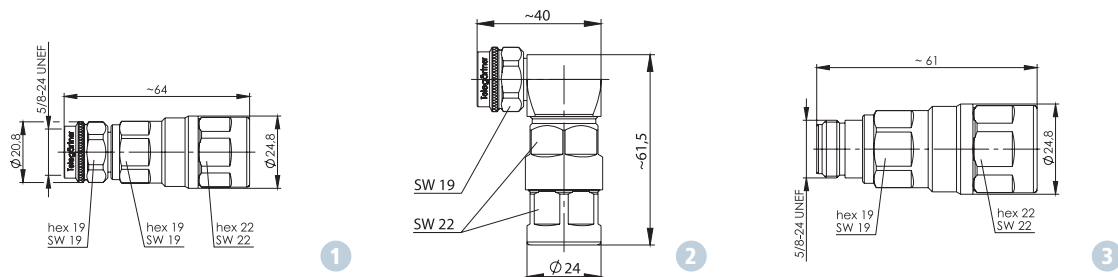


## 7-16 Series



| 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

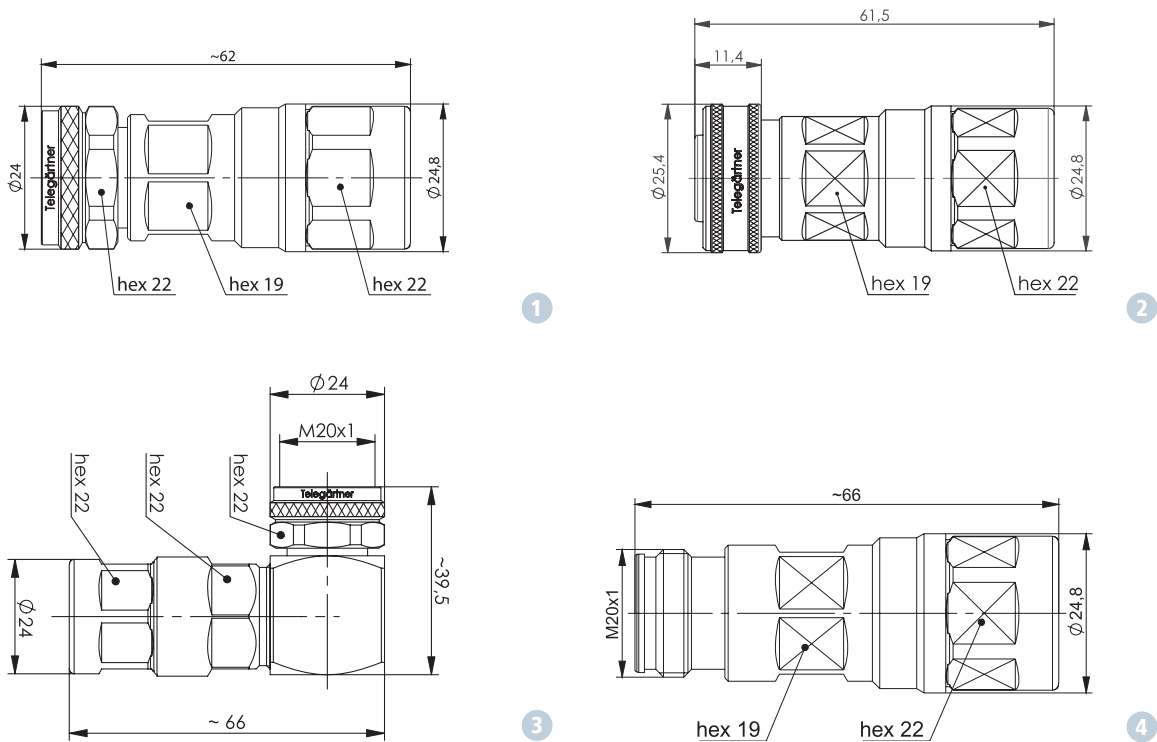


| Series | Design        | Type       | Protection Class | Order no.   | Tool        |             | Fig. |
|--------|---------------|------------|------------------|-------------|-------------|-------------|------|
|        |               |            |                  |             | Manual      | 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"




**Stripping Tools**  
for electric drills      manual

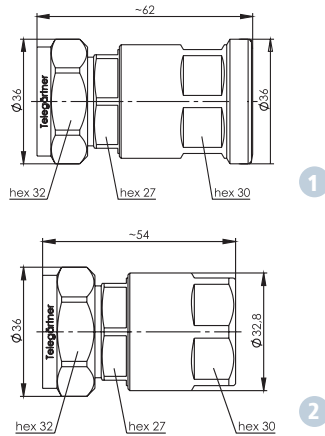


**Cable Types**

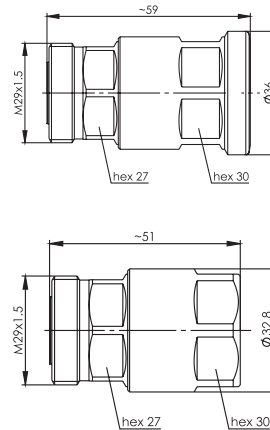
- RFA 7/8"-50 (AL)
- Eupen 5228A/X
- Eupen 5227
- HPL50-7/8 (AL)
- LCF78-50A
- 20D-SFCR
- HFC 22D
- AVA5-50
- AL5-50
- LDF5-50A
- RFX 7/8"-50
- Succofeed\_7/8
- Flexline7/8"R



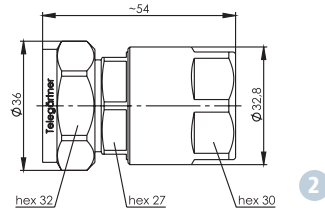
## 7-16 Series



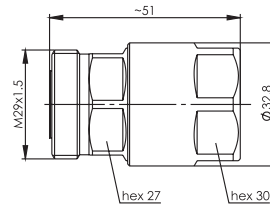
1



3



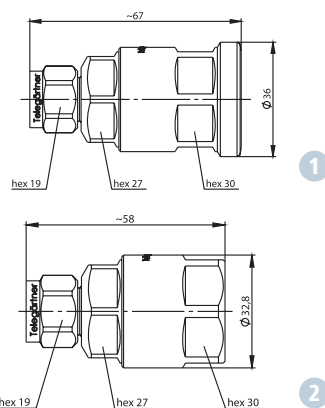
2



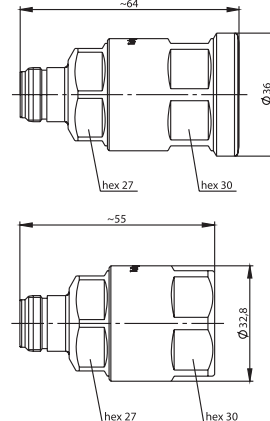
4

| 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    |

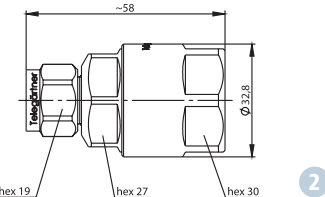
## N Series



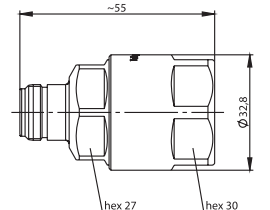
1



3






2



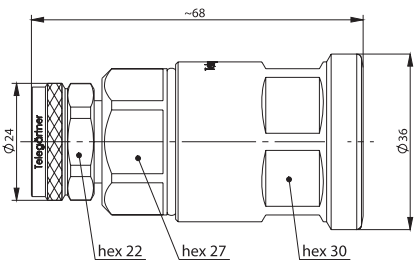
4

| 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    |

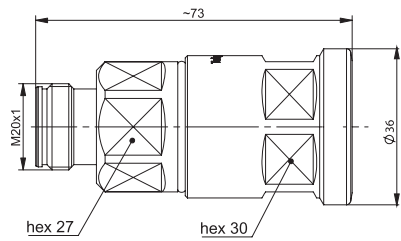
# 4.3-10 Connectors for 7/8" Corrugated Cables

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

## 4.3-10 Series



1

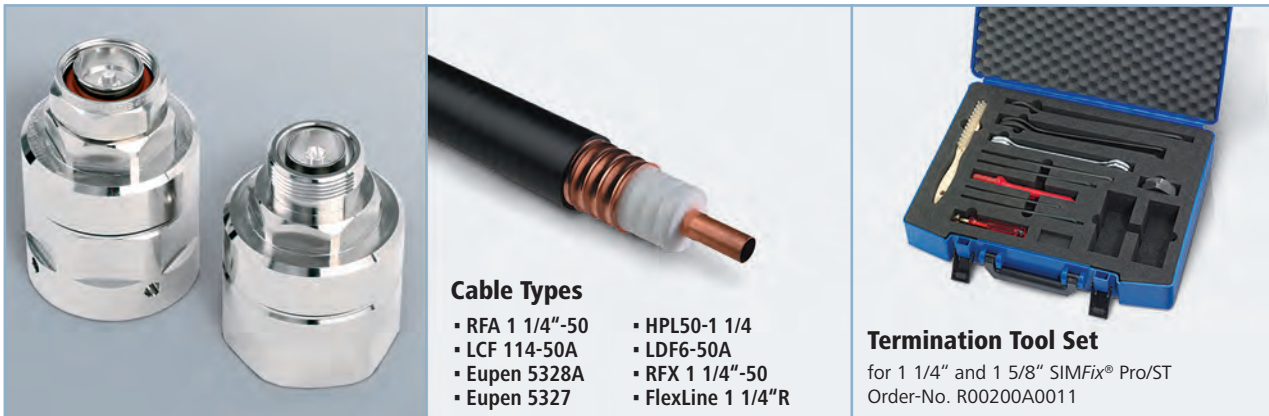


2

| 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"



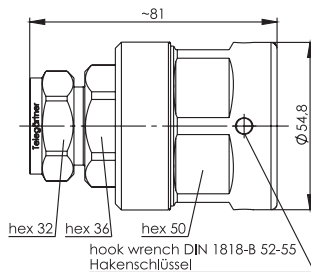
### Cable Types

- 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

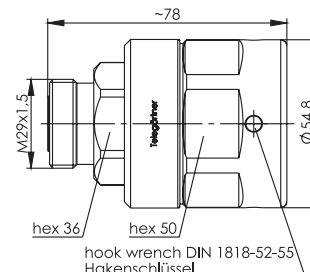
### Termination Tool Set

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

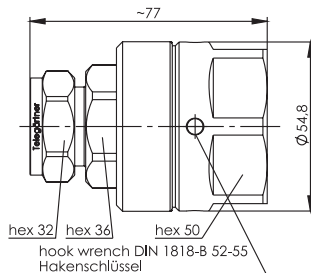
## 7-16 Series



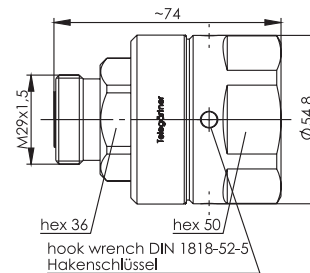
1



3



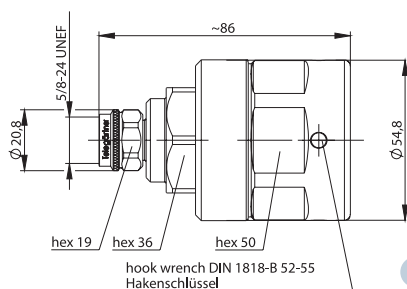
2



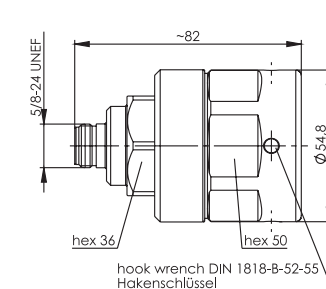
4

| 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



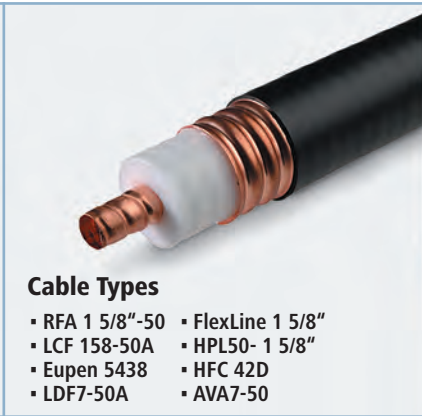
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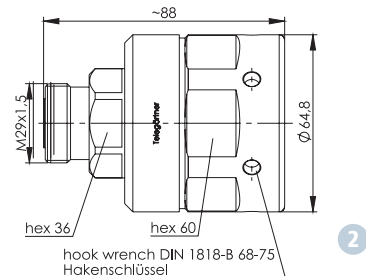
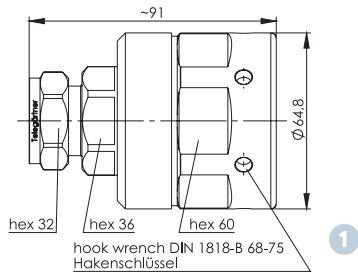
2

| 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    |

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

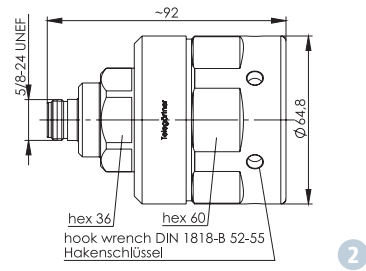
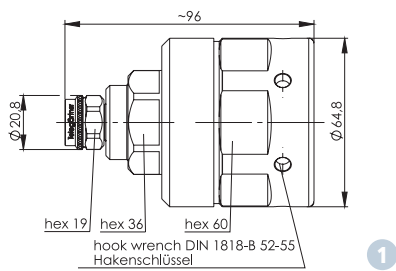


## 7-16 Series



| 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    |

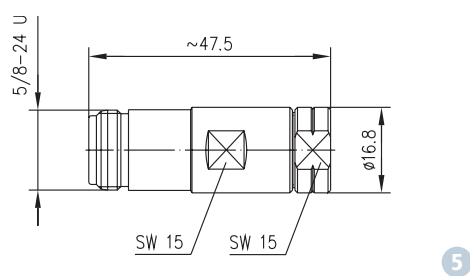
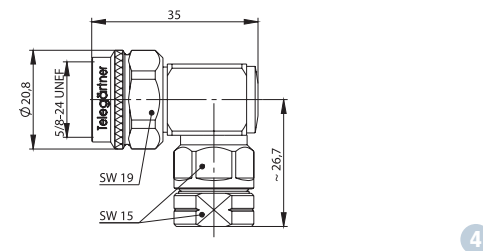
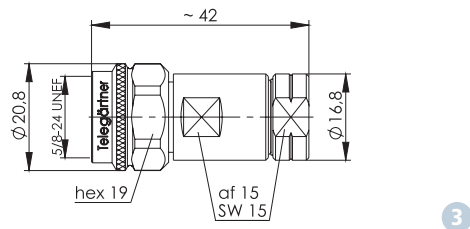
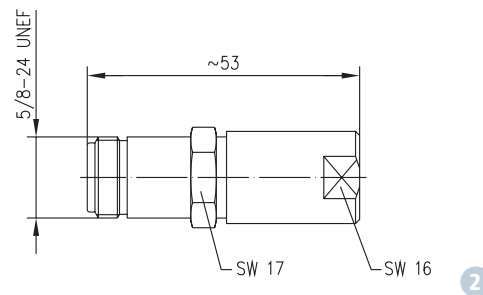
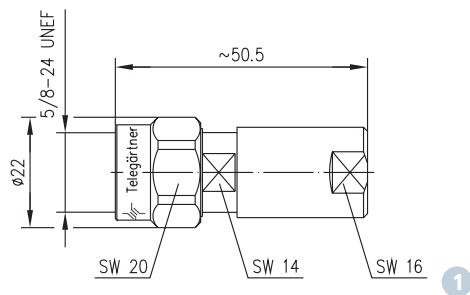


# N Connectors for 1/4" Corrugated Cables

1/4"



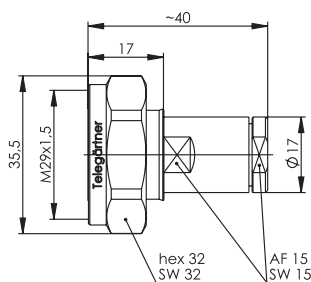
## Connectors for 1/4"



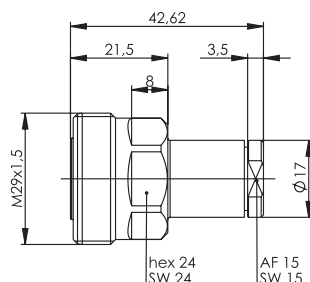
| Series | Design        | Type     | Cable  | Order no.   | Assembly | Fig. |
|--------|---------------|----------|--|-------------|----------|------|
| N      | Straight plug | Standard | LCF 14-50J; 5062 1/4"; HPL50-1/4                   | J01020A0028 | B25      | 1    |
| N      | Straight jack | 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

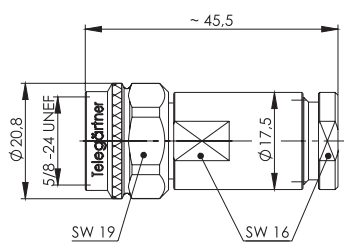
## Connectors for Braided Cables



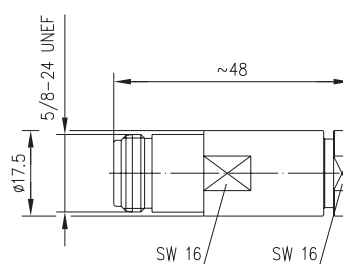
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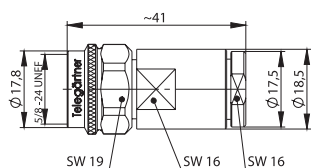
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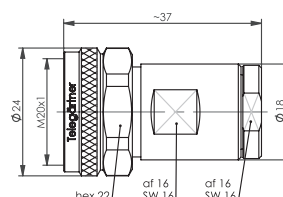
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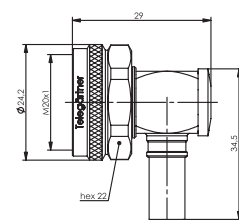
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5



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;<br>CNT-400; EC 400; HPF 400; MRC 400 AFB;<br>RF 400 TT; TZC 500 32; WBC-400; WCX400;<br>Aircom Plus; 2.6/7.3 AF; 213RT5; 9914;<br>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)<br>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<br>FlexLine 1/2"S, HFSC 12D LS,<br>HPL 50-1/2 SF, RFF 1/2"-50,<br>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<br>1/2"-LD Eupen, SUCOFEED_1/2<br>HPL50-1/2, Flexline 1/2" R,<br>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,<br>5228A 7/8"-LD, 5228 7/8"-LD,<br>HPL50-7/8 (AL), LCF78-50JA,<br>HFC 22D, FlexLine 7/8"R,<br>AVA5-50, LDF5-50A, AL5-50,<br>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<br>G37(2.7/7.25), G42(2.7/7.1)<br>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;<br>SCF 12-50J; Flexline 1/2"S<br>Eupen 5092; HPL50-1/2-SF<br>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<br>1/2"-LD Eupen, SUCOFEED_1/2<br>HPL50-1/2, Flexline 1/2" R,<br>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,<br>5228A 7/8"-LD, 5228 7/8"-LD,<br>HPL50-7/8 (AL), LCF78-50JA,<br>HFC 22D, FlexLine 7/8"R,<br>AVA5-50, LDF5-50A, AL5-50,<br>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;<br>5328 A 1 1/4"-GL; LDF6-50;<br>RFX 1 1/4"-50; 5328A 1 1/4"-GL;<br>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;<br>5438A 1 5/8"-LD; LDF7-50A;<br>HPL50-1-5/8; HFC 42D;<br>AVA7-50; FlexLine 1 5/8"R;<br>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;<br>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"<br>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;<br>SCF 12-50J; Flexline 1/2"S<br>Eupen 5092; HPL50-1/2-SF<br>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<br>HPL50-1/2, Flexline 1/2" R,<br>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,<br>5228A 7/8"-LD, 5228 7/8"-LD,<br>HPL50-7/8 (AL), LCF78-50JA,<br>HFC 22D, FlexLine 7/8"R,<br>AVA5-50, LDF5-50A, AL5-50,<br>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;<br>5328 A 1 1/4"-GL; LDF6-50;<br>RFX 1 1/4"-50; 5328A 1 1/4"-GL;<br>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;<br>5438A 1 5/8"-LD; LDF7-50A;<br>AVA7-50; FlexLine 1 5/8"R;<br>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

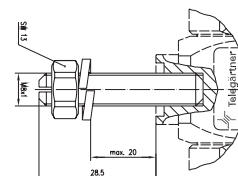
For terminating connectors on 1 1/4" and 1 5/8" corrugated cables (already included in tool kit R00200A0011).



| 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 |



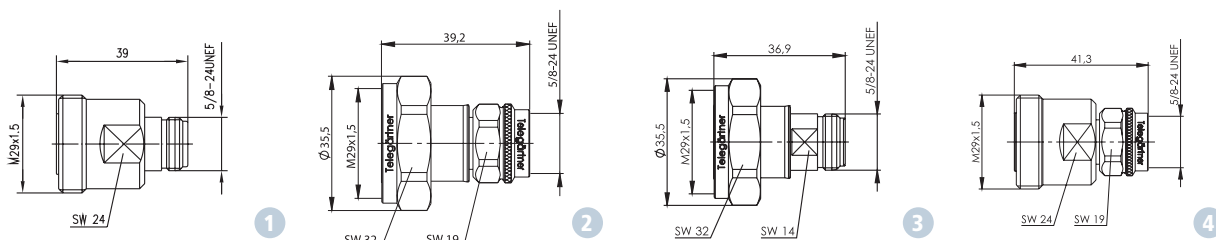
## Adaptors and Dust Caps

3

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

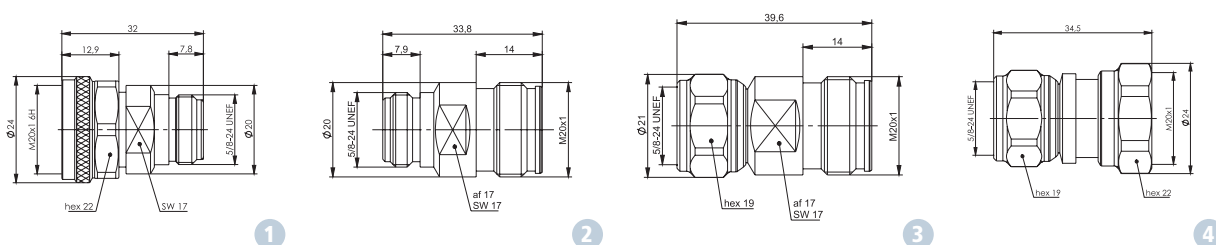
the recommended torque (7-16: 25-35 Nm; N: 4-6 Nm, 4.3-10: 5 Nm). This ensures a lasting connection with low return loss and excellent passive intermodulation (PIM) characteristics.

### 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    |

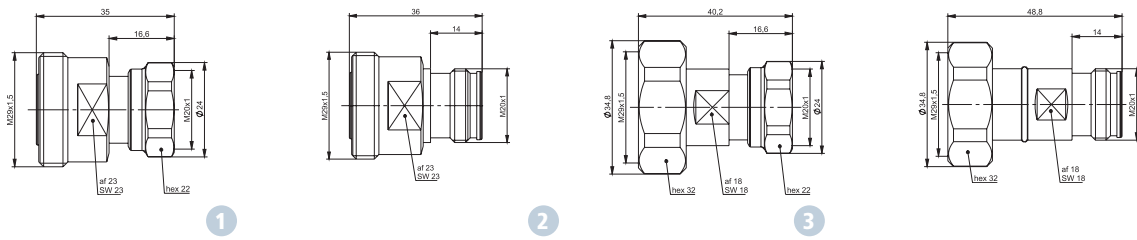
### Inter Series Adaptors 4.3-10 to N



| 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    |

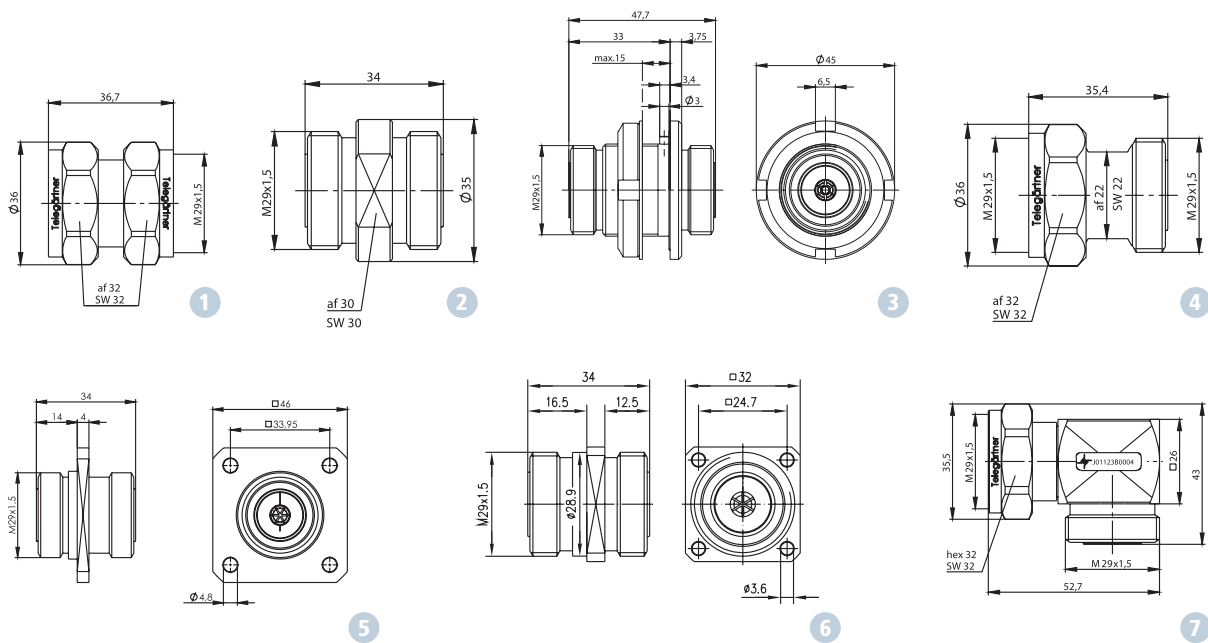
# Adaptors and Dust Caps

## 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    |

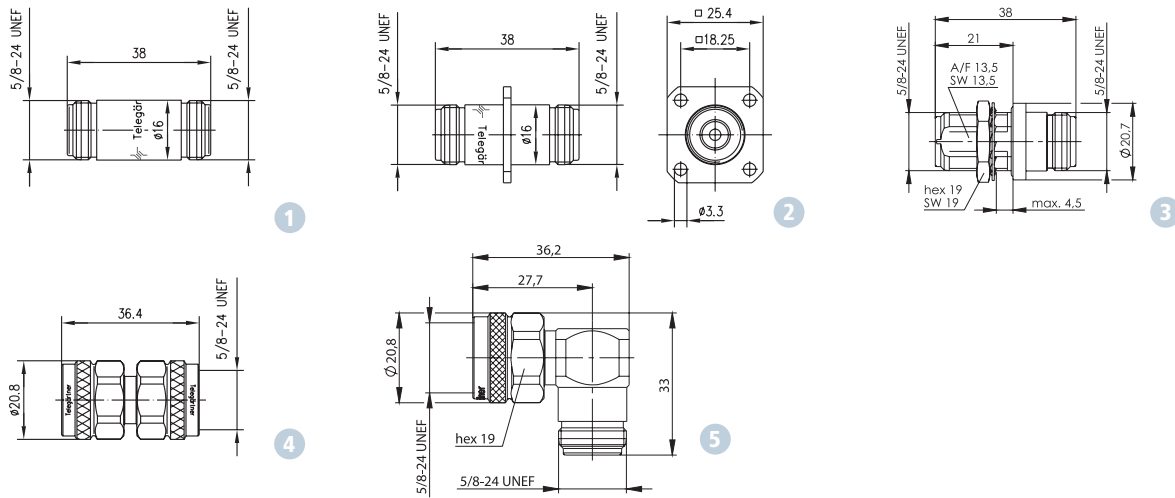


**Packaging:** Individually packed in PE foil. Mating-face of 7-16 jacks is protected by a PE-cap.



# Adaptors and Dust Caps

## N Adaptors

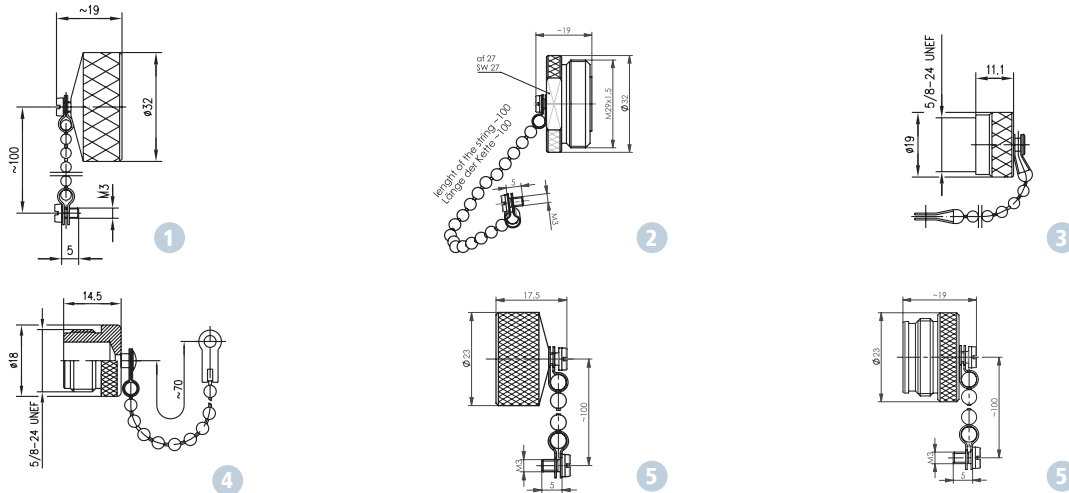


| Series                | Design              | Order no.   | Return Loss              | Mount. dim. | Fig. |
|-----------------------|---------------------|-------------|--------------------------|-------------|------|
| N adaptor             | jack-jack           | J01024A0004 | 40 dB/1 GHz; 35 dB/4 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    |

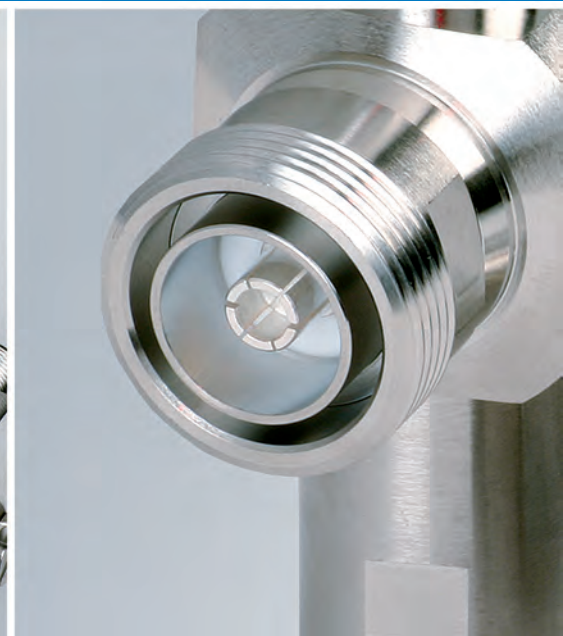


**Packaging:** Individually packed in PE foil. Mating-face of 7-16 jacks is protected by a PE-cap.

## 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  $90^\circ$  phase angle rotation, is then reflected totally at the short ( $180^\circ$  phase angle rotation) and finally travels back along the quarter wavelength stub (a further phase angle rotation of  $90^\circ$ ). This represents a total phase angle rotation of  $360^\circ$ . 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

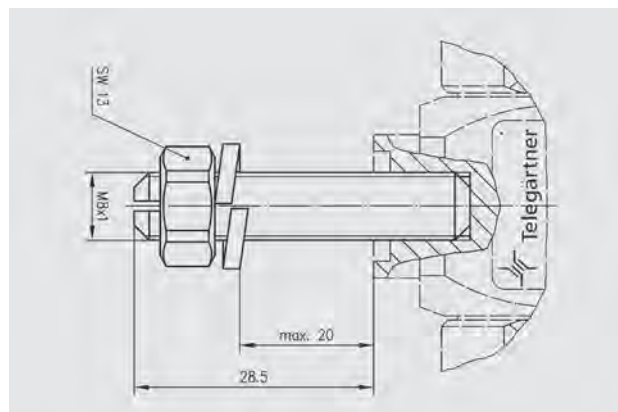
- Very high discharge currents are possible
- Very good transmission and intermodulation characteristics
- Complete discharge of the excess voltage
- Automatically operational again after the surcharge subsides, no special precautions necessary to protect the DC supply current
- Matching of the frequency 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.

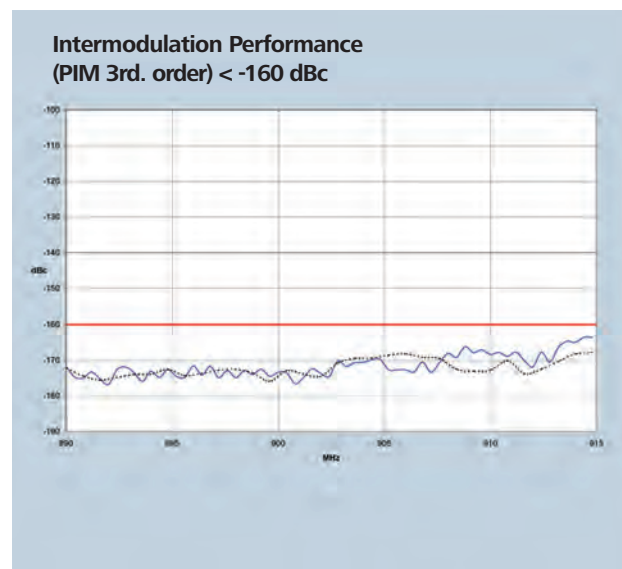
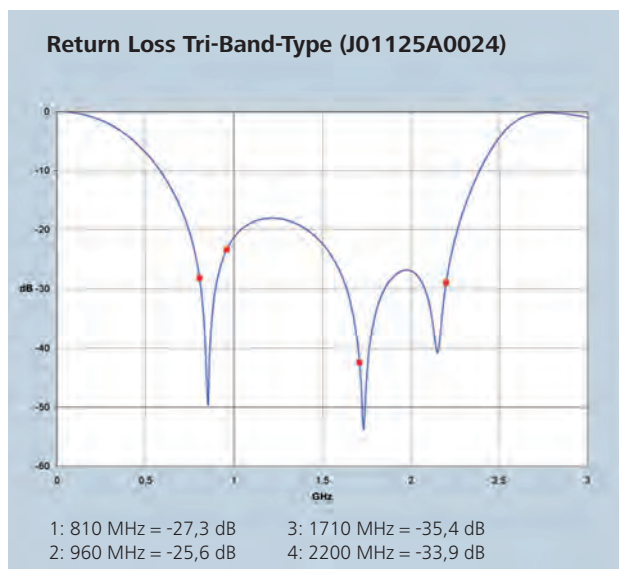
In principle, the use of λ/4 shorting stubs in the receive path can also be recommended. In the event of a pre-amplifier being used at the Rx end, then it would be necessary to use the new special λ/4 shorting stub protector with DC pass.

### Accessory: Fixing Kit



Fixing Kit Order Number: H06000A0024

## Technical Data



## $\lambda/4$ Shorting Stubs

### Technical Data

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



### $\lambda/4$ Shorting Stub Types

| Type                | Frequency range (MHz)      |             |                            | Fig |
|---------------------|----------------------------|-------------|----------------------------|-----|
|                     | 380-512                    | 678-2700    | 806-960 / 1710-2200        |     |
| 7-16 m-m            |                            |             | J01125A0022 <sup>(2)</sup> | 1   |
| 7-16 f-f            | J01125A0040 <sup>(1)</sup> |             | J01125A0023 <sup>(2)</sup> | 2   |
| 7-16 m-f            | J01125A0039 <sup>(1)</sup> |             | J01125A0024 <sup>(2)</sup> | 3   |
| 7-16 m-f (bulkhead) |                            |             | J01125B0031 <sup>(3)</sup> | 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 <sup>(1)</sup> |             |                            | 7   |

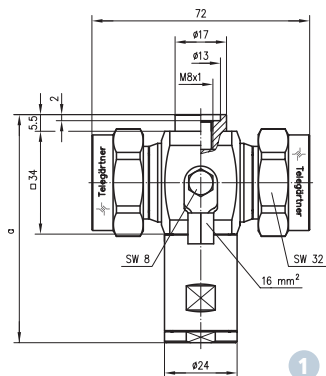


#### Dimensions (compare to drawings)

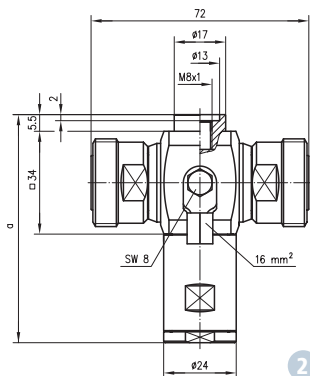
- 1) Dimension a=98 mm
- 2) Dimension a=71-76 mm
- 3) Dimension a=79 mm

# λ/4 Shorting Stubs

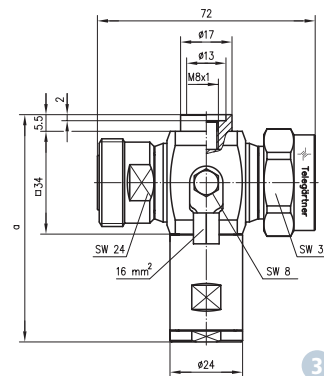
## λ/4 Shorting Stub Types



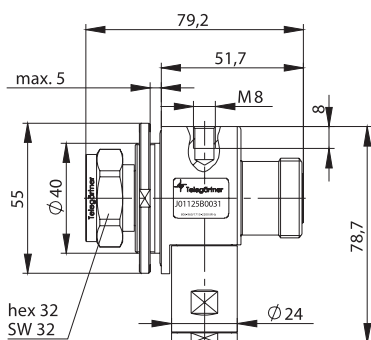
1



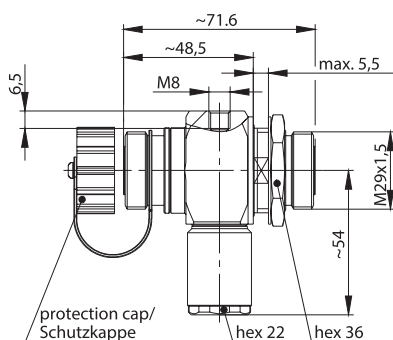
2



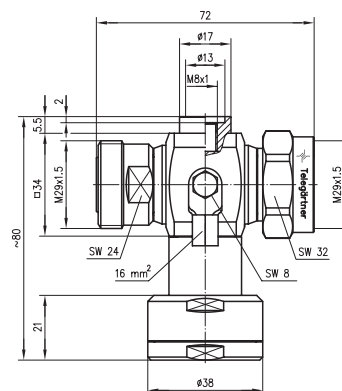
3



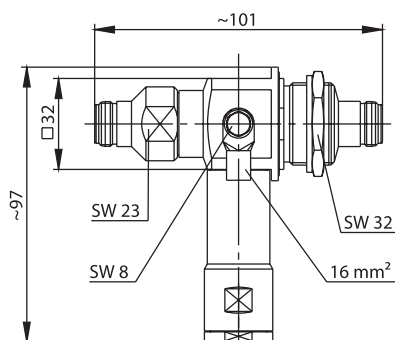
4



5



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)

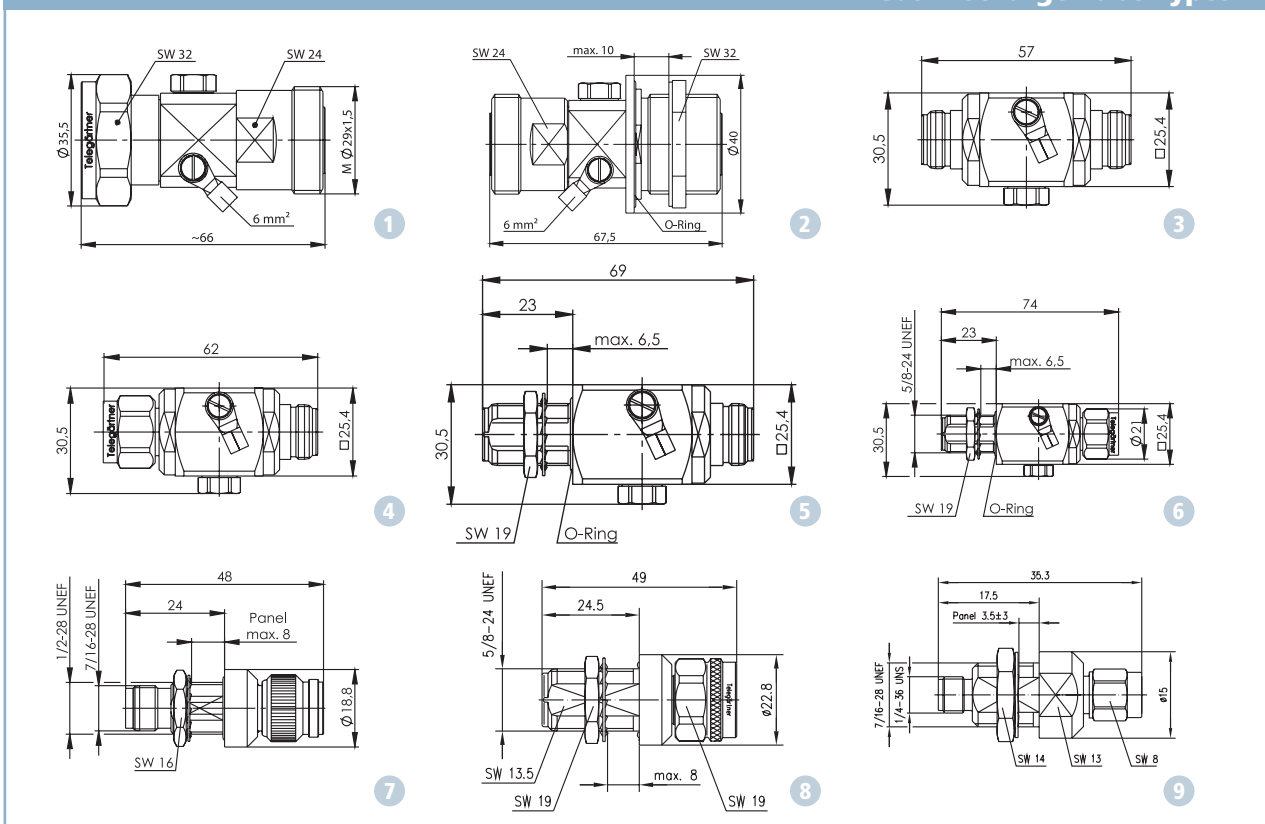
| Mechanical Characteristics         |           |
|------------------------------------|-----------|
| <b>Materials</b>                   |           |
| Spring contact                     | CuBe2     |
| Other metal parts                  | CuZn39Pb3 |
| Insulators                         | PTFE  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

| Thermal and Climatic Characteristics connectors |                           |                           |
|---|---------------------------|---------------------------|
|   | 7-16 Series               | N Series                  |
| <b>Category to DIN IEC 68 Part 1</b>            | 55/155/56                 | 40/155/21                 |
| <b>Protection level to DIN 60529</b>            | IP68                      | IP68                      |
| Electrical Characteristics                      |                           |                           |
|   | N Series                  | 7-16 Series               |
| <b>Max. frequency</b>                           | 2.7 GHz                   | 2.7 GHz                   |
| <b>VSWR</b>                                     | < 1.2 (2.7 GHz)           | < 1.2 (2.7 GHz)           |
| <b>Insertion loss</b>                           | < 0.2 dB                  | < 0.1 dB                  |
| <b>Impulse Discharge Current</b>                | 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  $2.5 \pm 0.1$  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

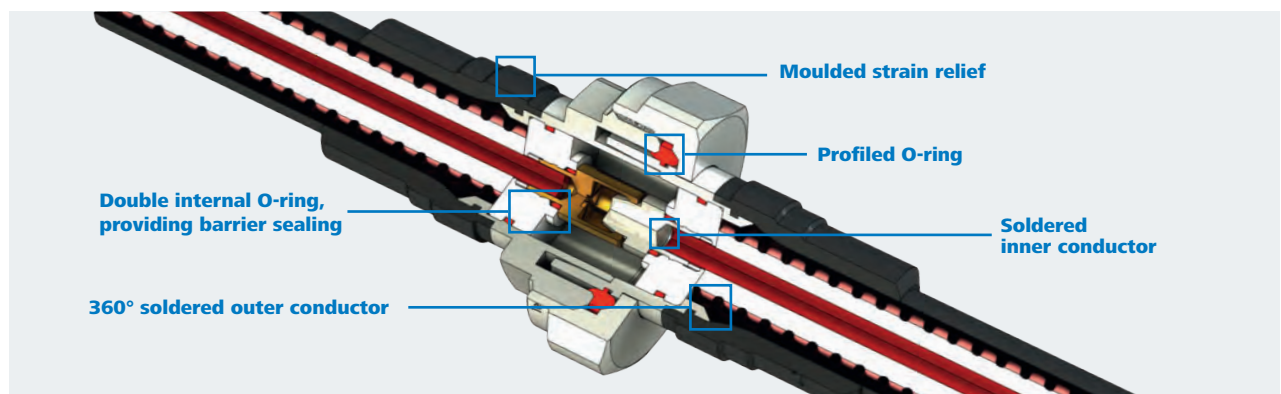
In order to provide long-lasting protection for the solder joint against environmental influences, Telegärtner jumper cables have a stable overmould made from polyamide V0.

This strain relief was mated as in the field and then temperature cycled from  $-40^\circ$  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!

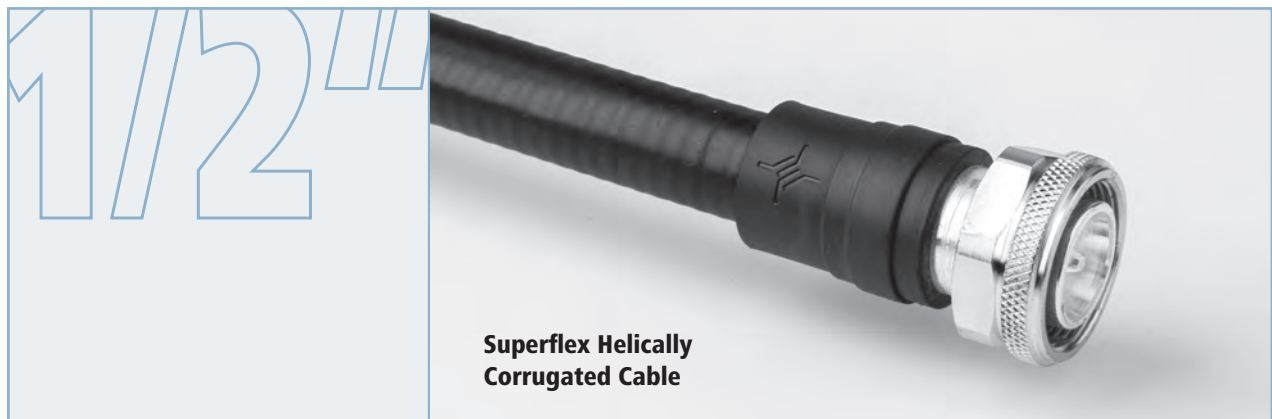
## Benefits

- 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   |
|---|---|--|--|
| <b>Mechanical Characteristics</b>   |   |  |  |
| <b>Materials</b>  |   |  |  |
| Spring contact  | CuBe2   | CuBe2  | CuBe2  |
| Other metal parts   | CuZn39Pb3   | CuZn39Pb3  | CuZn39Pb3  |
| Insulator   | PTFE  | PTFE   | PTFE   |
| Gaskets   | Silicon   | Silicon  | Silicon  |
| <b>Finish</b>   |   |  |  |
| Spring contact  | Cu2Ag5  | Cu2Ag5   | Cu2Ag5   |
| Outer surface   | Cu2Ag3  | Cu2Ag3   | Cu2Ag3   |
| <b>Coupling torque</b>  | 25-35 Nm  | 4-6 Nm   | 5 Nm   |
| <b>Cables</b>   |   |  |  |
| <b>Cables</b>   | 1/2" super flexible 50 Ω foam dielectric, helically corrugated; Black PE jacket; halogen free   |  |  |
| <b>Bending Protection</b>   |   |  |  |
| <b>Overmoulded strain relief</b>  | 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) |  |  |
| <b>Thermal and Climatic Characteristics</b>   |   |  |  |
| <b>Temperature range</b>  | -40 °C – +60 °C   | -40 °C – +60 °C                                      | -40 °C – +60 °C                                      |
| <b>Relative humidity</b>  | 0 % – 100 %   | 0 % – 100 %  | 0 % – 100 %  |
| <b>Corrosion and UV resistant</b>   | IP68  | IP68   | IP68   |
| <b>Protection to DIN 40050/IEC 60529</b>  |   |  |  |
| <b>Electrical Characteristics</b>   |   |  |  |
| <b>Return Loss (VSWR)</b>   |   |  |  |
| 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.           |
| <b>Attenuation (dB)</b>   |   |  |  |
| 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  |
| <b>Power handling</b>   |   |  |  |
| 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  |
| <b>Impedance</b>  |   |  |  |
|   | 50 Ω (±2 Ω)   | 50 Ω (±2 Ω)  | 50 Ω (±2 Ω)  |
| <b>Contact potential</b>  |   |  |  |
|   | no dissimilar metal surfaces  | no dissimilar metal surfaces                         | no dissimilar metal surfaces                         |
| <b>Voltage rating</b>   |   |  |  |
|   | 1100 V  | 1100 V   | 1100 V   |
| <b>Velocity of propagation</b>  |   |  |  |
|   | 83 %  | 83 %   | 83 %   |
| <b>Intermodulation products 3rd order; 2 unmodulated test signals each at 43dBm (20W)</b> |   |  |  |
| up to 2700 MHz  | -165 dBc (-122 dBm) typ.<br>-157 dBc (-114 dBm) min.  | -165 dBc (-122 dBm) typ.<br>-157 dBc (-114 dBm) min. | -165 dBc (-122 dBm) typ.<br>-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       | 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)

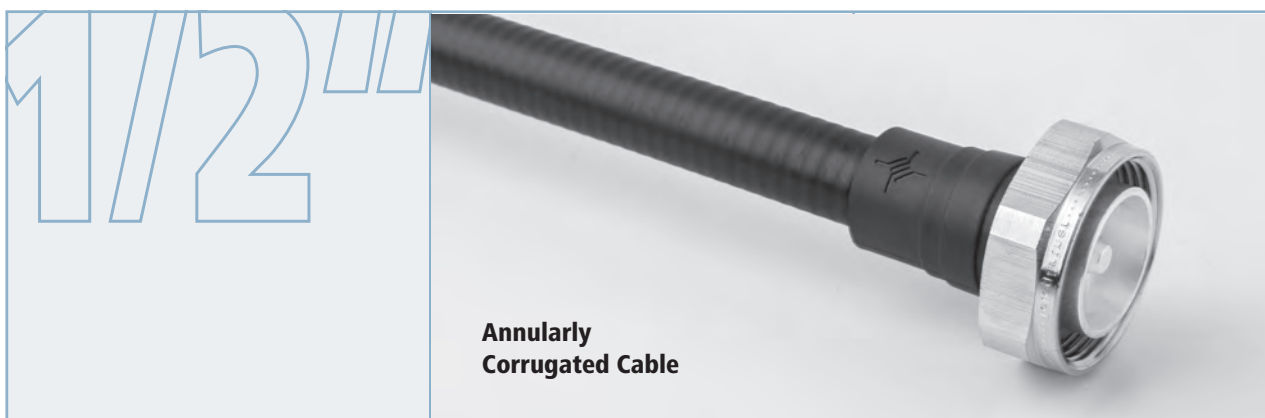
| Length | Plug - Plug |            |
|--------|-------------|------------|
|        | Order no.   | Type       |
| 0.5 m  | L00010Q0148 | JMPR/0547L |
| 1.0 m  | L00010Q0149 | JMPR/1047L |
| 2.0 m  | L00011Q0159 | JMPR/2047L |
| 3.0 m  | L00012Q0157 | JMPR/3047L |
| 5.0 m  | L00013Q0242 | JMPR/5047L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

# 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 |



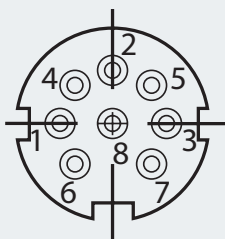
## 6 RET Cables (Remote Electrical Tilt)

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

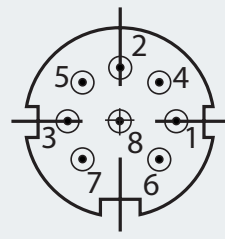
together at the top of the tower or building. By connecting the modules together, you reduce the number or cables required from the MCU to the antennas.

### 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 mm<sup>2</sup>, 2 x power cores and 1 ground core 0.75 mm<sup>2</sup>. 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



| 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 mm<sup>2</sup>, 2 x power cores and 1 ground core 0.75 mm<sup>2</sup>. 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<sub>A</sub> 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<sub>A</sub> and RJ45 keystone AMJ-S Module Cat.6<sub>A</sub> 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<sub>A</sub>  
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<sub>A</sub> UL listet (E244889)

#### TOC plug set IP68 MFP8 T568B Cat.6<sub>A</sub>

- RJ45 plug MFP8 Cat.6<sub>A</sub>  
acc. to IEC 60603-7-51 (500 MHz)
- RJ45 plug MFP8 Cat.6<sub>A</sub> 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.

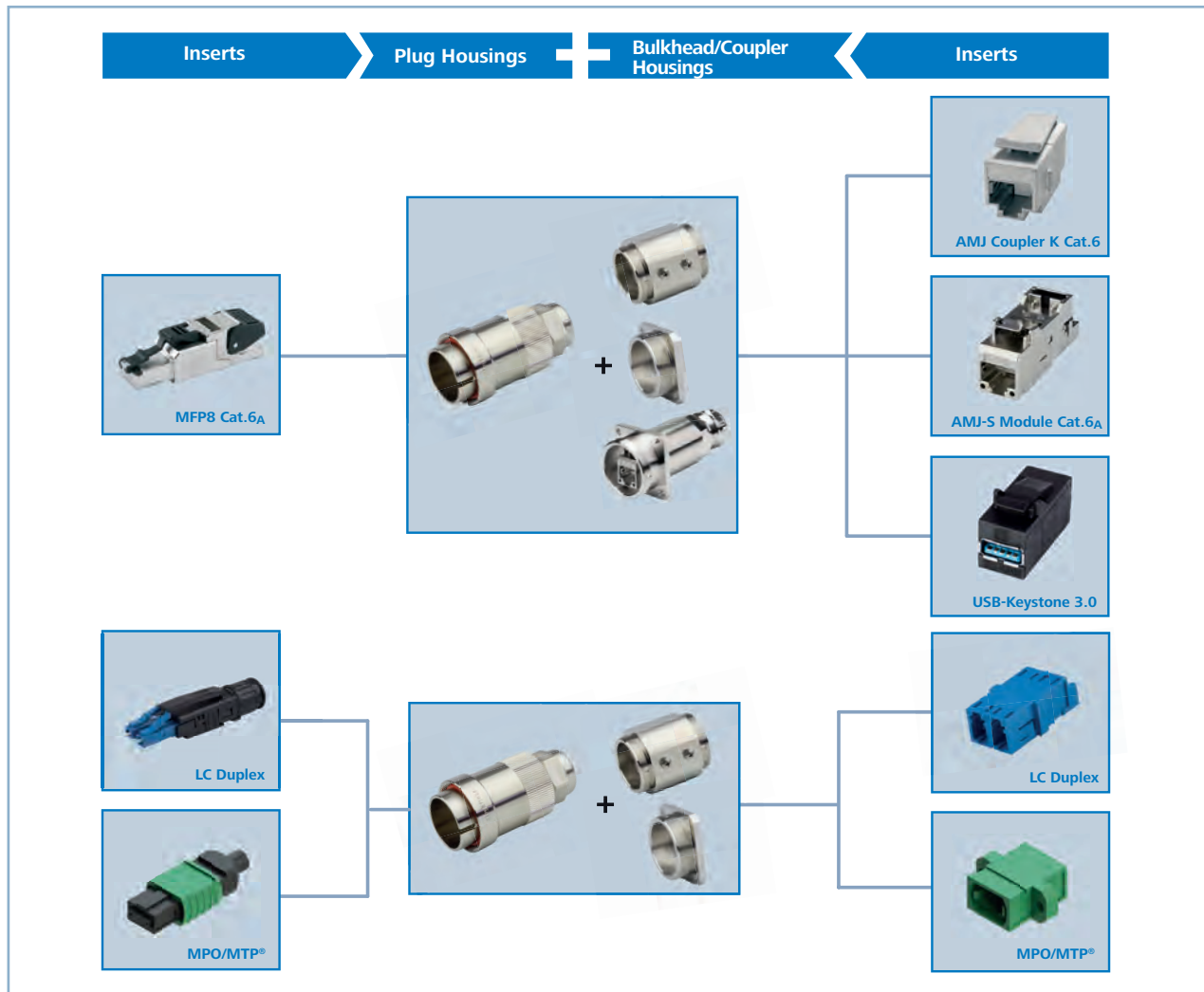
### Performance Characteristics TOC Series LC Duplex

- 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®

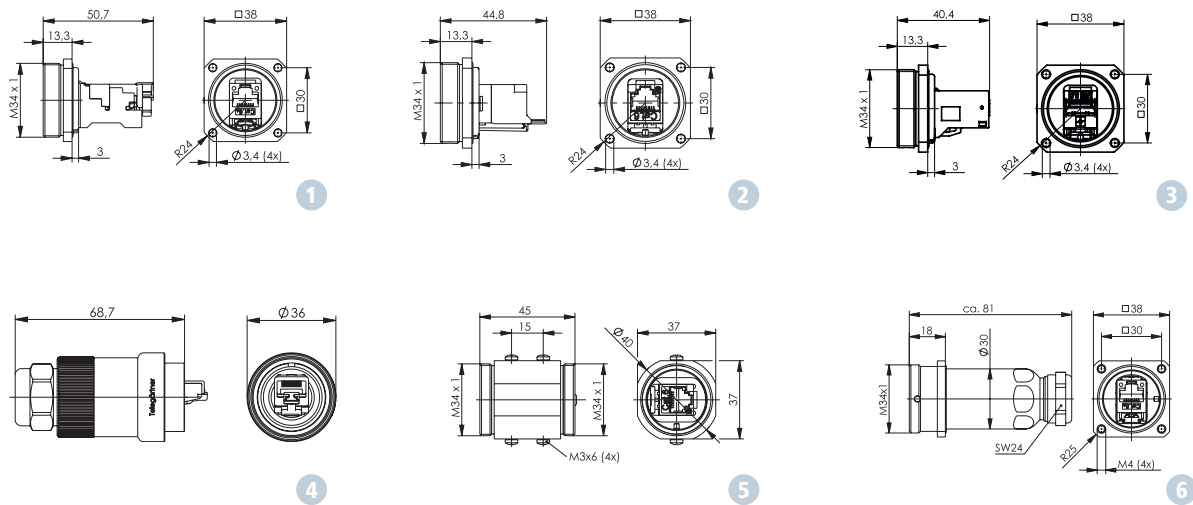
- plug & adaptor acc. to IEC 61755-3-1
- multimode (PC) & singlemode (APC) types
- insertion loss:
  - plug: multimode max. 0.5 dB (typ. 0.2)
  - singlemode APC max. 0.7 dB (typ. 0.25)
- return loss:
  - plug: multimode min. 30 dB, singlemode APC min. 60 dB
- temperature range: -40° C to +85° C\*
- plug 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



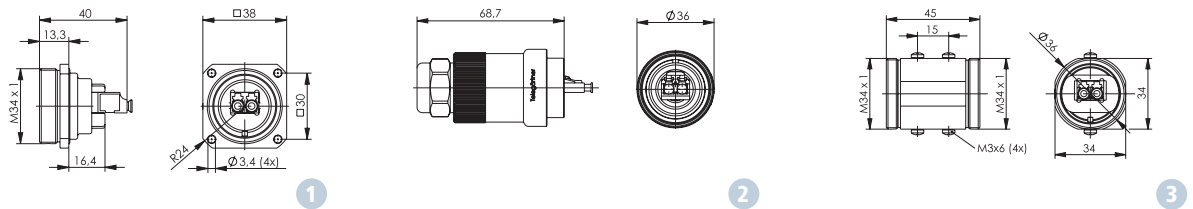
# TOC Outdoor Connectors IP68

## TOC Series RJ45



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

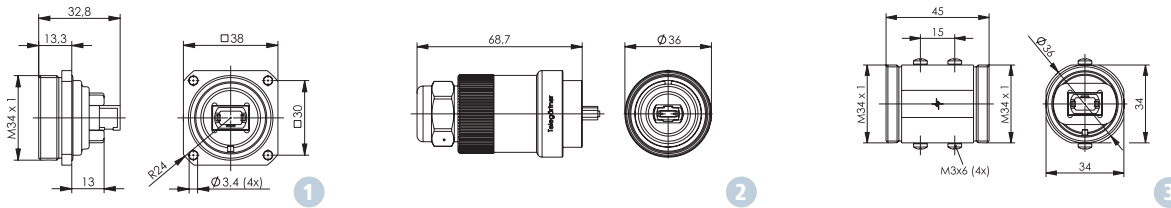
## TOC Series LC Duplex



| 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®



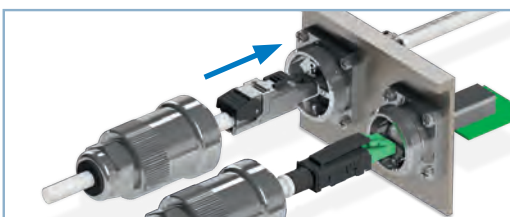
| Order no.   | Short name            | Description                           | Fig. |
|-------------|-----------------------|---------------------------------------|------|
| J68071A0006 | TOC bulkhead set IP68 | MPO/MTP® adaptor singlemode/multimode | 1    |
| J68070A0004 | TOC plug set IP68     | 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



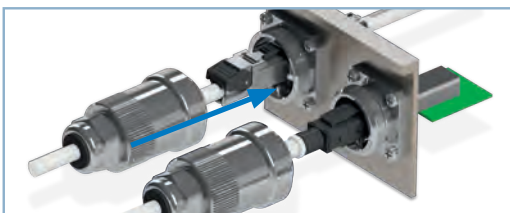
| Order no.   | Short name                       | Description                     | Fig. |
|-------------|----------------------------------|---------------------------------|------|
| H60030A0000 | TOC bulkhead protection cap IP68 | nickel-plated brass, with chain | 1    |
| H60030A0001 | TOC plug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

## Assembly steps



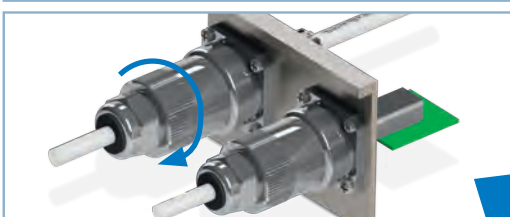
**Step 1:**  
**Slide plug into bulkhead**

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<sub>A</sub> S/FTP LSZH

| Mechanical Characteristics               |                              |
|--|------------------------------|
| Cable Structure                          | Li02YSCH<br>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<br>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<sub>A</sub> U/UTP LSZH

| Mechanical Characteristics           |                      |
|--------------------------------------|----------------------|
| Cable Structure                      | LI-2YH 4x2x0.58 LSZH |
| Stranded wire                        | AWG24/7<br>(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<sub>A</sub> S/FTP PE

| Mechanical Characteristics           |                                    |
|--------------------------------------|------------------------------------|
| Cable Structure                      | Li02YSCH                           |
| Stranded wire                        | 4x2xAWG26/7 PiMF<br>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<sub>A</sub> 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<sub>A</sub> 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<sub>A</sub> 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



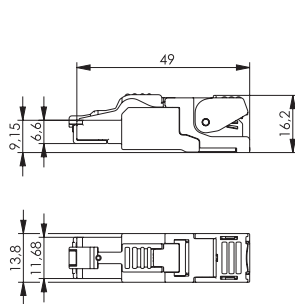
- T568B wiring
- 90° / 180° / 270° moulded boot with latch protection

- colours: grey, green, red, blue, yellow, black, white, purple
- variants with very short boot available
- variants with jacket LSZH, PVC, PUR, PE available

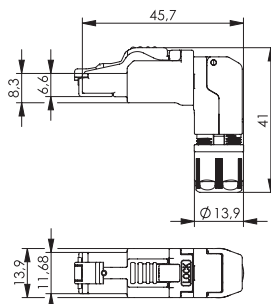
# Plugs

|  | MFP8 Cat.6A<br>AWG27-22           | UFP8 Cat.6A<br>AWG27-23          | Plug MP8(8) Cat.6A               |
|--|-----------------------------------|----------------------------------|----------------------------------|
| <b>Standards</b>                                     |                                   |                                  |                                  |
| Connectors   | IEC 60603-7-51                    | IEC 60603-7-41                   | IEC 60603-7-51                   |
| <b>Mechanical Characteristics</b>                    |                                   |                                  |                                  |
| 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<br>(AWG24/1-22/1)  | 0.51 - 0.57 mm<br>(AWG24/1-23/1) | 0.40 - 0.51 mm<br>(AWG26/1-24/1) |
| Mating Requirements Cu-Conductor diameter: stranded  | 0.46 - 0.76 mm<br>(AWG27/7-22/7)  | 0.46 - 0.65 mm<br>(AWG27/7-23/7) | 0.46 - 0.61 mm<br>(AWG27/7-24/7) |
| Mating Requirements Cu-Conductor diameter: stranded* | 0.61 - 0.78 mm<br>(AWG24-22/19)*  | 0.51 mm<br>(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                     |
| <b>Climatic Characteristics</b>                      |                                   |                                  |                                  |
| Operating temperature                                | -40°C ... +85°C                   | -40°C ... +70°C                  | -40°C ... +70°C                  |
| UL   | E244889                           | E244889                          | E244889                          |
| <b>Electrical Characteristics</b>                    |                                   |                                  |                                  |
| Current rating at 50°C                               | 1 A                               | 1 A                              | 1 A                              |
| PoE+ acc to IEEE 802.3at                             | Adequate for Power over Ethernet+ |                                  |                                  |
| <b>Transmission Characteristics</b>                  |                                   |                                  |                                  |
| Category 6A (component)                              | ISO/IEC 11801, DIN EN 50173-1     |                                  |                                  |

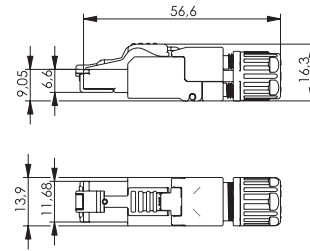
## Shielded field assembly RJ45 plug MFP8



1



2



3

| 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   | -    |

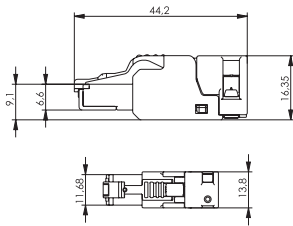


- Category 6A acc. to ISO/IEC 11801
- Plug: IEC 60603-7-51 compliant
- Durability: ≥ 750 mating cycles
- Contact finish material: Ni1,2Au0,8
- Shielding housing material: die-cast nickel-plated zinc
- Reusable IDC: ≤ 4 cycles
- Operating temperature: -40°C to 85°C
- Power over Ethernet plus (PoE+) acc. to IEEE 802.3at
- IP20
- MFP8-4x90: cable entry from 4 directions (4x90°)



# Plugs

## Unshielded field assembly RJ45 plug UFP8



1



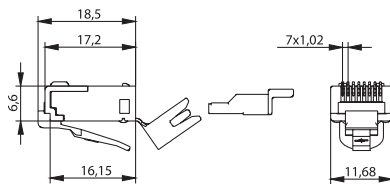
2

| Order no.   | Short name                    | Description  | Fig. |
|-------------|-------------------------------|--|------|
| J00026A3001 | UFP8 T568B Cat.6 <sub>A</sub> | AWG24/1-23/1, AWG27/7-23/7 incl.a pre-assembled dust protection cap                  | 1    |
| J00026A3111 | UFP8 T568B Cat.6 <sub>A</sub> | 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    |

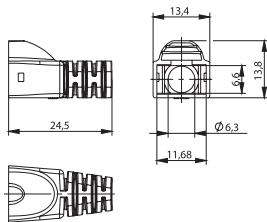


- Category 6<sub>A</sub> acc. to ISO/IEC 11801
- Plug: IEC 60603-7-41 compliant
- Durability: ≥ 750 mating cycles
- Contact finish material: Ni1.2Au0.8
- Housing material: PC UL94-V0 black
- Reusable IDC: ≤ 4 cycles
- Operating temperature: -40°C to 70°C
- Power over Ethernet plus (PoE+) acc. to IEEE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

## RJ45 Plug MP8(8) FS Cat.6<sub>A</sub> and Cable Boots



1

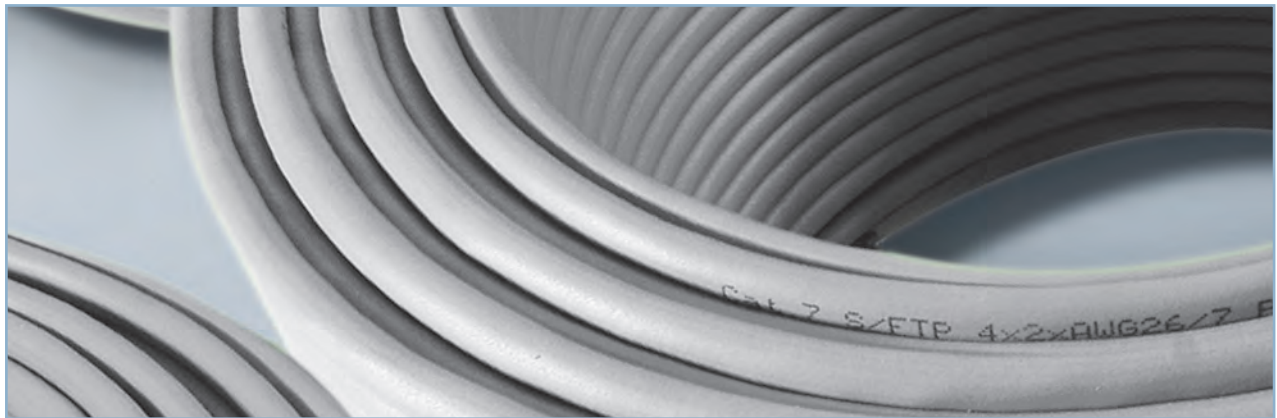


2



| Order no.   | Short name                             | Description  | Fig. |
|-------------|--|--|------|
| J00026A0165 | RJ45 plug MP8(8) FS Cat.6 <sub>A</sub> | 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

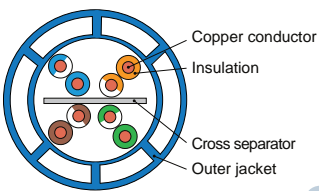


|   | AMJ 1000 S/FTP Cat.7  | AMJ 1000 Outdoor S/FTP Cat.7  | TOC 900 S/FTP Cat.7   | AMJ 600 Flex S/FTP Cat.7  |
|---|---|---|---|---|
| <b>Construction</b>                           |   |   |   |   |
| Conductor                                     | Bare copper wire Ø 0.56 mm (AWG 23)                               | 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  |
| <b>Mechanical Properties</b>                  |   |   |   |   |
| Bending radius                                | ≥40 mm without load<br>≥80 mm with load                           | ≥40 mm without load<br>≥80 mm with load                             | ≥40 mm without load<br>≥80 mm with load                             | ≥25 mm without load<br>≥50 mm with load   |
| Operating temperature                         | during operation: -20°C...60°C<br>during installation: 0°C...50°C | during operation: -55°C...70°C<br>during installation: -20°C...50°C | during operation: -40°C...85°C<br>during installation: -15°C...50°C | during operation: -20°C...60°C<br>during installation: 0°C...50°C                 |
| <b>Transmission characteristics (at 20°C)</b> |   |   |   |   |
| Acc. to                                       | IEC 61156-5 Cat.7   | IEC 61156-5 Cat.7   | IEC 61156-5 Cat.7   | IEC 61156-5 Cat.7   |

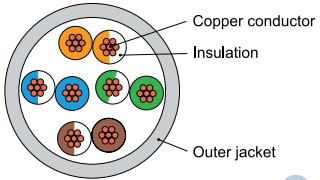
|                  |                   |                     |                 |               |               |               |               |             |
|------------------|-------------------|---------------------|-----------------|---------------|---------------|---------------|---------------|-------------|
|                  |                   |                     |                 |               |               |               |               |             |
|                  |                   |                     |                 |               |               |               |               |             |
| <b>Order no.</b> | <b>Short name</b> | <b>Construction</b> | <b>Category</b> | <b>AWG/mm</b> | <b>Jacket</b> | <b>Colour</b> | <b>Length</b> | <b>Fig.</b> |
| 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   |
|---|---|---|
| <b>Construction</b>                           |   |   |
| 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   |
| <b>Mechanical Properties</b>                  |   |   |
| Bending radius                                | ≥32 mm without load<br>≥64 mm with load                           | ≥20 mm without load<br>≥40 mm with load                             |
| Operating temperature                         | during operation: -20°C...60°C<br>during installation: 0°C...50°C | during operation: -20°C...60°C<br>during installation: -10°C...60°C |
| <b>Transmission characteristics (at 20°C)</b> |   |   |
| Acc. to                                       | IEC 61156-5 Cat.6A  | IEC 61156-6 Cat.6   |



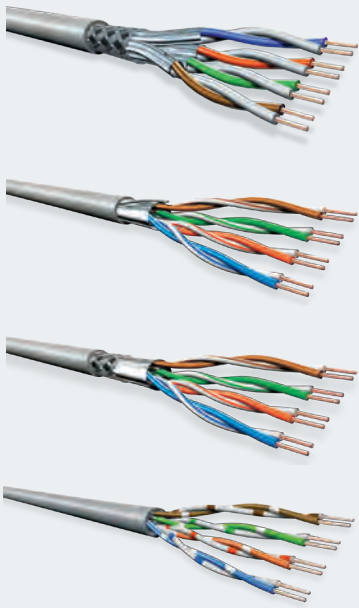
1



2

| 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

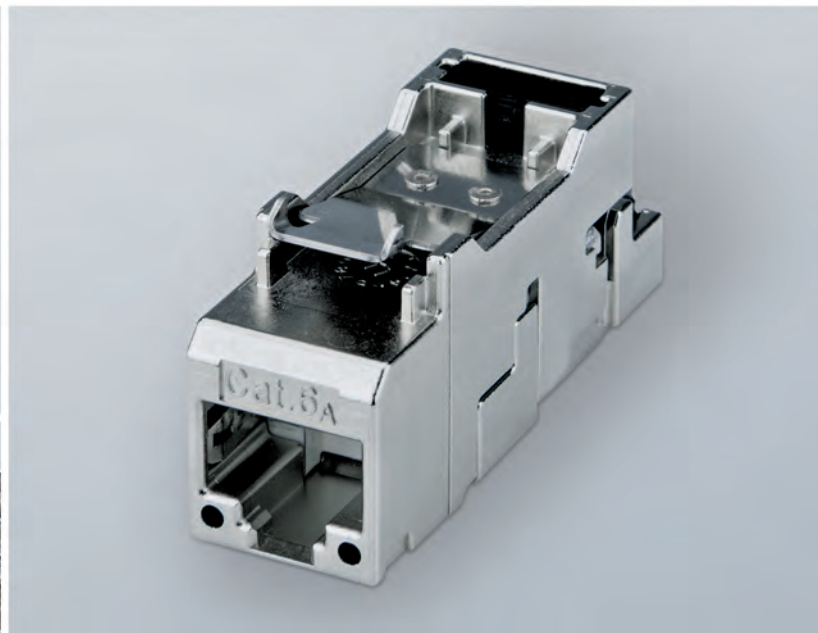
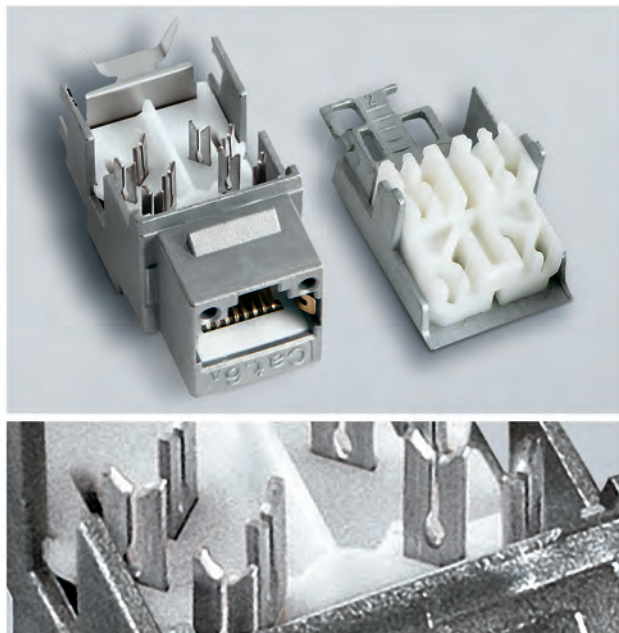


**S/FTP:**  
overall braid screen (S),  
elements foil screened (FTP)

**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)

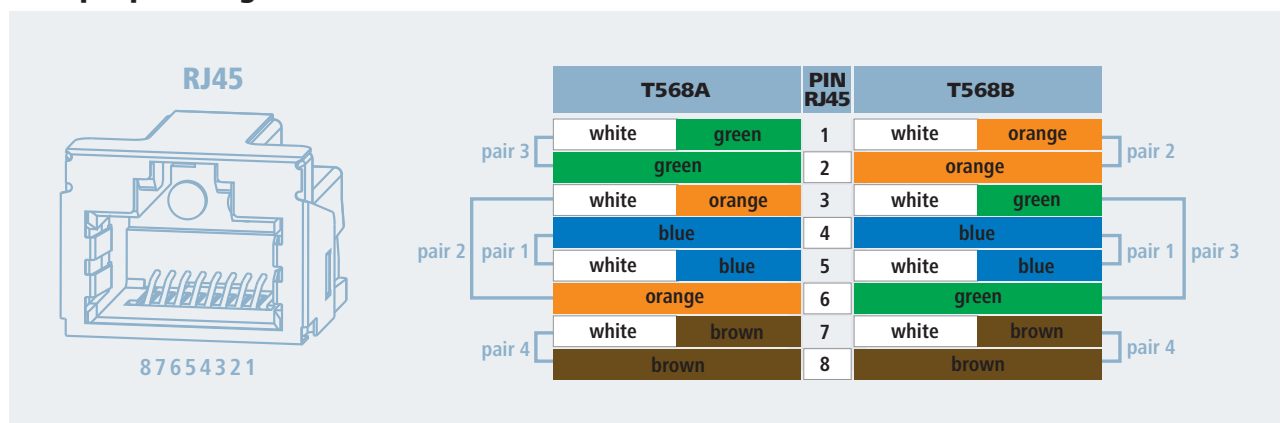


## 7.3

## Modular System AMJ-S/AMJ/UMJ

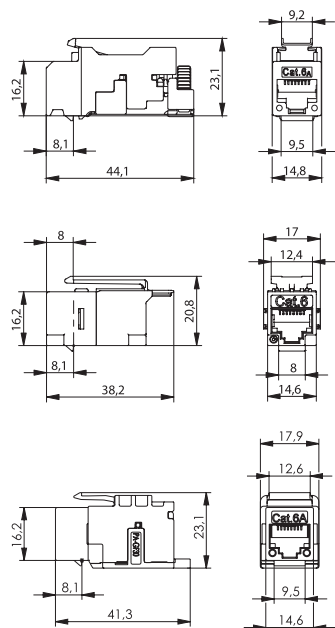
|  | AMJ-S Module Cat.6 <sub>A</sub>  | AMJ Coupler Cat.6                 | UMJ Module K Class E <sub>A</sub> 500 |
|--|----------------------------------|-----------------------------------|---------------------------------------|
| <b>Standards</b>                         |                        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



1

2

3



| 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



1



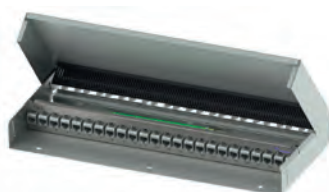
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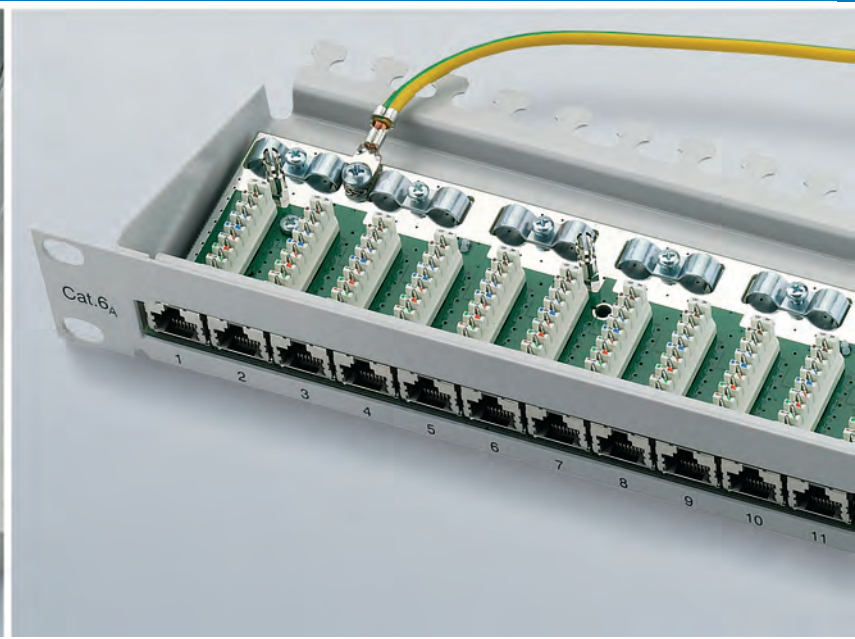


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5

| 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   |

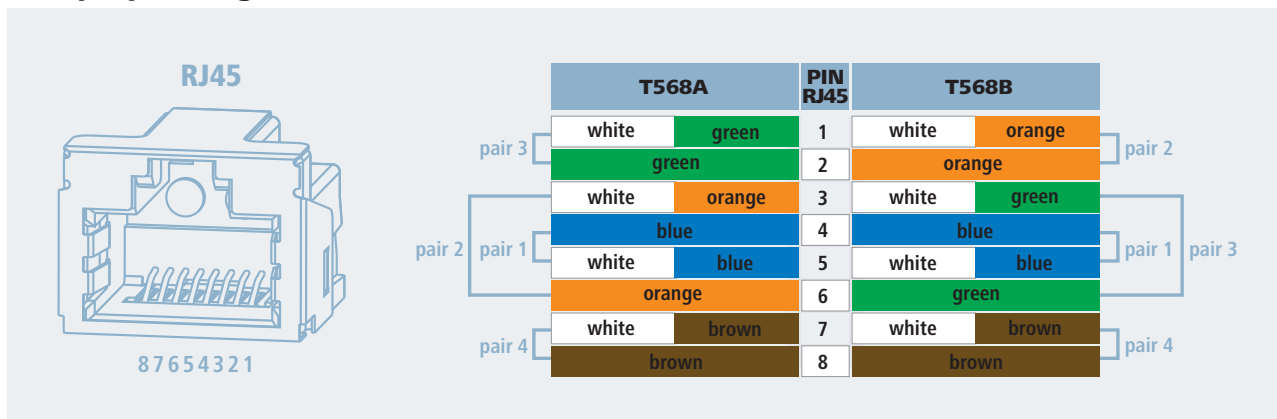


## 7.4

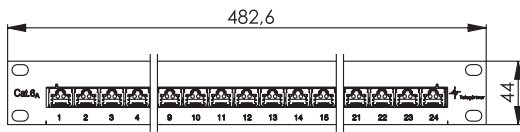
## Patch Panels and Distributors

|  | 19" Patch Panels<br>Cat.6 <sub>A</sub>    | 19" Feedthrough<br>Panel | 16 Port Cross<br>Connect Panel | Mini Distributor<br>Cat.6 <sub>A</sub>    |
|--|---|--------------------------|--------------------------------|---|
| <b>Standards</b>                         |   |                          |                                |   |
| Connectors                               | IEC 60603-7-51                            | IEC 60603-7-5            | IEC 60603-7-5                  | IEC 60603-7-51                            |
| <b>Mechanical Characteristics</b>        |   |                          |                                |   |
| 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<br>AWG26/1 - AWG22/1 | -                        | -                              | solid 0.40 - 0.65 mm<br>AWG26/1 - AWG22/1 |
| LSA Plus: Wire diameter                  | 0.7 - 1.6 mm                              | -                        | -                              | 0.7 - 1.6 mm                              |
| <b>Environmental Requirements</b>        |   |                          |                                |   |
| Operating temperature                    | -40°C to 70°C                             | -40°C to 70°C            | -40°C to 70°C                  | -40°C to 70°C                             |
| <b>Electrical Characteristics</b>        |   |                          |                                |   |
| 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+                         |
| <b>Transmission Characteristics</b>      |   |                          |                                |   |
| Category 6 <sub>A</sub> (Component)      | ISO/IEC 11801, DIN EN 50173-1             |                          |                                |   |
| 10 Gigabit Ethernet acc. to IEEE 802.3an | fulfilled                                 | fulfilled                | fulfilled                      | fulfilled                                 |

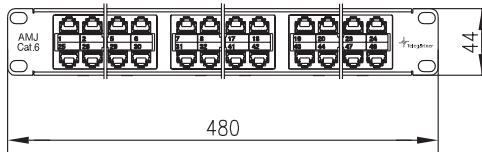
## RJ45 pin/pair assignment T568A and T568B



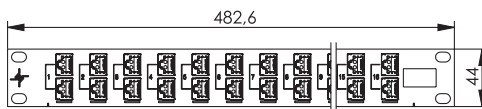
# Patch Panels and Distributors



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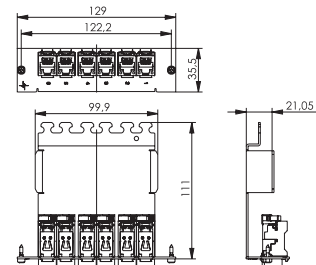
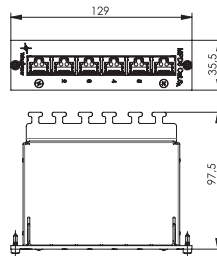
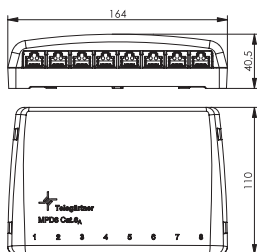
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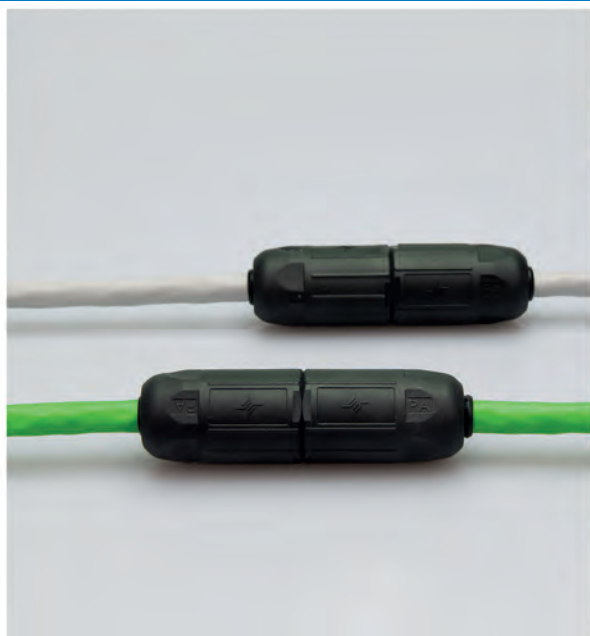
5



6



| Order No.   | Short name                  | Type  | Colour                   | Fig |
|-------------|-----------------------------|---|--------------------------|-----|
| J02023A0050 | MPP24-HS K Cat.6A           | 24x RJ45 shielded                                 | light grey RAL 7035      | 1   |
| J02023S0050 | MPP24-HS K Cat.6A           | 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.6A            | shielded, mounting onto DIN Rail TH35 w/o adaptor | alpine white             | 4   |
| J02021A0054 | MPD6-HS K Cat.6A 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.6A T568A                | aluminium                | 6   |



## 7.5

## Connection Module VM-Pro Class F<sub>A</sub> IP67

| Connection Module VM-Pro Class F <sub>A</sub> IP67 |   |
|--|---|
| <b>Wire connection</b>                             |   |
| 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  |
| <b>Environmental Requirements</b>                  |   |
| Protection against particulate ingress             | IP6X  |
| Protection against water / immersion               | IPX7  |
| Operating temperature                              | -40°C to +85°C  |
| <b>Electrical Characteristics</b>                  |   |
| PoE+ acc. to IEEE 802.3at                          | Adequate for Power over Ethernet+   |
| <b>Transmission Characteristics</b>                |   |
| 10 Gigabit Ethernet acc. to IEEE 802.3an           | Adequate for 10 Gigabit Ethernet  |
| Category 6 <sub>A</sub>                            | ISO/IEC 11801; EN 50173-1   |
| Class F <sub>A</sub>                               | 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 <sub>A</sub> IP67 | AWG27-22 | black  |



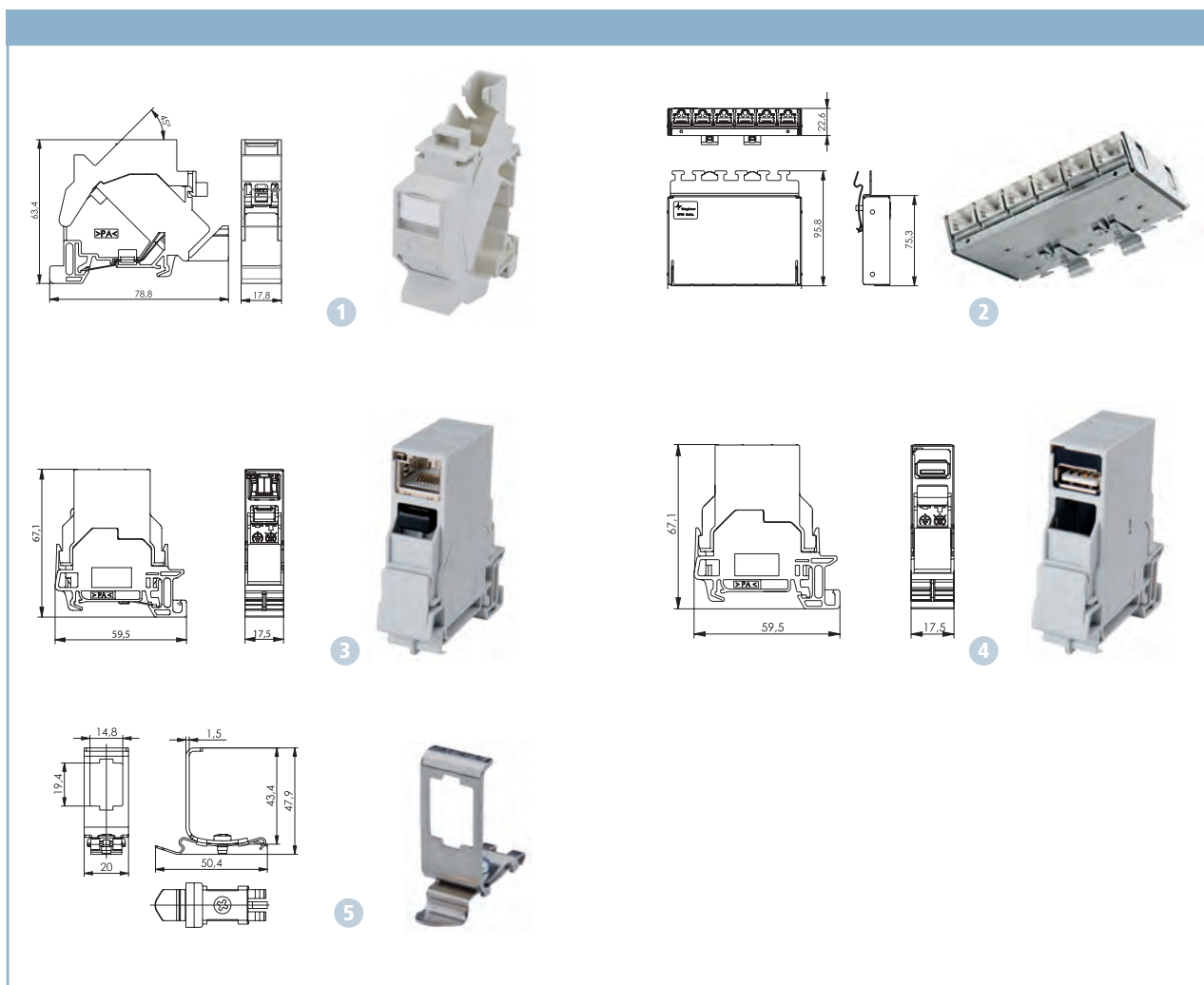
- Class F<sub>A</sub> (1000 MHz)
- Real-time re-embedded tested
- Suitable for 100 / 250 / 500 / 1000 MHz installation and patch cables
- Connection via IDC termination
- Insulated construction (insulating resistance 30x 1012 Ω)
- Connection of 4-pair shielded/unshielded installation and patch cables 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



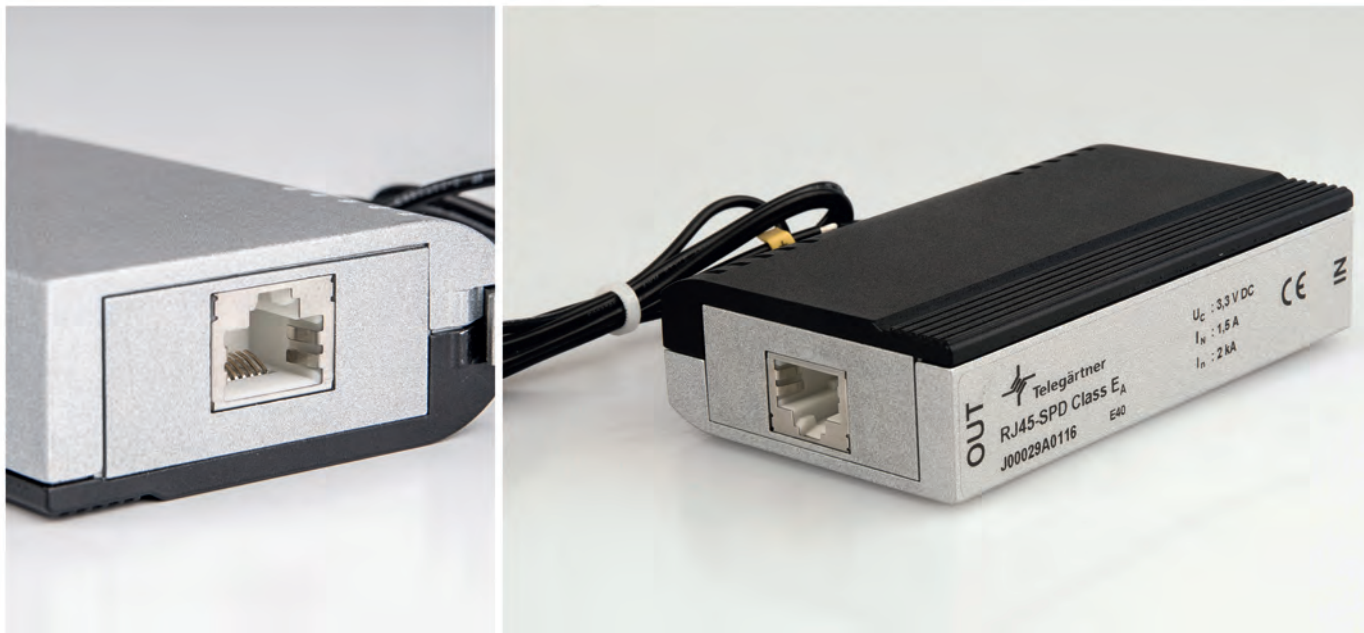


# Components for Mounting Rails

# 7.6


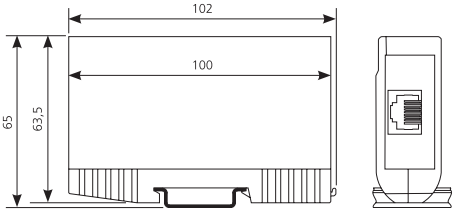


| Order No.   | Short name                      | Type   | Remarks                | Fig |
|-------------|---------------------------------|--|------------------------|-----|
| J00023A0206 | Mounting rail outlet TS45 AMJ-S | incl. AMJ-S Module Cat.6 <sub>A</sub> T568B                  | for mounting rail TH35 | 1   |
| J02021A0055 | MPD6-HS K Cat.6 <sub>A</sub>    | 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       |   |
|------------------------------------|---|
| <b>Standards</b>                   |   |
| Standards and Regulations          | IEC 61643-21, EN 50173-1, ISI/IEC 11801 |
| <b>Mechanical Characteristics</b>  |   |
| Housing                            | Zinc die-cast                           |
| Color                              | silver / black                          |
| Mounting type                      | DIN rail mounting                       |
| Dimension                          | 103x25x63 mm                            |
| Weight                             | 315 g                                   |
| Connection equipotential bonding   | Cable connection                        |
| <b>Environmental Requirements</b>  |   |
| Operation Temperature              | -40°C to 70°C                           |
| Protection class acc. to IEC 60529 | IP20                                    |
| <b>Electrical Characteristics</b>  |   |
| PoE+ acc. to IEEE 802.3 at         | Adequate for Power over Ethernet +      |

|  |                              |  |  |
|---|------------------------------|--|--|
| Order no.   | Description                  | Remarks  |  |
| J00029A0116   | RJ45 surge protection device | Class E <sub>A</sub> 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<sub>A</sub> 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



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2

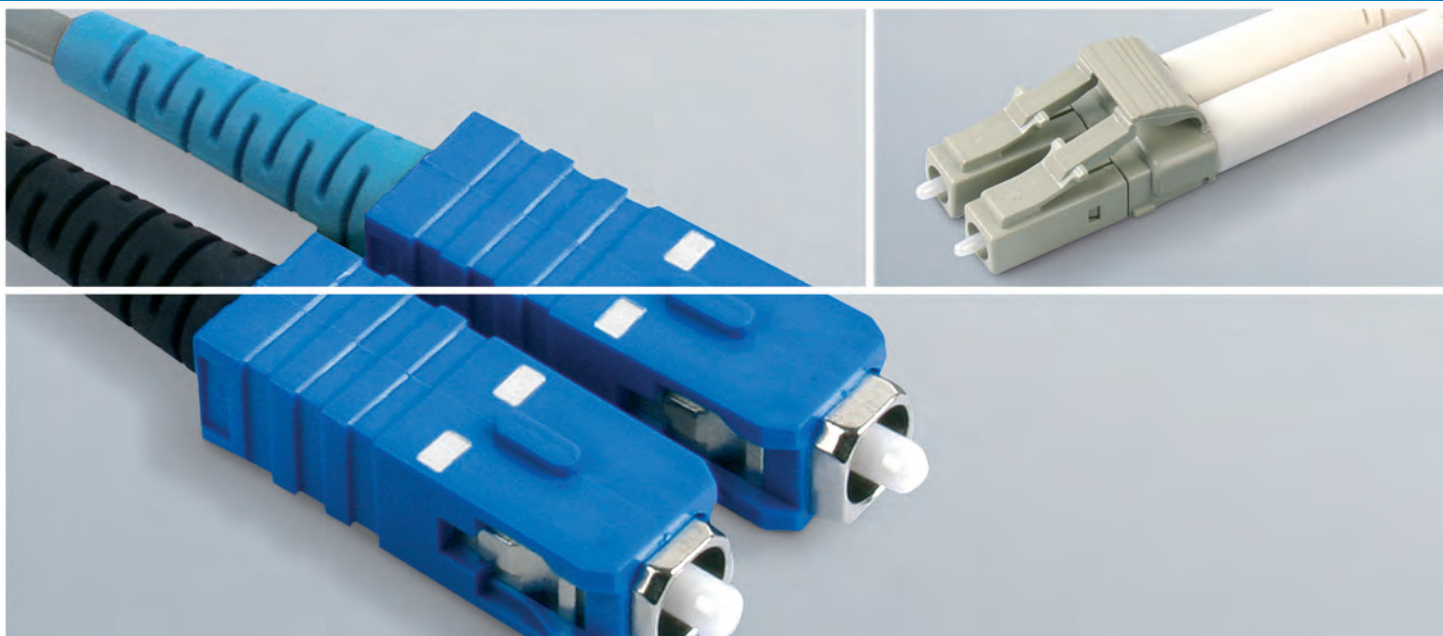


3



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 1/2 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 |

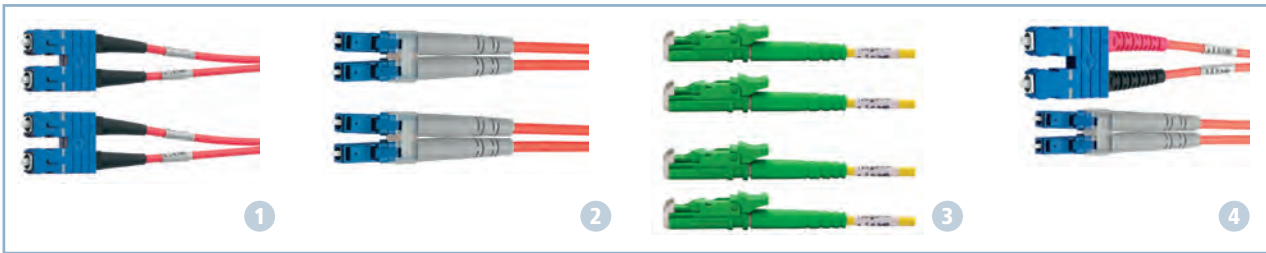
| 2           | Connector Type 1st End LC Duplex – 2nd End LC Duplex |             |             |             |             |
|-------------|--|-------------|-------------|-------------|-------------|
| Length      |  |             |             |             |             |
| Fiber type  | 1.0 m  | 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 |

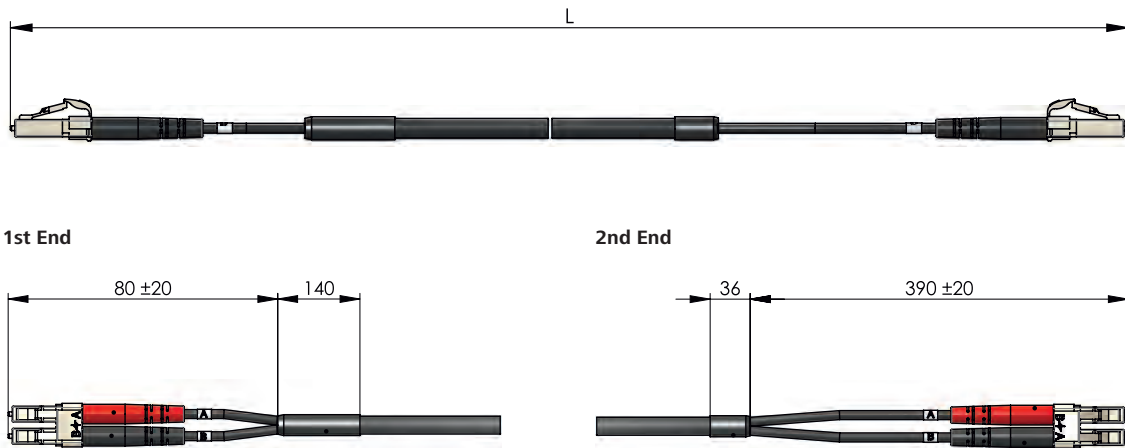
| 4           | Connector Type 1st End SC Duplex – 2nd End LC Duplex |             |             |             |             |
|-------------|--|-------------|-------------|-------------|-------------|
| Length      |  |             |             |             |             |
| Fiber type  | 1.0 m  | 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



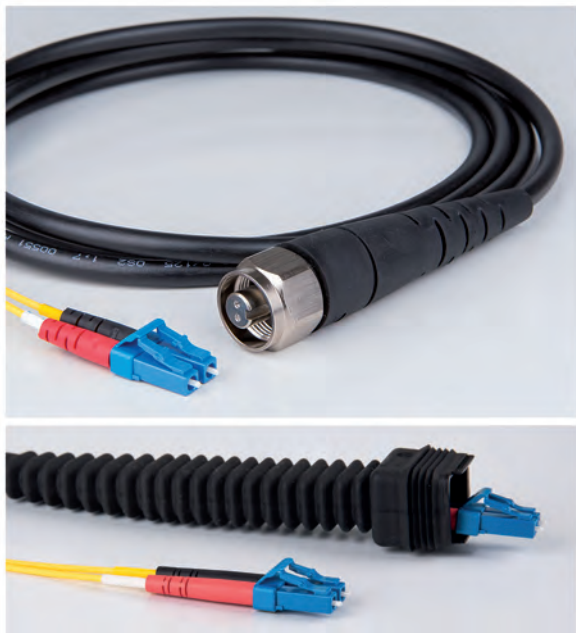
Other lengths and types on request

## 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 |

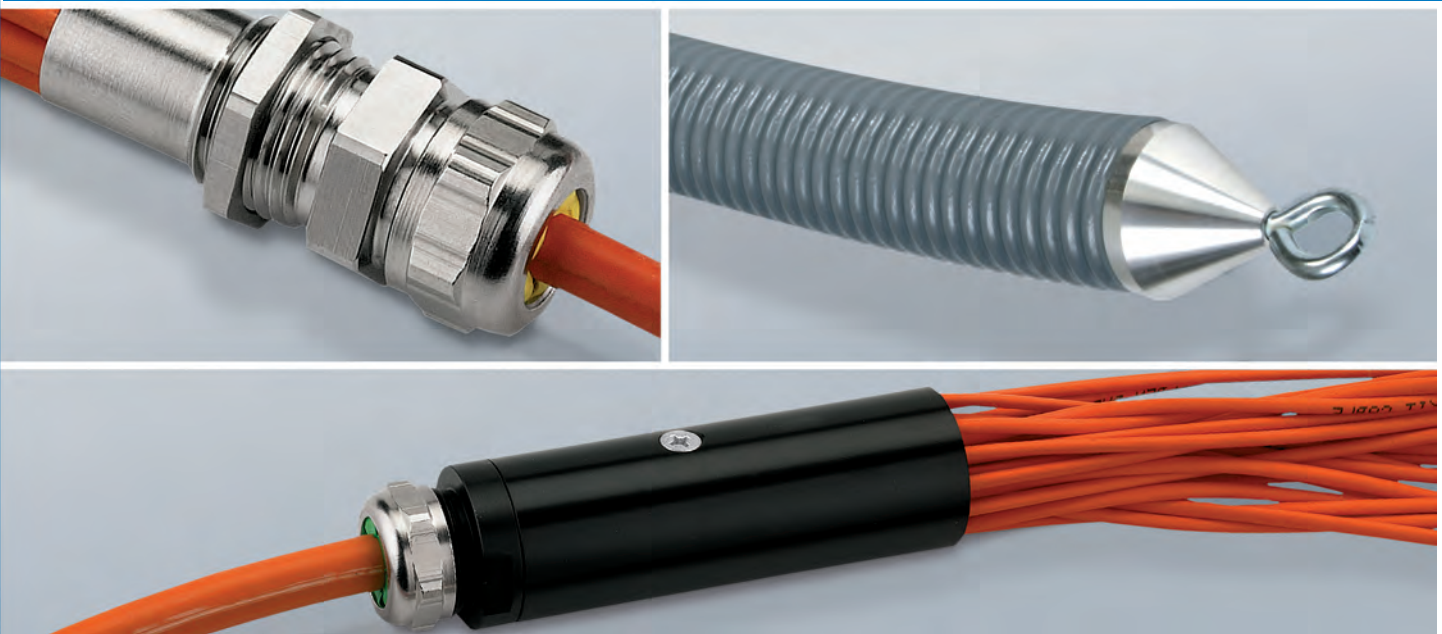
## TOC FEM



| 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

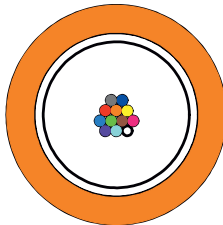
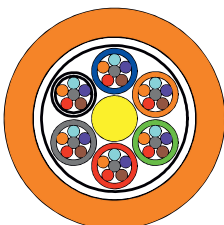
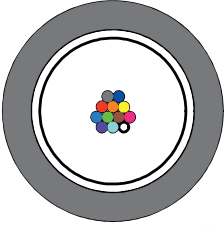
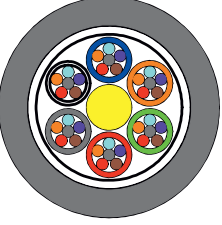
| Order No.   | Short name                                   | Jacket material |
|-------------|--|-----------------|
| L08020A2702 | TOC FTTA Cable AT-V(ZN)H11Y 2xE9/125, OS2    | TPE/PUR         |
| L08021A2702 | TOC FTTA Cable AT-V(ZN)H11Y 2xG50/125, OM2   | TPE/PUR         |
| L08022A2702 | TOC FTTA 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<br>A/I-DQ(ZN)BH | Central Tube<br>A-DQ(ZN)B2Y | Multi Tube<br>A/I-DQ(ZN)BH | Multi Tube<br>A-DQ(ZN)B2Y |
|---|------------------------------|-----------------------------|----------------------------|---------------------------|
| <b>Mechanical Characteristics</b>                               |                              |                             |                            |                           |
| 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                        |
| <b>Climatic Characteristics</b>                                 |                              |                             |                            |                           |
| Installation temperature in °C                                  |                              |                             | -5 to +50                  |                           |
| Operating temperature in °C                                     |                              |                             | -30 to +70                 |                           |
| Storage temperature in °C                                       |                              |                             | -30 to +70                 |                           |

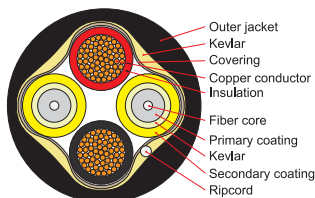
| Order no.   | Description                  | Colour | Fiber Count | Fiber Type     | Length in m | Fig. |
|-------------|------------------------------|--------|-------------|----------------|-------------|------|
| L08020T0014 | A/I-DQ(ZN)BH 1x12E9/125 OS2  | yellow | 12          | Singlemode OS2 | 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    |



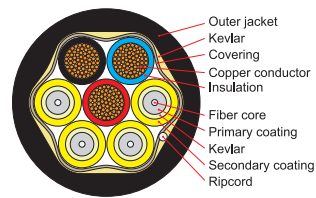
## 8.4

## Hybrid Cable

|                                   | 2x FO Singlemode / 2x Power         | 4x FO Singlemode / 3x Power          |
|-----------------------------------|-------------------------------------|--------------------------------------|
| <b>Construction</b>               |                                     |                                      |
| 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 <sup>2</sup> / black/red     | 2.5 mm <sup>2</sup> / black/red/blue |
| Ripcord                           | Yes                                 | Yes                                  |
| <b>Mechanical Characteristics</b> |                                     |                                      |
| 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   |
| <b>Climatic Characteristics</b>   |                                     |                                      |
| 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                         |



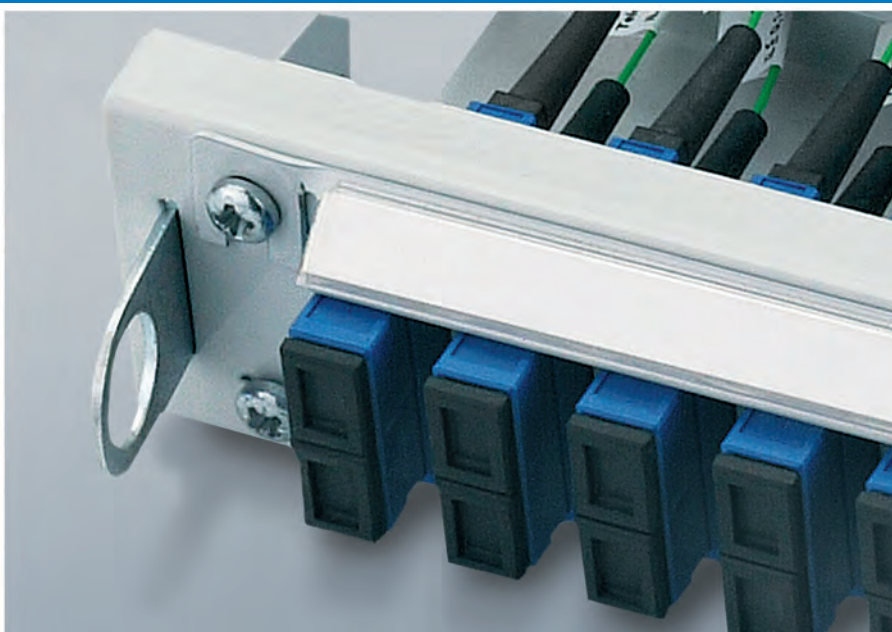
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2



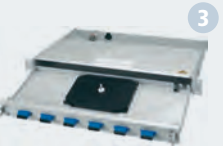
| Description                      | Remarks                    | Fig. |
|----------------------------------|----------------------------|------|
| Hybrid Fiber Optic / Power Cable | 2x FO singlemode, 2x power | 1    |
| Hybrid Fiber Optic / Power Cable | 4x FO singlemode, 3x power | 2    |





# FO Patch Panels

# 8.5

|                                    | ECONOMY V  | BASIS V   | PROFI V  |
|------------------------------------|--|---|--|
|                                    |    |  |  |
| <b>Mechanical Characteristics</b>  |  |   |  |
| 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  |   |  |
| <b>Dimensions in mm</b>            | <b>1 HU</b>  | <b>1 HU</b>   | <b>1 HU</b>  |
| Width                              | 482  | 482   | 482  |
| Hight                              | 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



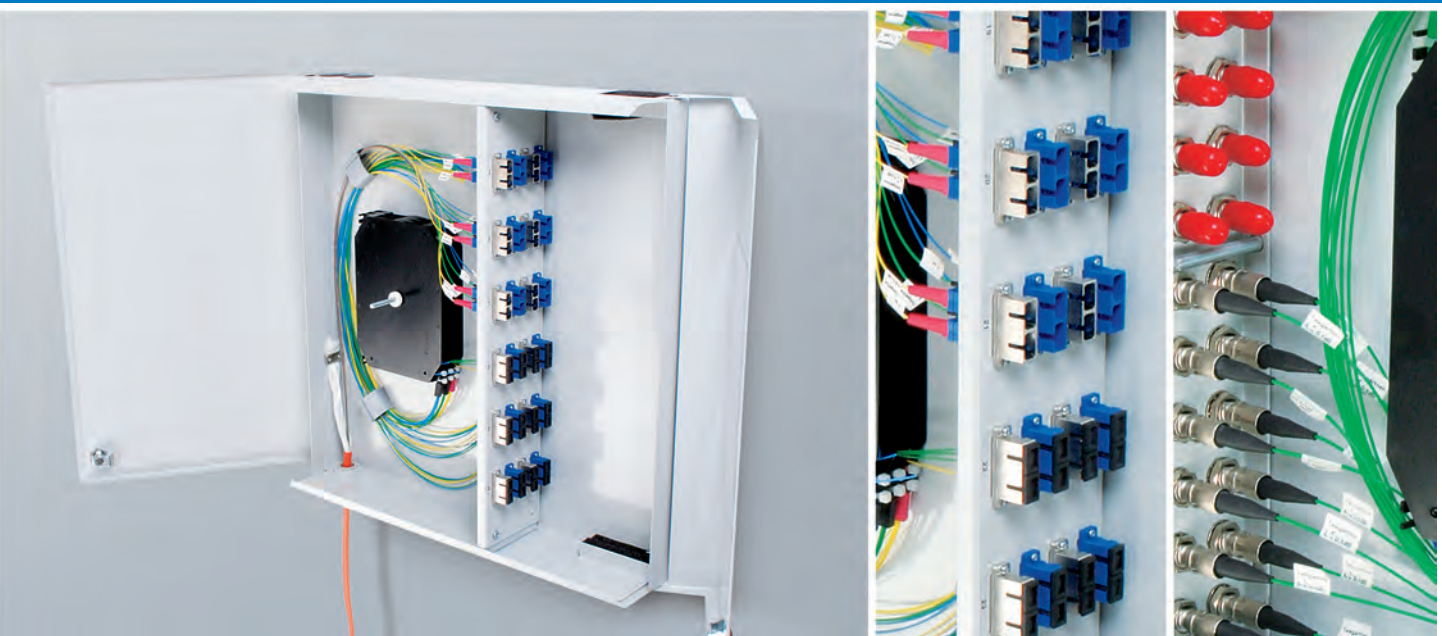
1



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                              |
|------------------------------------|--|---|--|---|
| <b>Mechanical Characteristics</b>  |  |   |  |   |
| 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



| 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

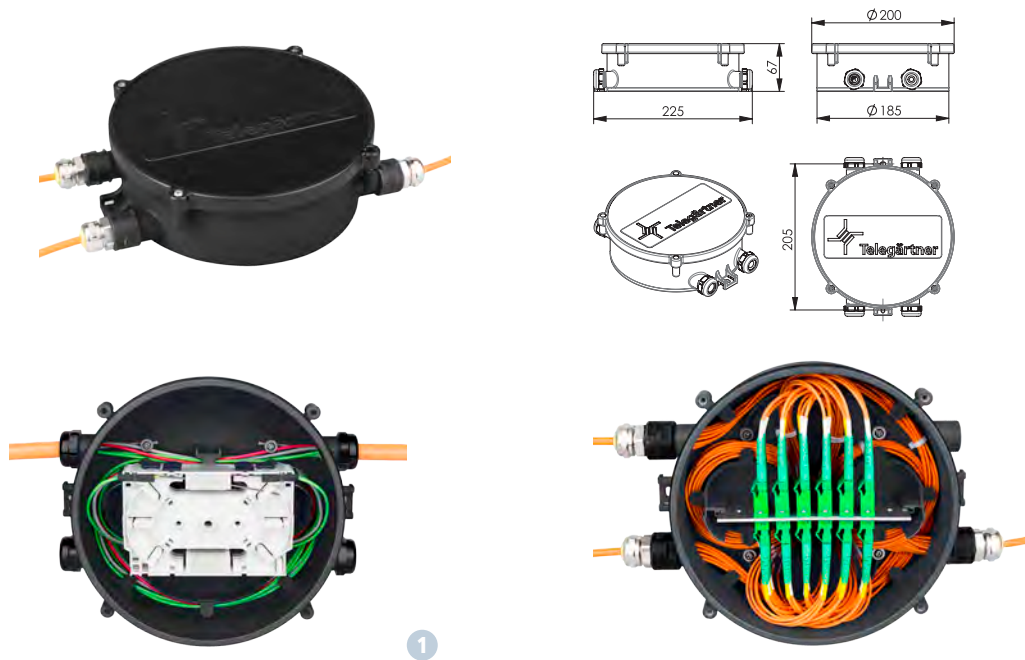


| Order No.   | Short name      | Remarks  | Fig |
|-------------|-----------------|--|-----|
| H02050A0190 | ODB 54 housing  | for splicing of max. 24 fibers   | 1   |
| H02050A0279 | ODB 54 - TICNET | for max. 6x SC Duplex / LC Quad / ST Duplex adaptors   | 2   |
| H02050A0280 | ODB 54 - TICNET | for 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   |

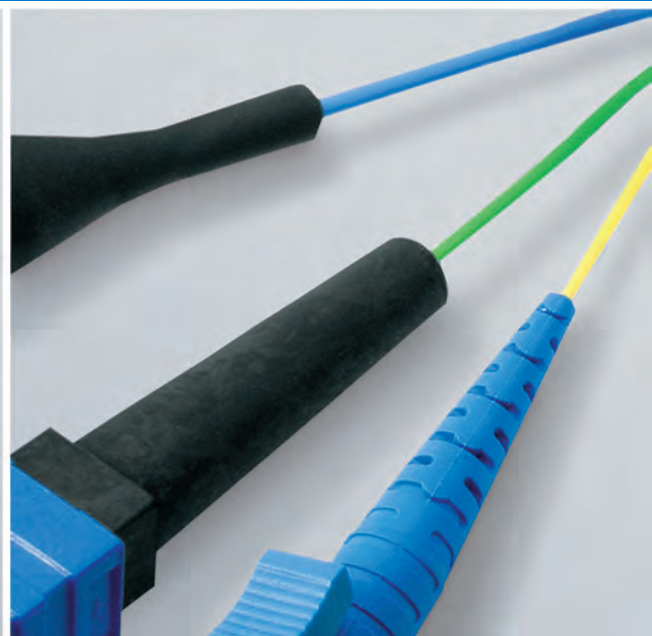
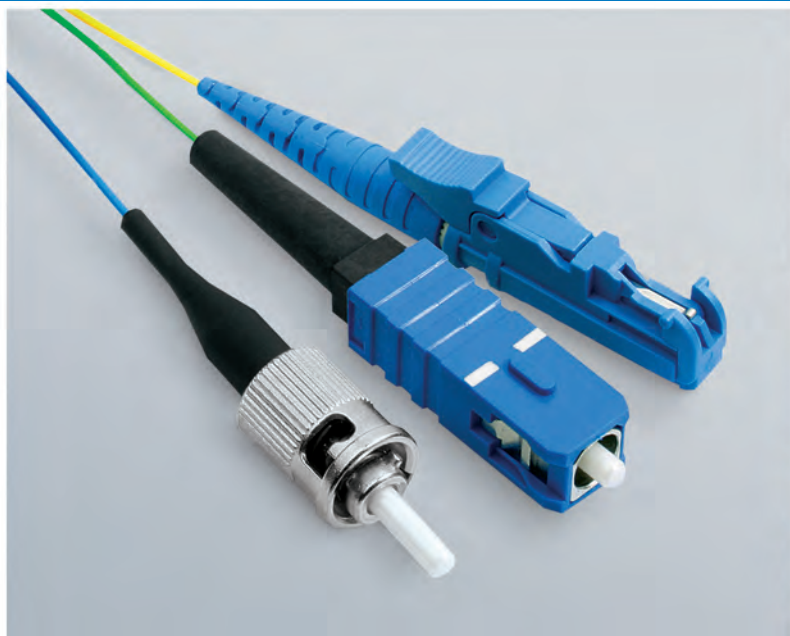
other solutions on request

# 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

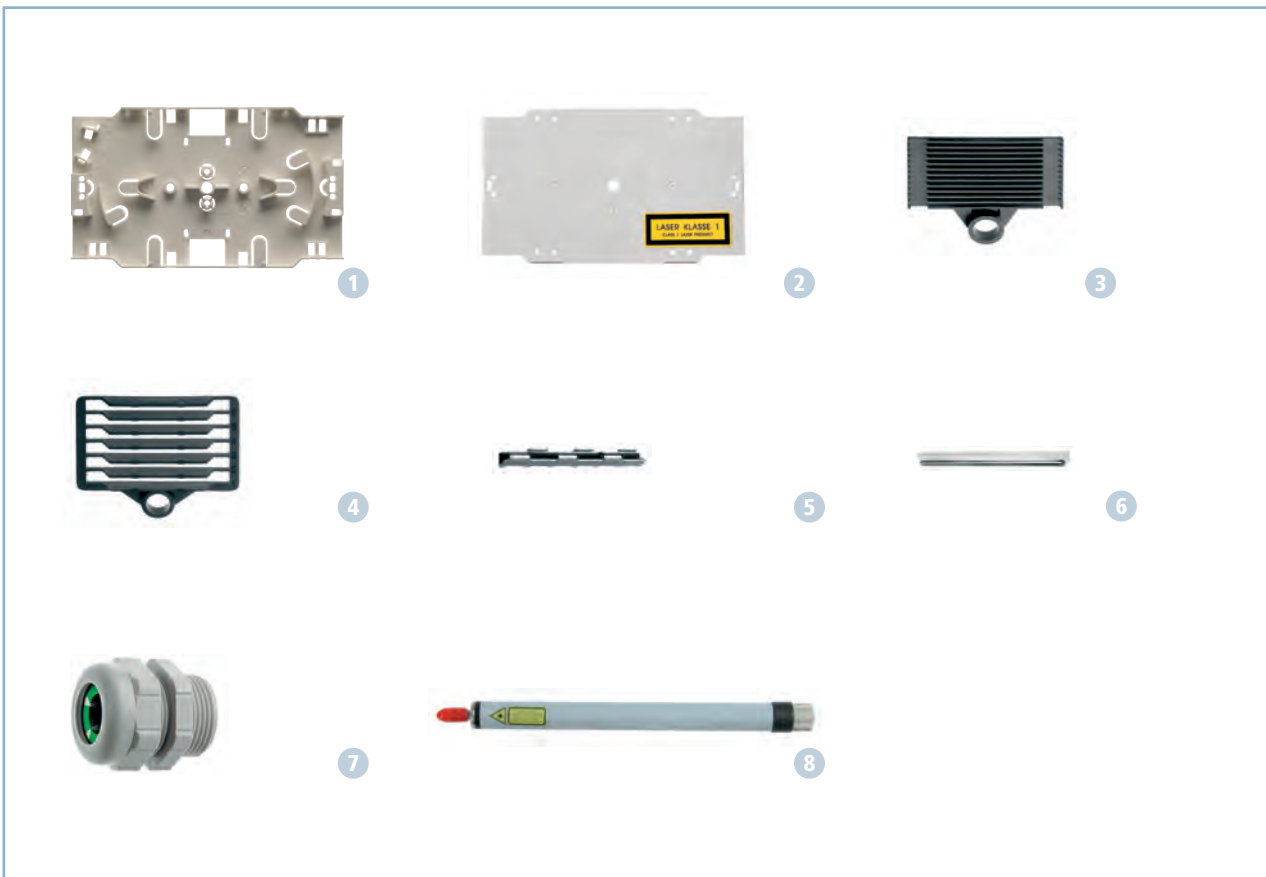


| Order No.   | Description | Pigtails                       | Housing Colour | Remarks                      |
|-------------|-------------|--------------------------------|----------------|------------------------------|
| L00889W0056 | Pigtail Set | 12x E9/125 OS2, 2 m, SC        | blue           | 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 |

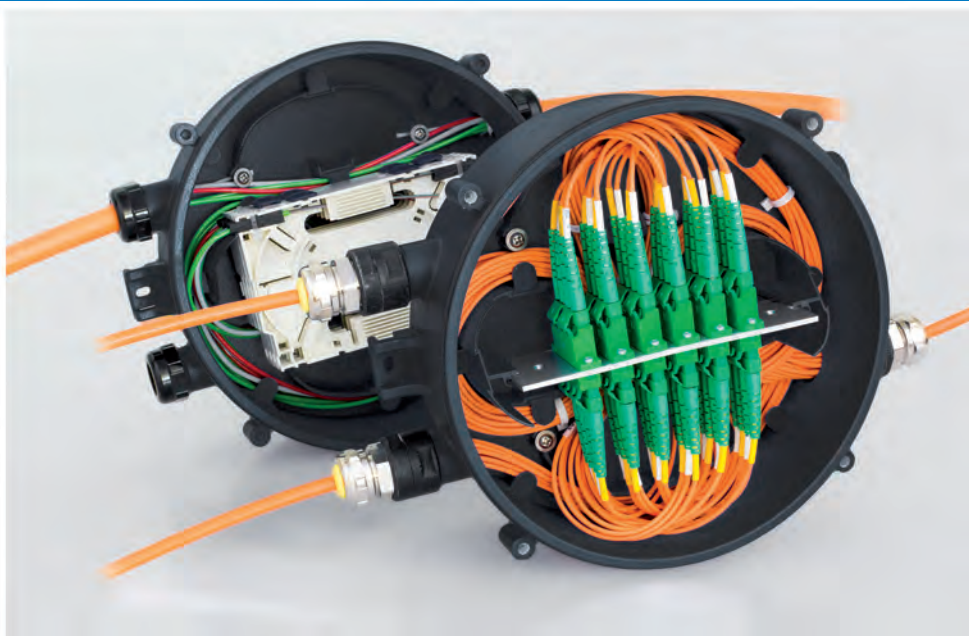


# FO Accessories

# 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.

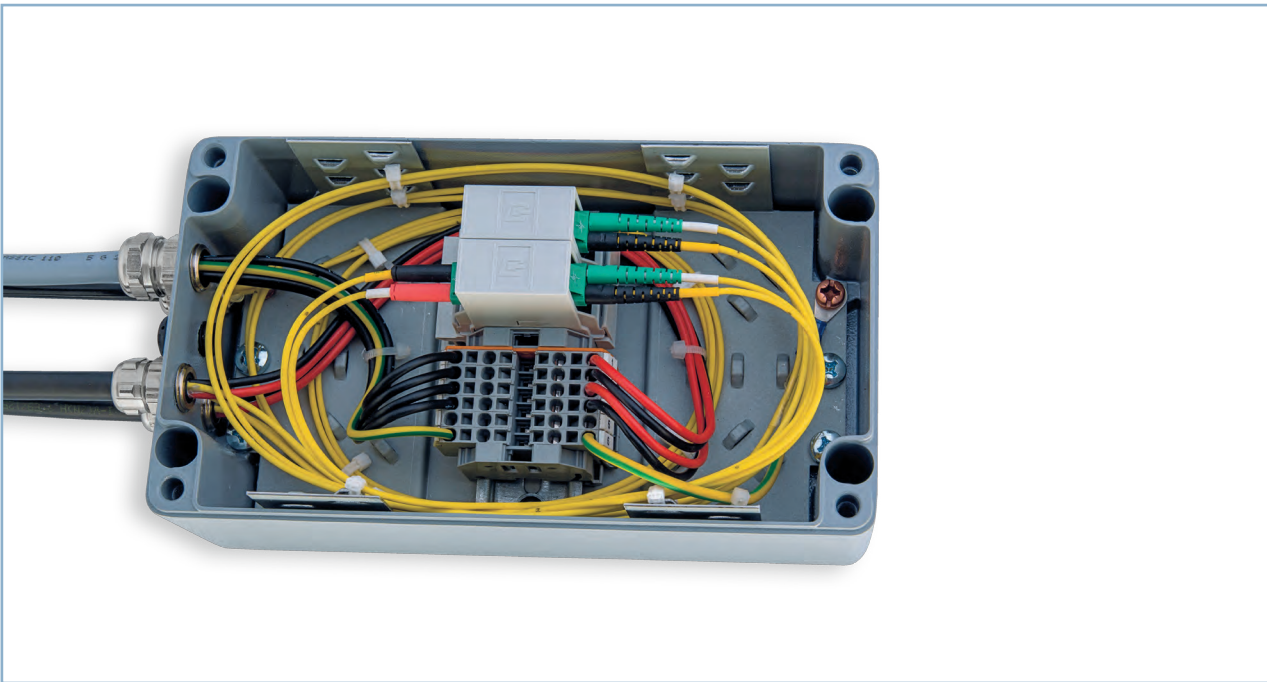


- **Box: protection class: IP68**
- **Black; UV-resistant**
- **Suitable for pole mounting (pole mounting kit should be ordered separately and for direct burial)**
- **Cover is sealed from 4 points with screws**



# Customized Solutions for FTTA Products

IP66 Hybrid Power & FO Distribution Box

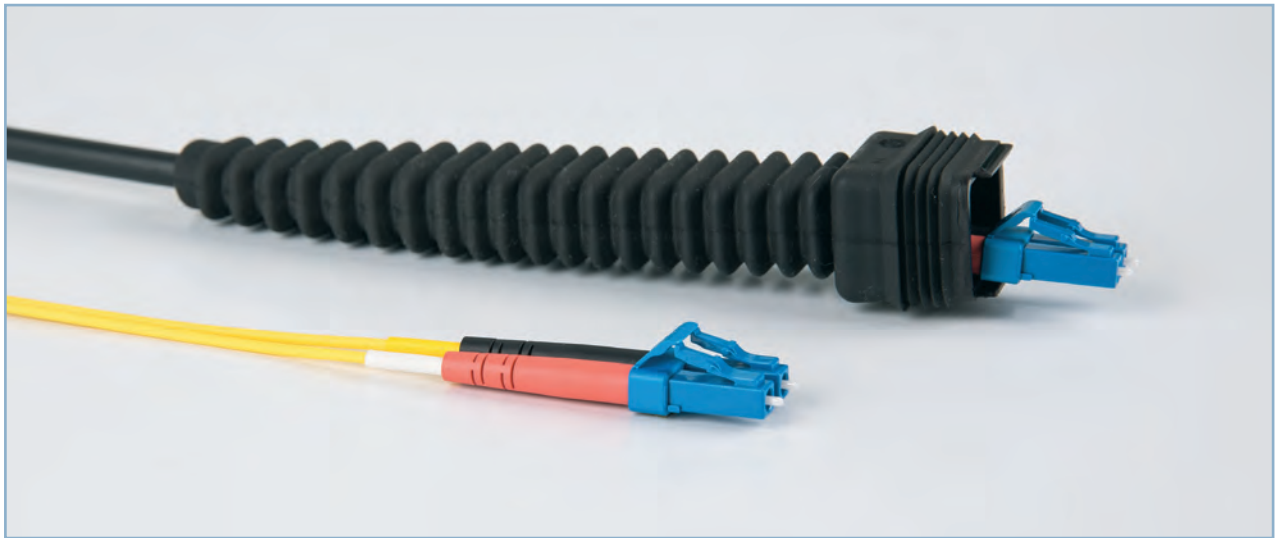


Hybrid Power & FO Cable

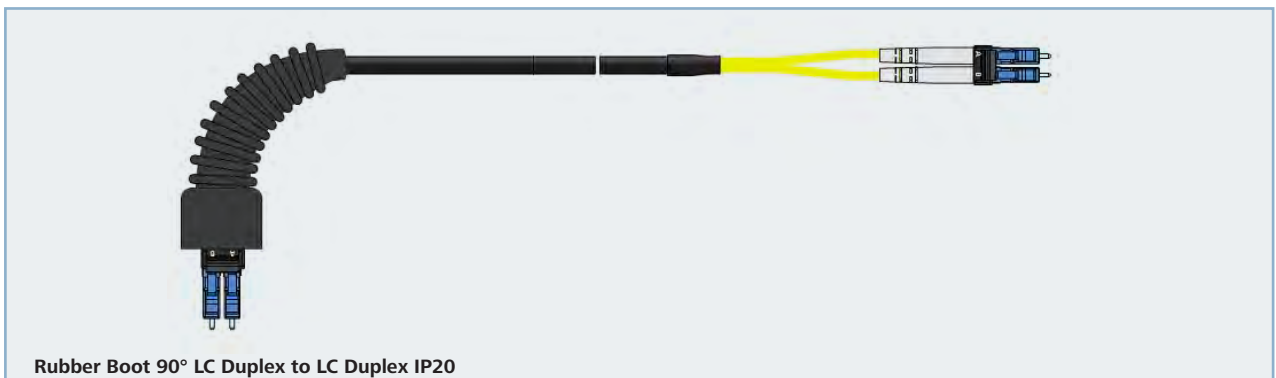


## Customized Solutions for FTTH Products

### 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

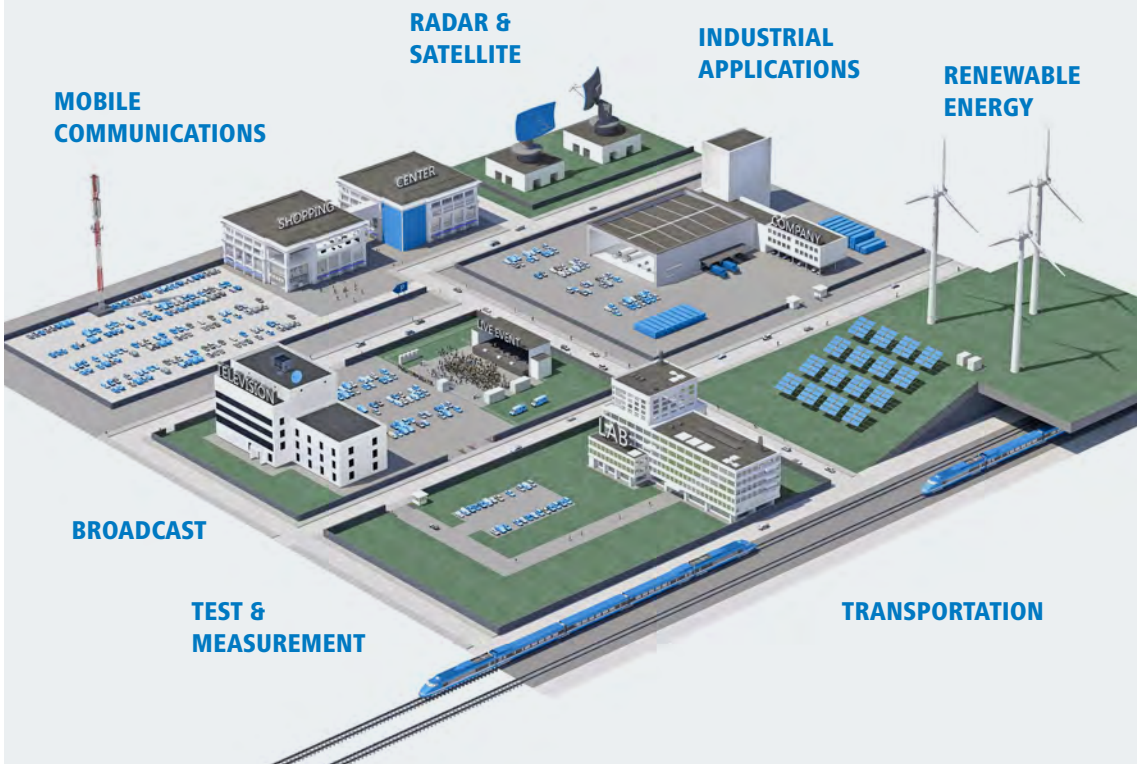
RF connectors and components

## ... Performance

A wide standard range of RF connectors as well as more  
than 40 years of experience with special solutions

## ... Reliability

Lower failure rates and greater power reserves



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All products are shown in our **online catalogue**  
[www.telegaertner.com](http://www.telegaertner.com)

## Best contacts for your success

Telegärtner offers professional solutions for all aspects of structured building cabling and industrial ethernet as well as a wide range of RF connectors. Order your personal catalogue copies.



### DATA VOICE OFFICE

Networking components for office applications.



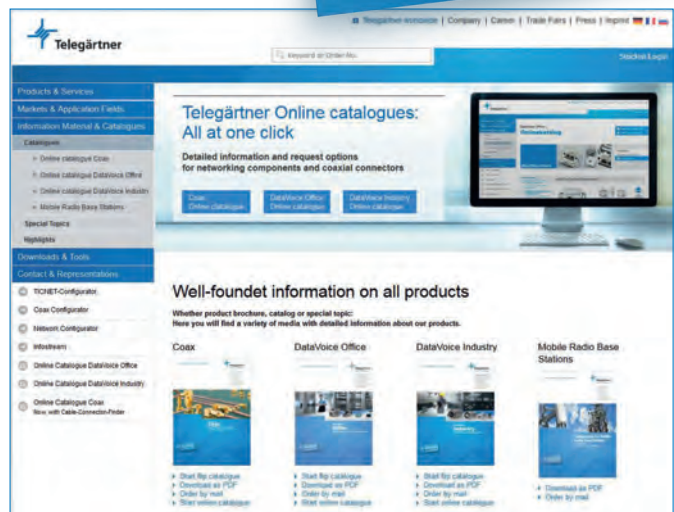
### COAX

RF components and much more.



### DATA VOICE INDUSTRY

Networking components for industrial applications.



## ONLINE CATALOGUES AND CONFIGURATORS

Get detailed information on our products in our online catalogue and create your cable assemblies and FO patch panels using our online configurators. Visit us at [www.telegaertner.com](http://www.telegaertner.com)



**Jumper Cables**

**Coax Components**

**Example of Mobile Radio Base Station Installations**

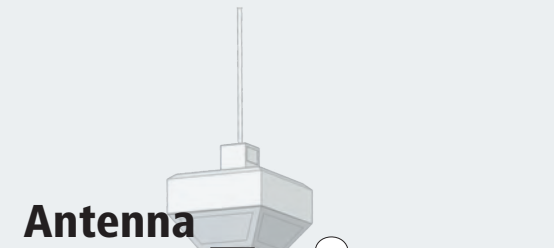
**DataVoice Components**



**FTTA Cables**



**RET Cables**



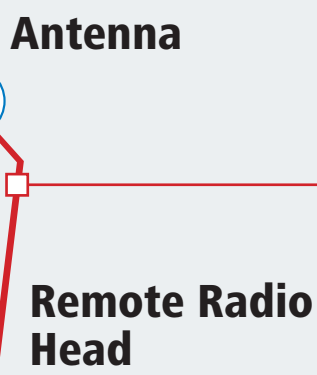
**TOC Connectors**



**Connectors**



**Adaptors**



**FO Distribution Box**



**Feeder**



**Connectors**



**Hybrid Cables**



**Surge Suppressors**



**Jumper Cables**



**FO Patch Cables**



**FO Patch Panel**



**RJ45 Surge Protection**



**Patch Cables**

**Base Station**

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