

TECHNICAL SPECIFICATIONS

VOLUME 2

- ULTIMATE
- FIBEROPTIC
- MINIMAX
- FREEDOM





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VOLUME 2



| | RUGGED COMPACT LIGHTWEIGHT | ROBUST OPTICAL PERFORMANCE EASY CLEANING |
|-----------------------------|---|--|
| Locking | Push-pull Quick-release | Push-pull |
| Shell material | Brass Aluminum | Brass |
| Plating | Nickel Anthracite / Black (ULTIMATE 80) | Chrome over Nickel |
| Plug ø [mm] | 12 to 29 | 13 or 24 |
| Number of contacts | 2 to 42 | 1 to 4 fibers / Hybrid 2+2 |
| AWG | AWG9-32 | AWG17 (hybrid) |
| Contact type | Low voltage | Fiber optic / Low voltage (hybrid) |
| Test voltage DC [kV] | Up to 3.7 | Up to 2.8 |
| Current rating [A] | Up to 26 | Up to 10 |
| Termination | Contact: Crimp / Solder / PCB | Contact: Optical termini / Solder (hybrid) |
| Sealing level | IP68/69 Hermetic | IP67/68 |
| Mating cycles | Up to 10,000 | 1,000 |



Technical specifications for our Fischer Core Series can be found in **VOLUME 1**.

Connector overview



HIGH-DENSITY MINIATURIZATION
HIGH-SPEED DATA TRANSFER
RELIABILITY

EASY MATING
EASY CLEANING
EASY INTEGRATION

| | | |
|-----------------------------|--|-------------------------------------|
| Locking | Push-pull Screw-locking / Quick-release | Quick-release |
| Shell material | Brass | Brass Stainless Steel 316L |
| Plating | Chrome over Nickel Anthracite Nickel | Anthracite Nickel |
| Plug ø [mm] | 9.9 to 14.9 | 20.4 or 25.4 |
| Number of contacts | 4 to 30 | 4 or 7 |
| AWG | AWG18-30 | AWG24-28 |
| Contact type | Low voltage | Low voltage |
| Test voltage DC [kV] | Up to 2.4 | Up to 1.2 |
| Current rating [A] | Up to 10 | Up to 5.0 |
| Termination | Contact: Solder / PCB | Contact: Solder / PCB / Wires / ZIF |
| Sealing level | IP68 | Plastic: IP67 Metal: IP68 |
| Mating cycles | 5,000 | Plastic: 5,000 Metal: 10,000 |

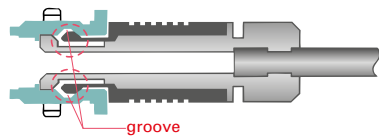
ORIGINAL PUSH-PULL LOCKING SYSTEM

Fischer Connectors' original push-pull automatic locking system is widely adopted by the industry for its ease of use, safety of mating and speed in connection and disconnection.



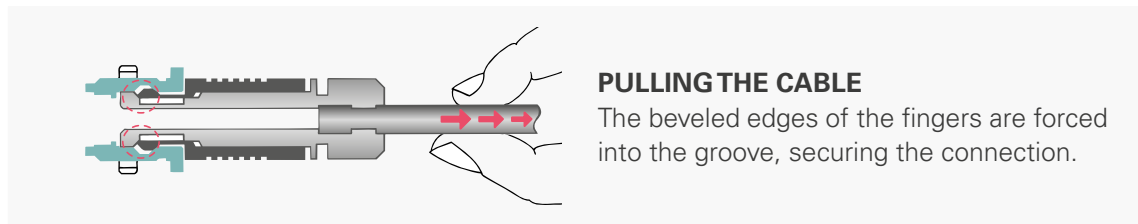
MATING

The plug has an outer sleeve, with flexible fingers, which slides forwards and backwards along the plug body.



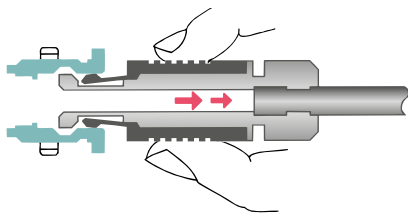
WHEN CONNECTED

The beveled edges are firmly captured by a locking groove located inside the receptacle.



PULLING THE CABLE

The beveled edges of the fingers are forced into the groove, securing the connection.



UNMATING

Pulling on the outer sleeve of the plug unlocks the latching mechanism.

OTHER LOCKING SYSTEMS

LANYARD

Combines push-pull automatic locking with an emergency release lanyard.

QUICK-RELEASE

Designed without a locking mechanism for emergency release.

FRICTION

Designed without a snapping mechanism.

TAMPERPROOF

Features an integral safety locking ring to prevent unauthorized or unintentional disengagement.

SCREW-LOCKING

Enables firm locking by circular movement with the plug's outer sleeve and receptacle feature threading.

Product specifications

SEALING CATEGORIES

The IP (Ingress Protection) classification system provides a reliable method of comparing relative levels of sealing between various connector products.

The protection level offered by a typical envelope is described in IEC 60529, published by the International Electrotechnical Commission (IEC). While the first number describes the level of protection from solid objects, the second one relates to protection from liquids.

Tests performed during the design and qualification of Fischer Connectors' environmentally sealed products are standardized to IP68 at a depth of 2 meters and for duration of 24 hours. Fischer Connectors' hermetically sealed products achieve IP69.

The digits indicate conformity with the conditions summarized in the tables aside.

IP RATING

SOLIDS

| | |
|---|---|
| 0 | Non-protected |
| 1 | Protected against solid objects greater than 50 mm |
| 2 | Protected against solid objects greater than 12 mm |
| 3 | Protected against solid objects greater than 2.5 mm |
| 4 | Protected against solid objects greater than 1.0 mm |
| 5 | Dust protected |
| 6 | Dust tight |

WATER

| | |
|---|---|
| 0 | Non-protected |
| 1 | Protected against dripping water |
| 2 | Protected against dripping water when filled, up to 15° |
| 3 | Protected against spraying water |
| 4 | Protected against splashing water |
| 5 | Protected against water jets |
| 6 | Protected against heavy seas |
| 7 | Protected against immersion effects |
| 8 | Protected against submersion |
| 9 | Protected against intense water jets |

Example:

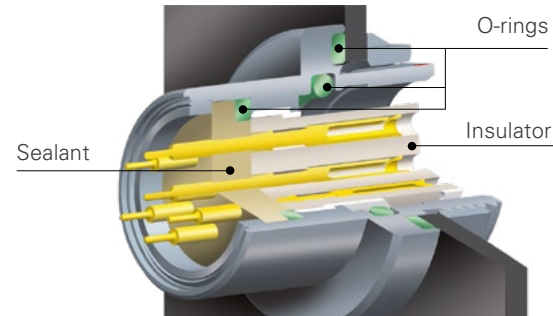
IP68

INGRESS PROTECTION

COMMONLY USED SEALING LEVELS

- IP50 indoor unexposed applications
- IP68 watertight sealing
- Hermetic sealing

Each requires different sealing levels and, therefore, different connector solutions.



IP50 INDOOR / UNEXPOSED APPLICATIONS

Typically for indoor or industrial applications, the required sealing level is IP50, since the device needs to be protected against dust but not exposed to water.

The IP50 rating can be improved with additional accessories like boots or protective sleeves.



IP68 WATERTIGHT SEALING

Typically for applications requiring outdoor use where they might be exposed to water submersion, rain, sand, mud or any other environmental stress.



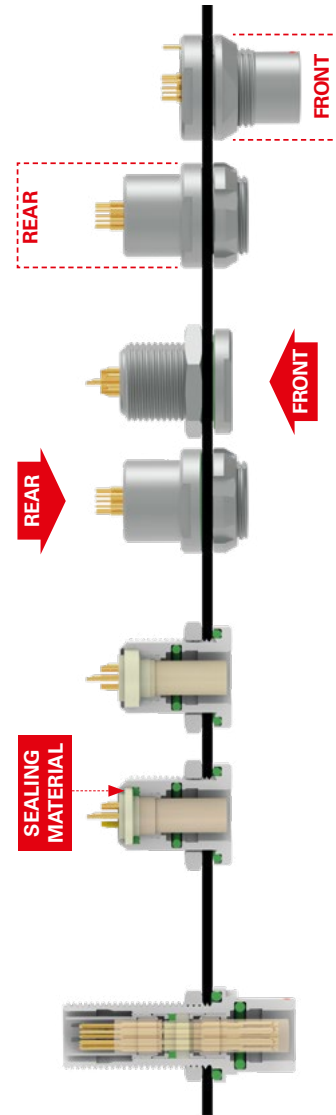
HERMETIC SEALING

Typically for applications requiring gas tightness like vacuum applications and pressurized vessels, immersed for long periods of time or exposed to strong jets.

100% of the hermetic pieces are tested with a leak testing instrument to ensure a leak smaller than 10^{-8} mbar l/s.



HOW TO CHOOSE YOUR RECEPTACLE BODY STYLES



Front and rear projecting

- Depending on whether you need the space saving inside or outside the device
- Also available in front or rear mounting

Front and rear mounting

- Depending on how you need to process your assembly
- Rear mounting is commonly used for PCB mount

IP68 watertight or hermetic designs

- Hermetic has a specific sealing material for best sealing under high pressures

Feedthrough

- Hermetic panel bulkhead feedthrough

MATERIALS

| MATERIAL NAME | IDEAL FOR | TEMPERATURE | MAIN ATTRIBUTES |
|--------------------------------------|---------------------------------|----------------|---|
| SHELL MATERIAL | | | |
| Chromium-plated brass | Ruggedness | -100 to +200°C | Salt mist and mechanical resistance, cost efficiency, electrical conductivity |
| Aluminum | Lightweight | -100 to +200°C | Lightweight |
| Stainless steel | Cleaning / Radiation | -100 to +350°C | Corrosion resistance, surface cleanability, nuclear radiation and mechanical resistance |
| PEI | Sterilization | -65 to +200°C | Sterilization in autoclave, EtO, Cidex, gamma radiation, Steris®, Sterrad® |
| PBT | Insulation | -65 to +135°C | Electrical insulation, low temperature manipulation |
| ABS | Cost efficiency | -20 to +65°C | Disposable solutions, medical applications |
| CONTACT BLOCK MATERIAL | | | |
| PEEK | High temperature | -65 to +250°C | High temperature, high chemical and high radiation resistance |
| LCP | High temperature | -65 to +200°C | High temperature and high chemical resistance |
| PBT | Cost efficiency | -65 to +135°C | High chemical resistance, cost efficiency |
| PTFE | Electrical insulation | -65 to +160°C | High dielectric strength, high chemical resistance |
| ABS | Cost efficiency | -20 to +65°C | Disposable solutions, good stability |
| O-RING & SEALING MATERIAL | | | |
| FPM (Viton®) | Hermeticity | -20 to +200°C | Acids, weather, ozone, fuels, mineral and silicone oils, high vacuum, gamma rays |
| EPDM | Low temperature | -50 to +160°C | Alcohol, weather, hot water, vapour, detergents, gamma rays |
| NBR | Oil resistance | -30 to +110°C | Acids, mineral oils, petrol, weather, detergents |
| FVMQ | High temperature oil resistance | -55 to +200°C | Mineral oils, alcohol, weather, hot water, detergents |
| TPE | Soft accessories | -55 to +130°C | Very resistant, except to aromatic and chlorinated hydrocarbon |
| Silicone based resin | IP68 sealing | -55 to +200°C | Mineral oils, acids, alkalines, inorganic saline solutions |
| Epoxy based resin | Hermeticity | -65 to +150°C | High chemical and radiation resistance |

Product specifications

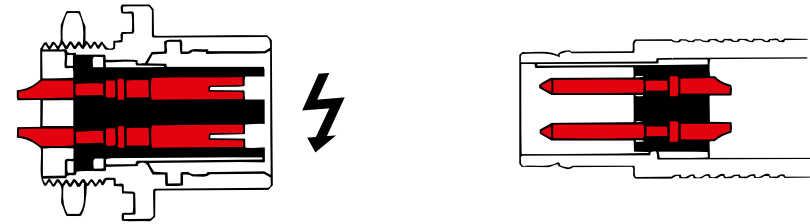
A/Z POLARITY

To protect users from contact with dangerous voltage, most of Fischer Connectors' products are available in two versions:

STANDARD A POLARITY

The contacts of the receptacle are protected against accidental touch.

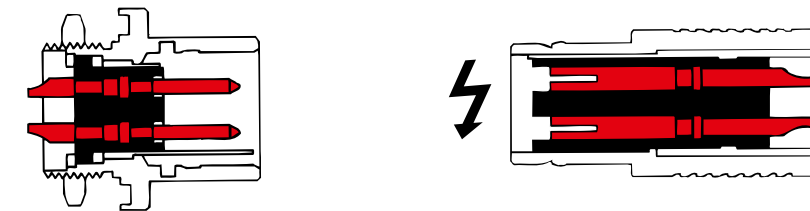
Recommended when voltage is present on the receptacle.



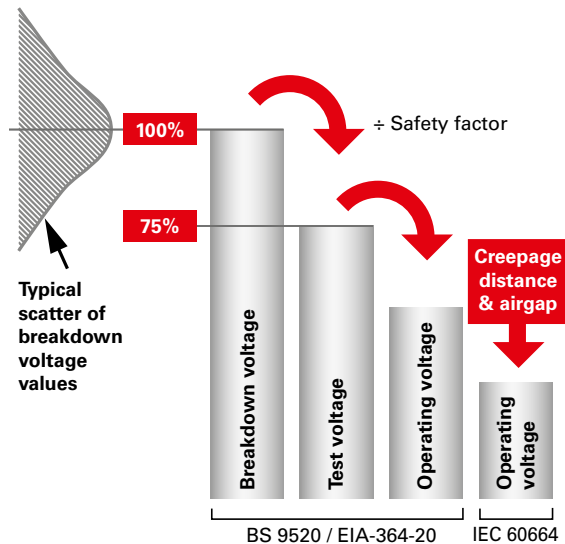
INVERTED Z POLARITY

The contacts of the plug are protected against accidental touch.

Recommended when voltage is present on the plug.



TEST VOLTAGE & OPERATING VOLTAGE



BREAKDOWN VOLTAGE

Maximum voltage difference that can be applied before the occurrence of a disruptive discharge between mutually insulated portions of a connector or between insulated portions and the ground.

TEST VOLTAGE (or withstanding voltage)

Voltage level at which the connector is tested during the qualification test. This value represents the upper physical limit. It is usually set at 75% of breakdown value.

OPERATING VOLTAGE (or rated voltage)

Voltage under which the connector will actually work in the equipment over the normal expected lifetime and in typical environmental conditions.

General recommendation for connectors in common applications

For connectors in common applications, IEC60664 is in particular recommended. This specification uses creepage distance instead of test voltage as a calculation basis for the operating voltage, taking into account the above-mentioned long-term effects. It is similar to German VDE 0110; typical applications are classified in insulation groups depending on their exposure to pollution.

Fischer Connectors recommends the use of IEC60664 in general multipole connector specifications, unless other more specific standards or regulations are applicable to the design. For example, IEC 60601 provides adequate special guidelines for medical devices.

All values given here are valid for mated connectors, provided that termination of connectors has been completed with adequate cable and following correct termination procedures. Other standards recommend a calculation using the test voltage as a basis with the application of a safety factor.

For example, BS 9520 recommends setting the operating voltage at:

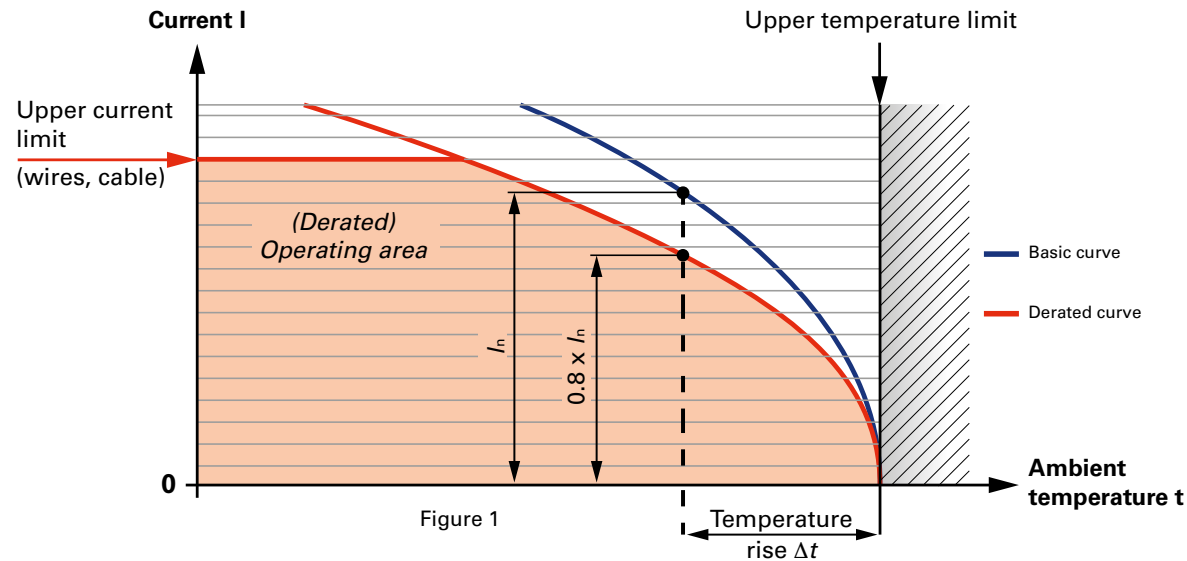
- 0.33 x test voltage for 500V < test voltage < 3kV
- 0.66 x test voltage for test voltage > 3kV

Similar recommendations are provided in EIA-364-20 and former MIL-STD-1344 method 3001.

Product specifications

CURRENT RATING (Maximum permissible current)

DERATING CURVE DERIVED FROM THE BASIC CURVE



The current values listed under “Electrical & contact configurations” were measured in our test laboratory according to IEC 60512-5-2: Current-carrying capacity test, Test 5b: Current-temperature derating. They are the currents that create a temperature rise of 40 °C (unless otherwise specified) within the connectors due to the self-generated heat, and they belong to the basic curve shown in Figure 1.

The maximum permissible current (I) as defined by the above mentioned IEC standard is the basic curve derated by a factor of 0.8 to account for manufacturing tolerances and uncertainty in measurements.

When selecting a connector, attention must be paid to the fact that the temperature rise caused by current must be added to the ambient temperature and that the resulting value shall not exceed the upper temperature limit of the materials, listed under the “Operating temperatures” sections and plotted as a vertical line on the graphs shown in Figure 1.

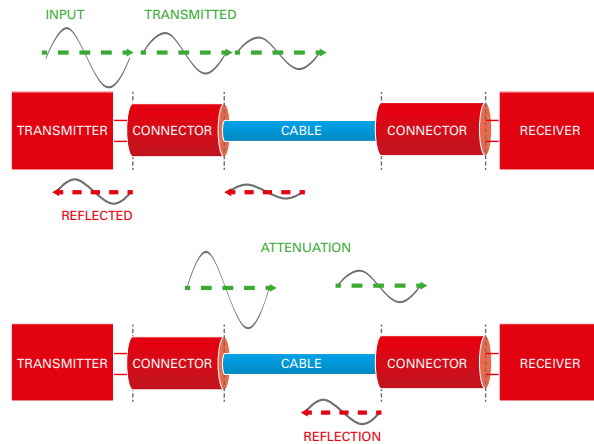
The current-carrying capacity may be further limited by external factors, for example the size of the wire and the cable characteristics. This upper current limit is plotted as a horizontal line on the graphs shown in Figure 1.

The operating area is defined by the surface below the derated curve and limited on top by the upper current limit.

The current values listed under “Electrical & contact configurations” are valid for each contact. For coaxial and triaxial connectors, the current is valid for the center and the outer contact.

HIGH FREQUENCY SIGNAL & DATA TRANSMISSION

DATA TRANSMISSION PRINCIPLES



Challenges in data transmission

When a signal is emitted at the transmitter, it must undergo minimal distortion across the system (transmitter, connectors, cable, receiver) to be properly recovered at the receiver.

Types of signal distortion across the transmission link:

- **Return loss:** When the impedances of two interfaced media do not match (i.e., transmitter/connector, connector/cable, ...), some parts of the signal will reflect back towards the source and be lost. The amount of this loss comes from impedance mismatch and is characterized by the return loss.
- **Insertion loss:** Insertion loss describes the attenuation of the signal along the transmission path. This mainly arises from losses both in the dielectric and the conductors.
- **Crosstalk:** Signals running in close-lying channels are likely to couple to one another. This is described as crosstalk terms.
- **Noise:** Unwanted interferences which could either be external or internal to the system itself might add up to the original signal and cause distortion. For instance, internal interferences can be linked to the noise generated from the transmitter or receiver.

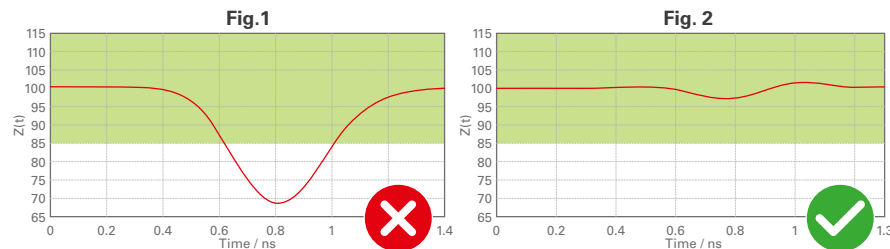
CONNECTOR DESIGN RULES TO OPTIMIZE DATA TRANSMISSION

At a system level, the return loss, insertion loss, crosstalk and noise are critical parameters to ensure high quality data transmission. However, impedance and crosstalk play a more prominent role at the connector level.

Connector with optimized impedance

To optimize impedance matching, the following factors must be considered: Contact diameter, interaxial contact distance, contact form factor, and the dielectric constant of all the components (i.e., type of material).

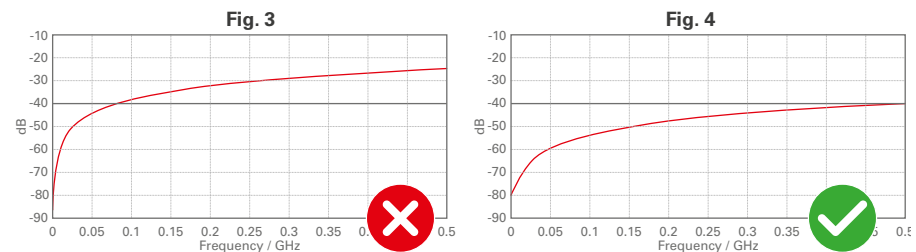
Figures 1 and 2 illustrate the notion of impedance matching in which the green area depicts the tolerated range: Fig. 1 shows a connector with poor impedance-matching, while Fig. 2, shows a connector with optimized impedance matching.



Preventing Crosstalk

To minimize crosstalk, the geometrical distribution of the contacts as well as the contact layout (i.e., signal attribution to specific contacts) are critical.

Figures 3 and 4 illustrate the latter by displaying the crosstalk for two different contact layouts: Fig. 3 shows a connector where the contact layout was not optimized, while Fig. 4 shows a reduced crosstalk noise level which was achieved as a result of an optimized contact layout.



Product specifications

HIGH FREQUENCY SIGNAL & DATA TRANSMISSION




DATA PROTOCOLS

Data protocols provide us the normative values of data transmission parameters (ex. Insertion Loss, Return Loss, Crosstalk, Noise). This provides a means of ensuring that the various components of a system (transmitter, connectors, cable, receiver) work together and allow for an optimized transmission of the data streams.

Two complementary methods can be used to assess the system's capability of transmitting a certain high-speed data transmission protocol in terms of signal quality and transmission speeds: Numerical simulations (connector only) and Vector Network Analyzer (VNA) measurements (i.e., cable and connector).

Typical high-speed data transmission protocols are USB, Ethernet and standard protocol for the simultaneous transmission of audio and video.



| SYMBOL |  |  | |  |
|--|---|---|--|---|
| PROTOCOL | USB | SPE (SINGLE PAIR ETHERNET) | ETHERNET | STANDARD AUDIO/VIDEO PROTOCOL |
| DESCRIPTION | 4 wires for USB 2.0 up to 480 Mbit/s 9 wires for USB 3.2 Gen 1 up to 5 Gbit/s 9 wires for USB 3.2 Gen 2 up to 10 Gbit/s | 2 wires for SPE up to 1 Gbit/s (1000BASE-T1) | 4 wires for Ethernet up to 100 Mbit/s (100BASE-TX) 8 wires for Ethernet up to 10 Gbit/s (10GBASE-T) | 19 wires for standard audio/video protocol up to 10.2 Gbit/s |
| FISCHER SERIES PERFORMANCE UP TO: | | | | |
| CORE SERIES | USB 2.0 | 1000BASE-T1 | 5GBASE-T | 18 Gbit/s 4K UHD Up to 60 fps |
| ULTIMATE SERIES | USB 2.0 | | 1000BASE-T | 10.2 Gbit/s 4K UHD Up to 30 fps |
| MINIMAX SERIES | USB 3.2 Gen 2 | 1000BASE-T1 | 10GBASE-T | 18 Gbit/s 4K UHD Up to 60 fps |
| FREEDOM SERIES | USB 2.0 | | 100BASE-TX | |

Fischer Connectors' skilled technical and support teams can help you build the perfect system by analyzing your specific application and needs. Please contact your local sales representative for more details.

CONTACTS & ACCESSORIES



SOLDER CONTACTS

Most versatile
Pre-installed contacts
Qualified assemblers required

- Can be produced with any type of contact block material and accept a wide range of wire sizes.
- Contacts are pre-installed in the insulator block, and the wires can be terminated with any appropriately sized soldering iron.
- May require operators who are qualified in specialized soldering techniques.



PCB CONTACTS

PCB or Flex circuit mount
Reduced pin diameter
Wave soldering

- Designed to be mounted directly onto a PCB or flex circuit, can be used in wave soldering operations for faster production assembly.
- Preferred for high rates of data transmission due to the low distance to the board that their integration allows. This helps reducing signal perturbations.
- PCB pins are generally used on rear mounted panel connectors.



CRIMP CONTACTS

Selectively annealed area
Special tools required
Limited range of wire sizes

- Each contact has a selectively annealed area which is deformed during assembly by specialized tooling to assure proper termination of the wire to the contact.
- Commonly used for field termination or repair, as no soldering process is required.
- Not available for sealed or hermetic connectors.

Product specifications

CONTACTS & ACCESSORIES



STAMPED CONTACTS

High volume
Automated cable assembly
Disposable applications

- Optimized for very high volume and automated cable assembly.
- Come on specific reels to be accommodated in automated cable assembly machines.
- Mainly used in disposable applications due to their limited number of mating cycles.



FIBER OPTIC BUTT-JOINT CONTACTS

High optical performance
IP67 unmated
UPC & APC polishing

- The FiberOptic termini rely on butt-joint technology commonly used in the telecom industry to ensure ultra-low insertion and return losses.
- A unique sealing feature on the termini allows easy cleaning and device protection even unmated (IP67) without compromising on the alignment once mated.
- Guaranteed, tested and certified optical performance platform using high precision polishing process.
- The alignment sleeve parts are located in a removable mate adapter for easy maintenance, replacement and cleaning.

BEND RELIEFS



OVERMOLDED STRAIGHT & RIGHT ANGLE BEND RELIEF

- Can accommodate a wide range of cable diameters
- Wide choice of colors and materials (e.g. polyurethane, silicon, etc.)
- Best protection to improve cable flex life



CABLE BEND RELIEF

Tool-free terminations for field installations:

- High quality and improved protection
- Wide range of colors for easy cable identification
- Can accommodate a wide range of cable diameters

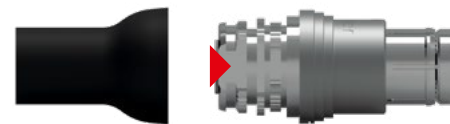
PROTECTIVE SLEEVE



Improves mechanical protection on the whole interface:

- Prevents contamination in highly dusty environments
- Protects both plug and receptacle
- Enhances sealing

HEAT SHRINKING TUBE



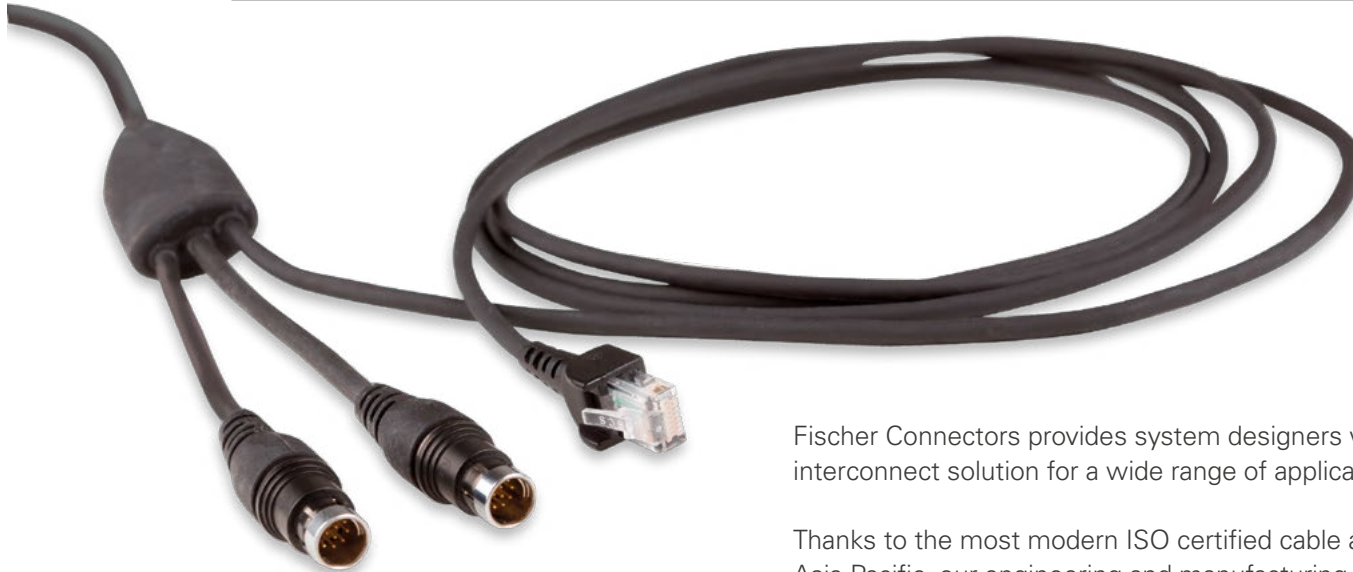
Allows submersion with adhesive versions:

- Ideal for quick prototyping
- Can accommodate a wide range of cable diameters and multiple cable output
- Protects exposed wires

CABLE ASSEMBLIES



KEY FEATURES



Fischer Connectors provides system designers with everything they need to put together the right interconnect solution for a wide range of applications.

Thanks to the most modern ISO certified cable assembly facilities in Europe, North America and Asia Pacific, our engineering and manufacturing experts ensure short lead times to meet your project deadline.

VERTICAL INTEGRATION

- Connectors
- Components
- Cables

EXPERTISE

- Design
- Manufacturing
- Testing

RELIABILITY

- Sealing
- Sterilization
- Data transmission

Cable assemblies

INTEGRATED CONNECTIVITY SOLUTIONS FOR EVERY PROJECT

Our engineers work closely with your team to find the right solution for the most demanding applications by integrating precision connectors, components, parts, and engineered cables.

Fischer Connectors' skilled technical and support teams help you build the perfect cable assembly for your unique application, providing advice through design, prototype, assembly, testing, manufacturing, installation, and beyond.

LARGE RANGE OF APPLICATIONS:

- High-performance rugged and submersible cable assemblies for the defense and marine markets
- Silicone overmolded solution for high heat protection and maximum flexibility in the medical industry
- High-speed transmission of electrical, power, and optical signals
- Custom and application-specific cable harnesses

MEDICAL



Integration in medical devices

SILICONE



High temperature applications

DEFENSE



Communications

- Overmolded cable assemblies, including thermoplastic & silicone
- Wiring harness assemblies
- Rugged & submersible cable solutions
- Third-party connector integration
- Right-angle overmolds
- Custom overmolds with multi-cable exits
- Potting or heat shrink
- Automated strip and crimp
- Colored overmolding
- Low cost and disposable options

AT YOUR SERVICE, WHEREVER YOU ARE

GLOBAL FOOTPRINT

With our worldwide connectors and cable assembly network, located in Europe, North America and Asia Pacific, we provide our customers with quick turnarounds around the globe.

STREAMLINING YOUR SUPPLY CHAIN

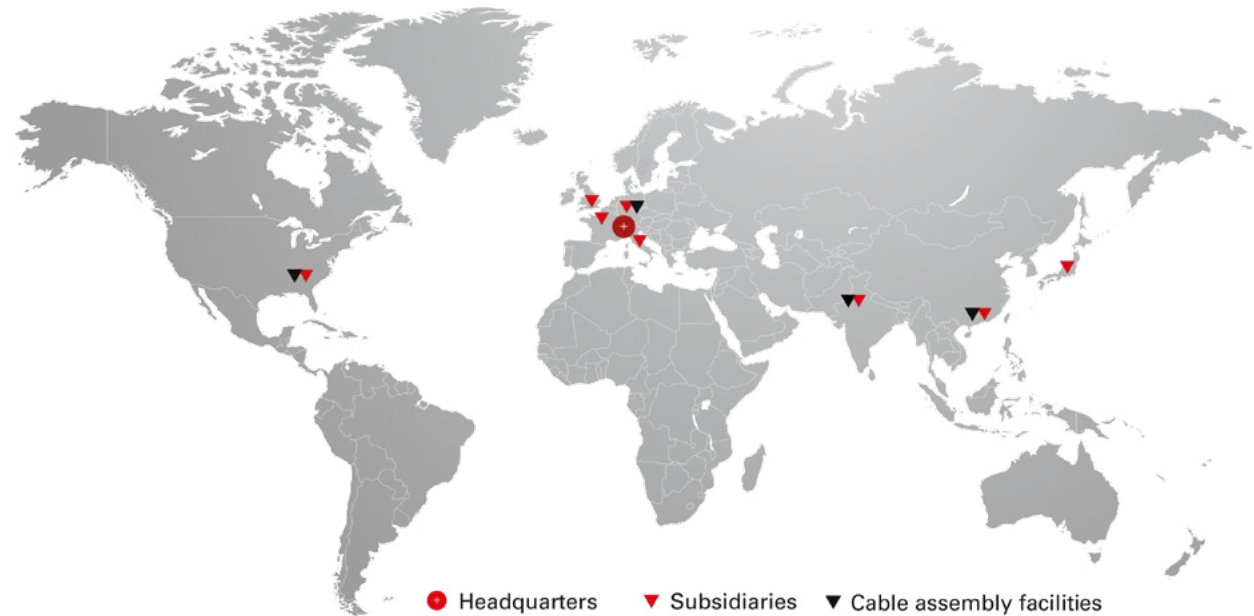
By purchasing cable assemblies, connectors and manufacturing from one place, you deal with one vendor, pay one bill, and reduce the time and the risk it takes to coordinate your project.

ALL THE RIGHT ANGLES

Overmolding, including right-angle and custom connections, silicone and low friction cables, are all part of the business. We have overmolding machines for both polyurethane and silicone.

COMPETITIVE PRICING

Companies that use Fischer Connectors for both their connectors and assembly solutions can see significant savings over the cost of handling each vendor separately.



TOP QUALITY

We build cable assemblies to the same rigorous quality standards as we build our connectors. Whether you're looking for a simple or complex assembly, Fischer Connectors is able to deliver exactly what you need, when you need it.

Cable assemblies

CUSTOM CABLE ASSEMBLIES

Fischer Connectors has helped hundreds of customers find their unique cable assembly solution that fulfills technical, quality and cost requirements.

From prototyping, design validation, testing and delivery, we support your project from the beginning to the end.

Our team of experts is at your service to recommend the best solution for your connectivity challenges and turn them into a success story.



A WIDE RANGE OF CUSTOM OVERMOLDING



Thermoplastic overmolds for the Fischer Core Series, Fischer MiniMax™ Series and Fischer FiberOptic Series



Right-angle thermoplastic overmolds for the Fischer Core Series and Fischer UltiMate™ Series



Silicone overmolds with low friction coatings for medical and high temperature applications



Thermoplastic overmolds for the Fischer UltiMate™ Series



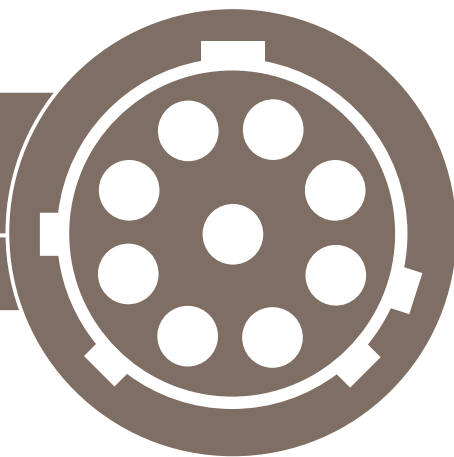
Thermoplastic overmolds with custom cable breakouts



Custom thermoplastic overmolds for multi-cable exits

H

CHAPTER



FISCHER ULTIMATE™ SERIES

RUGGED | COMPACT | LIGHTWEIGHT

KEY FEATURES

- IP68 2m/24h / IP69 / Hermetic
- 360° EMC shielding
- High corrosion resistance
- Up to 10,000 mating cycles

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ULTIMATE



PLUGS



CABLE MOUNTED

- Body styles (UP01-L; UP01-Q)..... H-4
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PANEL FRONT MOUNTED

- Body styles (UP50)..... H-6
- Technical dimensions H-7

RECEPTACLES



CABLE MOUNTED

- Body styles (UR50)..... H-8
- Technical dimensions H-9



PANEL REAR MOUNTED

- Body styles (UR01; UR02)..... H-10
- Technical dimensions H-11



PANEL FRONT MOUNTED

- Body styles (UR03)..... H-10
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FOR ALL ULTIMATE

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This catalog covers our standard connector solutions. For specific requests, including hybrid or custom connectors, please contact your local sales representative.

AVAILABLE SIZES

**CONNECTOR SIZE
VERSUS
CABLE DIAMETER**



| Size | Min cable ø | Max cable ø | Number of contacts |
|------|-------------|-------------|--------------------|
| 07 | 1.9 | 4.8 | 2-10 |
| 08 | 2.5 | 5.2 | 2-9 |
| 11 | 3.9 | 7.8 | 8-19 |
| 13 | 6.9 | 9.8 | 5-27 |
| 15 | 6.9 | 11.3 | 2-27 |
| 18 | 6.9 | 14.8 | 42 |

Min cable ø compatible with bend relief (accessory).

Images of available sizes are on 1:1 scale when printed full size on A4 paper.

PLUGS

CABLE MOUNTED



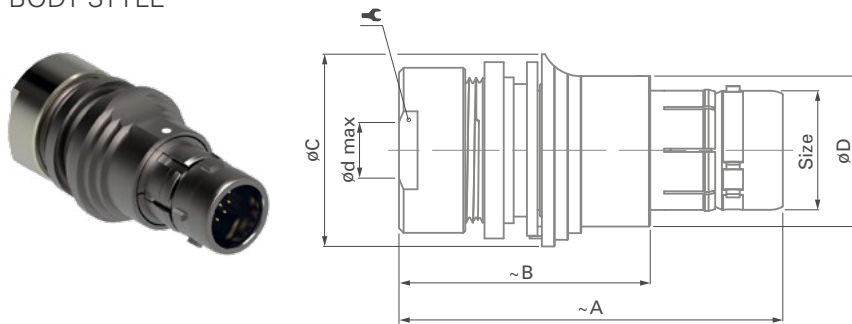
| Body style | | UP01 | References to detailed information |
|------------------|--------------------|------|--|
| Protection | Sealed up to IP68 | ● | Sealing categories, page A-6 |
| | Hermetic | | |
| Locking system | Friction | | Locking systems, page A-5 |
| | Push-pull | ● | |
| | Quick-release | ● | |
| | Lanyard | | |
| | Tamperproof | | |
| Termination | Crimp contact | ● | Electrical & contact configurations, pages H-13 to H-18 |
| | Solder contact | ● | |
| Housing material | Brass | ● | Part numbering, page H-26 |
| | Aluminum | ● | |
| Housing material | Anthracite | ● | Part numbering, page H-26 |
| | Black | | |
| Design | Shortened body | ● | Body styles, chapter H |
| | Straight | ● | |
| | Right-angle | ● | |
| Cabling | Cable clamp sets | | |
| | Overmoldable | ● | |
| | Heat shrinkable | ● | |
| Accessories | Cable bend reliefs | ● | Accessories, page H-27 |
| | Protective sleeves | | |
| | Sealing caps | ● | |
| Size | 07 | ● | Technical dimensions, page H-5 For more information visit our website www.fischerconnectors.com/technical |
| | 08 | ● | |
| | 11 | ● | |
| | 13 | ● | |
| | 15 | ● | |
| | 18 | ● | |

PLUGS

CABLE MOUNTED

UP01

BODY STYLE



| Size | A | B | øC | øD | ød max | 🔩 | Torque |
|------|------|------|------|------|--------|----|--------|
| 07 | 28.0 | 18.0 | 12.0 | 9.0 | 4.8 | 8 | 1.5 Nm |
| 08 | 39.0 | 25.0 | 15.0 | 10.5 | 5.2 | 10 | 2.5 Nm |
| 11 | 39.5 | 26.0 | 18.5 | 13.7 | 7.8 | 14 | 3.0 Nm |
| 13 | 50.0 | 34.0 | 21.7 | 16.0 | 9.8 | 17 | 3.5 Nm |
| 15 | 50.2 | 33.6 | 23.7 | 18.0 | 11.3 | 19 | 4.0 Nm |
| 18 | 58.0 | 38.0 | 29.0 | 22.7 | 14.8 | 22 | 6.0 Nm |

All dimensions and images shown are in millimeters and are for reference only.

PLUGS

PANEL FRONT MOUNTED



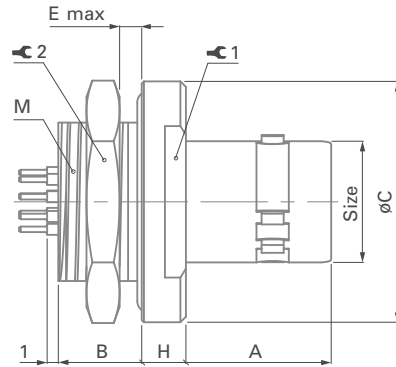
| Body style | | UP50 | References to detailed information |
|------------------|--------------------|------|---|
| Protection | Sealed up to IP68 | ● | Sealing categories, page A-6 |
| | Hermetic | | |
| Locking system | Friction | ● | Locking systems, page A-5 |
| | Push-pull | | |
| | Quick-release | | |
| | Lanyard | | |
| | Tamperproof | | |
| Termination | Crimp contact | | Electrical & contact configurations, pages H-13 and H-15 |
| | Solder contact | ● | |
| Housing material | Brass | ● | Part numbering, page H-26 |
| | Aluminum | ● | |
| Housing color | Anthracite | ● | Part numbering, page H-26 |
| | Black | | |
| Design | Shortened body | | Body styles, chapter H |
| | Straight | ● | |
| | Right-angle | | |
| Assembly | Front-mounting | ● | |
| | Rear-mounting | | |
| Accessories | Cable bend reliefs | | Accessories, page H-27 |
| | Protective sleeves | | |
| | Sealing caps | ● | |
| Size | 07 | ● | Technical dimensions, page H-7 For more information visit our website www.fischerconnectors.com/technical |
| | 11 | ● | |

PLUGS

PANEL FRONT MOUNTED

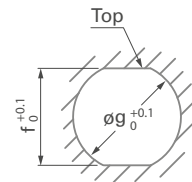
UP50

BODY STYLE



| Size | A | B | øC | E max | H | M | 1 | 2 | Torque |
|------|------|-----|------|-------|-----|--------|----|----|--------|
| 07 | 10.0 | 5.2 | 13.0 | 2.5 | 3.0 | M9x0.5 | 9 | 11 | 1.3 Nm |
| 11 | 13.2 | 7.6 | 21.8 | 4.5 | 4.0 | M16x1 | 17 | 19 | 4.5 Nm |

| Size | f | øg |
|------|------|------|
| 07 | 8.0 | 9.1 |
| 11 | 14.5 | 16.1 |



PANEL CUT-OUT

All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

CABLE MOUNTED



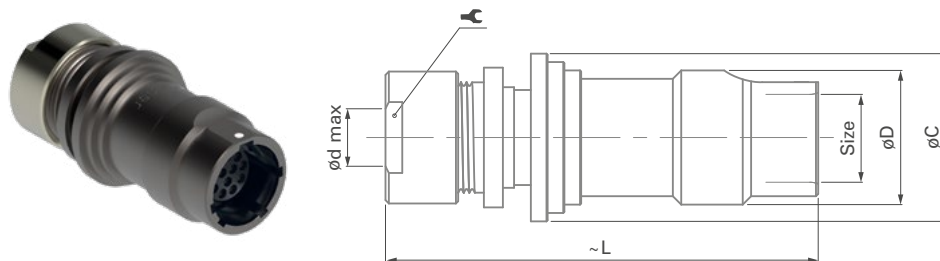
| Body style | | UR50 | References to detailed information |
|------------------|--------------------|------|--|
| Protection | Sealed up to IP68 | ● | Sealing categories, page A-6 |
| | Hermetic | | |
| Termination | Crimp contact | ● | Electrical & contact configurations, pages H-13 to H-16 |
| | Solder contact | ● | |
| Housing material | Brass | ● | Part numbering, page H-26 |
| | Aluminum | ● | |
| Housing color | Anthracite | ● | Part numbering, page H-26 |
| | Black | | |
| Design | Shortened body | | Body styles, chapter H |
| | Straight | ● | |
| | Right-angle | ● | |
| Cabling | Cable clamp sets | | |
| | Overmoldable | ● | |
| | Heat shrinkable | ● | |
| Accessories | Cable bend reliefs | ● | Accessories, page H-27 |
| | Protective sleeves | | |
| | Sealing caps | ● | |
| Size | 07 | ● | Technical dimensions, page H-9 For more information visit our website www.fischerconnectors.com/technical |
| | 08 | ● | |
| | 11 | ● | |
| | 13 | ● | |

RECEPTACLES

CABLE MOUNTED

UR50

BODY STYLE



| Size | øC | øD | ød max | L | ⬡ | Torque |
|------|------|------|--------|----|----|--------|
| 07 | 12.0 | 10.0 | 4.8 | 27 | 8 | 1.5 Nm |
| 08 | 15.0 | 12.0 | 5.2 | 39 | 10 | 2.5 Nm |
| 11 | 18.5 | 15.5 | 7.8 | 39 | 14 | 3.0 Nm |
| 13 | 21.7 | 17.9 | 9.8 | 50 | 17 | 3.5 Nm |

RECEPTACLES

PANEL MOUNTED



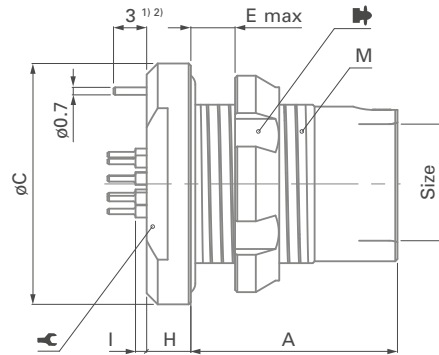
| Body style | | UR01 | UR02 | UR03 | References to detailed information |
|------------------|----------------------|------|------|------|---|
| Protection | Sealed up to IP68 | ● | ● | ● | Sealing categories, page A-6 |
| | Hermetic | ● | ● | ● | |
| Termination | Crimp contact | | | | Electrical & contact configurations, page H-13 to H-18 |
| | Solder contact | ● | ● | ● | |
| | PCB contact | ● | ● | ● | |
| Housing material | Brass | ● | ● | ● | Part numbering, page H-26 |
| | Aluminum | ● | ● | ● | |
| Housing color | Anthracite | ● | ● | ● | Part numbering, page H-26 |
| | Black | | | | |
| Design | Right-angle | | | | Body styles, chapter H |
| | Flush | | ● | | |
| | Front-projecting | ● | | ● | |
| | Bulkhead feedthrough | | | | |
| Assembly | Front-mounting | | | ● | |
| | Rear-mounting | ● | ● | | |
| Accessories | Sealing caps | ● | ● | ● | Accessories, page H-27 |
| | Spacers | | | | |
| | Color-coded washers | | | | |
| | Grounding washers | | | | |
| | Locking washers | | | | |
| Size | 07 | ● | ● | ● | Technical dimensions, page H-11 and H-12 For more information visit our website www.fischerconnectors.com/technical |
| | 08 | ● | ● | ● | |
| | 11 | ● | ● | ● | |
| | 13 | ● | ● | | |
| | 15 | ● | ● | | |
| | 18 | ● | ● | | |

RECEPTACLES

PANEL REAR MOUNTED*

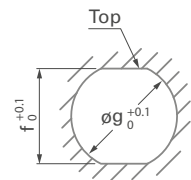
UR01

BODY STYLE



| Size | A | øC | E max | H | I | M | ↶ | ↷ | Torque |
|------|------|------|-------|-----|-----|---------|----|----------|---------|
| 07 | 14.2 | 14.0 | 4.5 | 3.0 | 0.7 | M10x0.5 | 11 | TC00.007 | 1.5 Nm |
| 08 | 18.7 | 16.9 | 5.0 | 4.0 | 1.0 | M12x1 | 15 | TF00.001 | 2.5 Nm |
| 11 | 18.7 | 21.8 | 7.0 | 4.0 | 1.0 | M16x1 | 17 | TK00.002 | 4.5 Nm |
| 13 | 22.5 | 23.8 | 5.5 | 4.0 | 1.0 | M18x1 | 20 | TP00.011 | 6.0 Nm |
| 15 | 27.7 | 25.8 | 9.0 | 4.0 | 1.0 | M20x1 | 20 | TP00.013 | 6.5 Nm |
| 18 | 29.3 | 31.8 | 7.5 | 4.0 | 1.0 | M25x1 | 27 | TQ00.005 | 10.0 Nm |

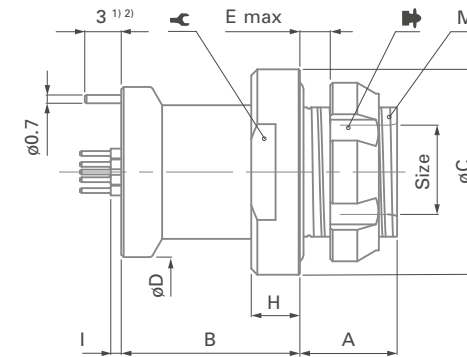
| Size | f | øg |
|------|------|------|
| 07 | 9.2 | 10.1 |
| 08 | 10.9 | 12.1 |
| 11 | 14.5 | 16.1 |
| 13 | 16.5 | 18.1 |
| 15 | 18.5 | 20.1 |
| 18 | 23.2 | 25.1 |



PANEL CUT-OUT

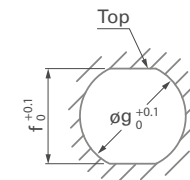
UR02

BODY STYLE



| Size | A | B | øC | øD | E max | H | I | M | ↶ | ↷ | Torque |
|------|------|------|------|------|-------|-----|-----|--------|----|----------|---------|
| 07 | 6.5 | 10.7 | 14.0 | 13.0 | 3.5 | 3.5 | 0.7 | M9x0.5 | 11 | TC00.000 | 1.3 Nm |
| 08 | 8.0 | 14.7 | 16.9 | 14.0 | 4.0 | 4.0 | 1.0 | M12x1 | 15 | TF00.001 | 2.5 Nm |
| 11 | 8.0 | 14.7 | 21.8 | 18.8 | 4.0 | 4.0 | 1.0 | M16x1 | 17 | TK00.002 | 4.5 Nm |
| 13 | 10.5 | 16.0 | 23.8 | 20.0 | 5.0 | 4.0 | 1.0 | M18x1 | 20 | TP00.011 | 6.0 Nm |
| 15 | 10.5 | 21.2 | 25.8 | 22.0 | 5.0 | 4.0 | 1.0 | M20x1 | 20 | TP00.013 | 6.5 Nm |
| 18 | 11.0 | 22.3 | 31.8 | 26.0 | 5.0 | 4.0 | 1.0 | M25x1 | 27 | TQ00.005 | 10.0 Nm |

| Size | f | øg |
|------|------|------|
| 07 | 8.0 | 9.1 |
| 08 | 10.9 | 12.1 |
| 11 | 14.5 | 16.1 |
| 13 | 16.5 | 18.1 |
| 15 | 18.5 | 20.1 |
| 18 | 23.2 | 25.1 |



PANEL CUT-OUT

* Standard version with PCB contacts and grounding pin. For solder contact version, a special solder ground contact pin is included for AWG22[7/30].

¹ Solder & PCB ground pins are always equal or larger than the largest contact of corresponding contact bloc layout (except size 13 config. 203 AWG12 [7/20])

² 3.6 mm for size 15

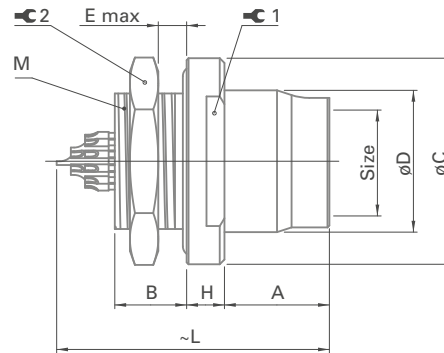
All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

PANEL FRONT MOUNTED*

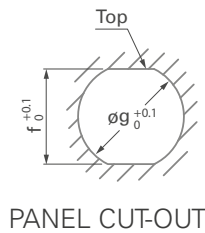
UR03

BODY STYLE



| Size | A | B | øC | øD | E max | H | L | M | 1 | 2 | Torque |
|------|------|-----|------|------|-------|-----|----|--------|----|----|--------|
| 07 | 7.7 | 6.4 | 14.0 | 10.0 | 3.5 | 2.5 | 20 | M9x0.5 | 11 | 11 | 1.3 Nm |
| 08 | 11.7 | 7.0 | 16.9 | 11.5 | 4.0 | 4.0 | 27 | M12x1 | 15 | 14 | 2.5 Nm |
| 11 | 11.1 | 7.6 | 21.8 | 15.0 | 4.6 | 4.0 | 29 | M16x1 | 17 | 19 | 4.5 Nm |

| Size | f | øg |
|------|------|------|
| 07 | 8.0 | 9.1 |
| 08 | 10.9 | 12.1 |
| 11 | 14.5 | 16.1 |



PANEL CUT-OUT

* Standard version with solder contacts.

SIZE 07

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ³⁾ | | PCB contacts [mm] | | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|------|------------|------------------|--------------------|-----------------------|---|--|-------------------|--------------|--------------------------------|---------------------------|-------------------------------------|--------------------|-----------------|--------------------|
| | | | | | Solder contacts ¹⁾ | Crimp contacts ²⁾ | Pin ø | Ground pin ø | | | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | IEC 60512-5-2-5b ⁴⁾ | IEC 60664-1 ⁵⁾ | AC r.m.s. | | DC | |
| | | | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact |
| 07 | | 002 | 2 | 0.9 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | max ø0.83 mm ⁶⁾ min ø0.48 mm AWG22-26 | 0.63 | 0.7 | 9.2 | ≤ 250 | 1.3 | 1.7 | 1.8 | 2.4 |
| | | OS2 | 2 | 0.5 | max ø0.88 mm ⁶⁾ AWG21 [1] AWG22 [7/30] | - | 0.4 | 0.7 | 7.0 | ≤ 250 | 1.2 | 1.8 | 1.8 | 3.4 |
| | | 003 | 3 | 0.9 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.63 | 0.7 | 8.2 | ≤ 250 | 1.3 | 1.3 | 1.8 | 1.6 |
| | | 004 | 4 | 0.7 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | max ø0.62 mm min ø0.38 mm AWG24-28 | 0.50 | 0.7 | 5.5 | ≤ 200 | 1.2 | 1.2 | 1.7 | 1.8 |
| | | 005 | 5 | 0.7 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | max ø0.62 mm min ø0.38 mm AWG24-28 | 0.50 | 0.7 | 5.2 | ≤ 160 | 0.8 | 1.0 | 1.3 | 1.8 |
| | | 007 | 7 | 0.5 | max ø0.43 mm AWG26 [1] AWG28 [19/40] | max ø0.43 mm min ø0.20 mm AWG28-32 | 0.40 | 0.7 | 4.0 | ≤ 160 | 0.8 | 1.0 | 1.3 | 1.8 |
| | | 009 | 9 | 0.5 | max ø0.43 mm AWG26 [1] AWG28 [19/40] | - | 0.40 | 0.7 | 3.1 | ≤ 160 | 0.8 | 1.1 | 1.2 | 1.8 |
| | | 010 | 10 | 0.5 | max ø0.43 mm AWG26 [1] AWG28 [19/40] | - | 0.40 | 0.7 | 3.1 | ≤ 160 | 0.8 | 0.9 | 1.2 | 1.3 |

¹⁾ Stranding values are in brackets.

²⁾ See dedicated crimping instructions document for further information.

³⁾ For a given AWG, the diameter of some stranded cable designs could be larger than the hole diameter of the barrel. Testing may be required.

⁴⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For maximum operating current, a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.







⁵⁾ Recommended operating voltage at sea level. This rated voltage is a general guideline where no other electrical safety standard applies.
In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

⁶⁾ Standard polarity only.

⁷⁾ Layout dedicated to SPE data protocol 1 Gbit/s

All dimensions and images shown are in millimeters and are for reference only.

SIZE 08

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ³⁾ | | PCB contacts [mm] | | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|------|---|------------------|--------------------|-----------------------|---|--|-------------------|--------------------------|--------------------------------|---------------------------|-------------------------------------|--------------------|-----------------|--------------------|
| | | | | | Solder contacts ¹⁾ | Crimp contacts ²⁾ | Pin \varnothing | Ground pin \varnothing | | | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | IEC 60512-5-2-5b ⁴⁾ | IEC 60664-1 ⁵⁾ | AC r.m.s. | | DC | |
| | | | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact |
| 08 |  | 002 | 2 | 0.9 | max \varnothing 0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.70 | 0.7 | 9.2 | \leq 250 | 1.3 | 1.7 | 1.8 | 2.4 |
| |  | 003 | 3 | 0.9 | max \varnothing 0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.70 | 0.7 | 8.2 | \leq 250 | 1.3 | 1.3 | 1.8 | 1.6 |
| |  | 004 | 4 | 0.7 | max \varnothing 0.79 mm AWG21 [1] AWG22 [7/30] | max \varnothing 0.62 mm min \varnothing 0.38 mm AWG24-28 | 0.50 | 0.7 | 5.5 | \leq 200 | 1.2 | 1.2 | 1.7 | 1.8 |
| |  | 005 | 5 | 0.7 | max \varnothing 0.79 mm AWG21 [1] AWG22 [7/30] | max \varnothing 0.62 mm min \varnothing 0.38 mm AWG24-28 | 0.50 | 0.7 | 5.2 | \leq 160 | 0.8 | 1.0 | 1.3 | 1.8 |
| |  | 007 | 7 | 0.5 | max \varnothing 0.43 mm AWG26 [1] AWG28 [19/40] | - | 0.40 | 0.7 | 4.0 | \leq 160 | 0.8 | 1.0 | 1.3 | 1.8 |
| |  | 009 | 9 | 0.5 | max \varnothing 0.43 mm AWG26 [1] AWG28 [19/40] | - | 0.40 | 0.7 | 3.1 | \leq 160 | 0.8 | 1.1 | 1.2 | 1.8 |

¹⁾ Stranding values are in brackets.

²⁾ See dedicated crimping instructions document for further information.





³⁾ For a given AWG, the diameter of some stranded cable designs could be larger than the hole diameter of the barrel. Testing may be required.

⁴⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For maximum operating current, a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

⁵⁾ Recommended operating voltage at sea level. This rated voltage is a general guideline where no other electrical safety standard applies.

In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

SIZE 11

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ³⁾ | | PCB contacts [mm] | | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|------|---|------------------|--------------------|-----------------------|--|---|--------------------|--------------|--------------------------------|---------------------------|-------------------------------------|--------------------|-----------------|--------------------|
| | | | | | Solder contacts ¹⁾ | Crimp contacts ²⁾ | Pin ø | Ground pin ø | | | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | IEC 60512-5-2-5b ⁴⁾ | IEC 60664-1 ⁵⁾ | AC r.m.s. | | DC | |
| | | | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact |
| 11 |  | 008 | 8 | 0.7 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | max ø0.62 mm min ø0.38 mm AWG24-28 | 0.50 | 0.7 | 4.2 | ≤ 250 | 1.7 | 1.8 | 3.1 | 2.6 |
| |  | 012 | 12 | 0.7 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | ^{6) 7)} max ø0.62 mm min ø0.38 mm AWG24-28 | 0.50 | 0.7 | 4.2 | ≤ 250 | 1.6 | 1.6 | 2.6 | 2.3 |
| |  | 016 | 16 | 0.5 | max ø0.43 mm AWG26 [1] AWG28 [19/40] | - | 0.40 ⁶⁾ | 0.7 | 2.7 | ≤ 250 | 1.2 | 0.9 | 2.0 | 1.5 |
| |  | 019 | 19 | 0.5 | max ø0.43 mm AWG26 [1] AWG28 [19/40] | - | 0.40 ⁶⁾ | 0.7 | 2.5 | ≤ 250 | 1.2 | 0.9 | 2.0 | 1.5 |

¹⁾ Stranding values are in brackets.

²⁾ See dedicated wire gauge crimping instructions document for further information.

³⁾ For a given AWG, the diameter of some stranded cable designs could be larger than the hole diameter of the barrel. Testing may be required.

⁴⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For maximum operating current, a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

⁵⁾ Recommended operating voltage at sea level. This rated voltage is a general guideline where no other electrical safety standard applies. In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

⁶⁾ Not valid for UP50.

⁷⁾ UR0x: standard polarity only.

SIZE 13

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ³⁾ | | PCB contacts [mm] | | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|------|------------|-------------------|--------------------|-----------------------|--|--|--------------------|--------------|--------------------------------|---------------------------|-------------------------------------|--------------------|-----------------|--------------------|
| | | | | | Solder contacts ¹⁾ | Crimp contacts ²⁾ | Pin Ø | Ground pin Ø | | | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | IEC 60512-5-2-5b ⁴⁾ | IEC 60664-1 ⁵⁾ | AC r.m.s. | | DC | |
| | | | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact |
| 13 | | 203 ⁹⁾ | 2 ⁸⁾ | 2.3 | max ø3.28 mm AWG9 [19/22] | - | 1.8 | 1.8 | 26 | ≤ 320 | 2.2 | 1.7 | 3.7 | 2.4 |
| | | | 3 | 0.7 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.5 | | 1 | ≤ 320 | 2.1 | | | |
| | | 303 | 3 ⁸⁾ | 1.6 | max ø1.86 mm AWG13 [1] AWG14 [7/22] | - | 1.5 | 1.5 | 16 | ≤ 320 | 2.6 | 1.6 | 3.6 | 2.4 |
| | | | 3 | 0.7 | max ø0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.5 | | 1 | ≤ 320 | 2.6 | | | |
| | | 027 | 27 | 0.5 | ⁶⁾ max ø0.43 mm AWG26 [1] AWG28 [19/40] | ⁷⁾ max ø0.43 mm min ø0.20 mm AWG28-32 | 0.40 ⁶⁾ | 0.7 | 2.0 | ≤ 200 | 1.2 | 0.5 | 1.8 | 0.5 |

¹⁾ Stranding values are in brackets.

²⁾ See dedicated wire gauge crimping instructions document for further information.

³⁾ For a given AWG, the diameter of some stranded conductor designs could exceptionally be larger than the hole diameter of the barrel. Testing may be required.

⁴⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For the max. operating current a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

⁵⁾ Recommended operating voltage at sea level. This rated voltage is a general purpose guideline where no other electrical safety standard applies. In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

⁶⁾ UR0x: standard polarity only.

⁷⁾ Only valid for UP01.

⁸⁾ Contact block with male contacts comes standard with advanced power contacts.

⁹⁾ UR0x: only available in "V" (Vacuum sealing) version, not in "W" (Water sealing) nor in "N" (Non sealing) versions.

SIZE 15

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ²⁾ | | PCB contacts [mm] | | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|------|------------|--------------------|--------------------|---|--|------------------------------|-------------------|--------------|--------------------|-------------------------|-------------------------------------|--------------------|-----|-----|
| | | | | | Solder contacts ¹⁾ | Crimp contacts ²⁾ | Pin Ø | Ground pin Ø | | | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | AC r.m.s. | | DC | | | |
| | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact | | |
| 15 | | 002 ⁹⁾ | 2 | 3.0 | max Ø3.13 mm AWG9 [1] AWG10 [105/30] | - | 2.5 | 2.5 | 30 | ≤ 400 | 1.2 | 1.6 | 2.3 | 3.0 |
| | | 004 ⁹⁾ | 4 | 2.0 | max Ø2.03 mm AWG13 [1] AWG14 [7/22] | - | 1.5 | 2.5 | 20 | ≤ 320 | 1.8 | 1.8 | 2.6 | 2.6 |
| | | 204H ⁸⁾ | 4 ⁵⁾ | 1.3 | max Ø1.18 mm AWG17 [1] AWG18 [16/30] | - | - | - | - | ≤ 320 | | | | |
| | | | 2 ⁵⁾ | coax | - | 7) | - | - | 7) | 7) | 7) | - | 7) | - |
| | | 008 | 8 | 1.3 | max Ø1.18 mm AWG17 [1] AWG18 [16/30] | - | 1.0 | 1.0 | 10 | ≤ 320 | 1.7 | 2.0 | 2.5 | 2.8 |
| | | 412 ⁶⁾ | 4 | 1.6 | max Ø1.86 mm AWG13 [1] AWG14 [7/22] | - | 1.5 | 2.5 | 14 | ≤ 250 | 1.6 | 1.3 | 2.8 | 2.1 |
| | | | 12 | 0.7 | max Ø0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.5 | | 1.0 | | 1.0 | 1.2 | 1.5 | 2.0 |
| | 027 | 27 | 0.7 | max Ø0.79 mm AWG21 [1] AWG22 [7/30] | - | 0.5 | 1.0 | 3.0 | ≤ 250 | 1.2 | 1.5 | 1.5 | 2.0 | |

¹⁾ Stranding values are in brackets.

²⁾ For a given AWG, the diameter of some stranded conductor designs could exceptionally be larger than the hole diameter of the barrel. Testing may be required.

³⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For the max. operating current a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

⁴⁾ Recommended operating voltage at sea level. This rated voltage is a general purpose guideline where no other electrical safety standard applies. In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

⁵⁾ Standard polarity only.

⁶⁾ Contacts dia. 1.6 are positioned to make contact first and break last.


⁷⁾ Please refer to www.fischerconnectors.com/technical for technical specification of coax insert.

⁸⁾ Max 500 mating cycles due to coax insert characteristics.

⁹⁾ UR0x: only available in "V" (Vacuum sealing) version, not in "W" (Water sealing) nor in "N" (Non sealing) versions.

All dimensions and images shown are in millimeters and are for reference only.

SIZE 18

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ³⁾ | | PCB contacts [mm] | | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|------|---|------------------|--------------------|-----------------------|-------------------------------|--|-------------------|--------------|---------------------------------------|------------------------------------|-------------------------------------|--------------------|-----|-----|
| | | | | | Solder contacts ¹⁾ | Crimp contacts ²⁾ | Pin Ø | Ground pin Ø | | | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | AC r.m.s. | | DC | | | |
| | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact | | |
| 18 |  | 042 | 42 ⁶⁾ | 0.7 | - | max Ø0.62 mm min Ø0.38 mm AWG24-28 | 0.50 | 0.70 | IEC 60512-5-2-5b ⁴⁾ 3.0 | IEC 60664-1 ⁵⁾ ≤ 250 | 1.5 | 1.5 | 2.4 | 2.5 |

¹⁾ Stranding values are in brackets.

²⁾ See dedicated wire gauge crimping instructions document for further information.

³⁾ For a given AWG, the diameter of some stranded cable designs could be larger than the hole diameter of the barrel. Testing may be required.

⁴⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For maximum operating current, a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

⁵⁾ Recommended operating voltage at sea level. This rated voltage is a general guideline where no other electrical safety standard applies.

In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

⁶⁾ Standard polarity only.

MECHANICAL CODING

| PLUGS | Size | Code 1 | Code 2 | Code 3 | Code 4 |
|---------------|------|--------|--------|--------|--------|
| | 07 | | | | |
| | 08 | | | | |
| | 11 | | | | |
| | 13 | | | | |
| | 15 | | | | |
| | 18 | | | | |
| Visual coding | ● | ▼ | ■ | ✕ | |

| RECEPTACLES | Size | Code 1 | Code 2 | Code 3 | Code 4 |
|---------------|------|--------|--------|--------|--------|
| | 07 | | | | |
| | 08 | | | | |
| | 11 | | | | |
| | 13 | | | | |
| | 15 | | | | |
| | 18 | | | | |
| Visual coding | ● | ▼ | ■ | ✕ | |

All dimensions and images shown are in millimeters and are for reference only.

POLARITY

BODY STYLES

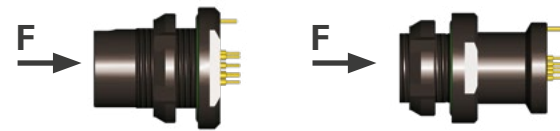
UP01

UP50



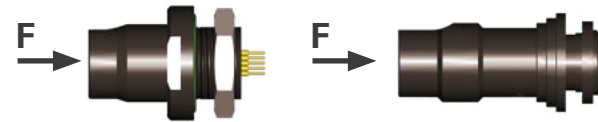
UR01

UR02



UR03

UR50



POLARITY

Standard polarity: male contacts on plug / female contacts on receptacle

Inverted polarity: female contacts on plug / male contacts on receptacle.

WARNING: for high-current applications, make sure to choose the correct polarity (female contacts on device that is supplying the power).

PCB / PIN LAYOUT

View from F¹⁾

| Size | Polarity | Number of contacts (layout reference) | | | | | | | |
|------|----------|---------------------------------------|---------|---------|---------|---------|---------|---------|----------|
| | | 2 (002) | 2 (0S2) | 3 (003) | 4 (004) | 5 (005) | 7 (007) | 9 (009) | 10 (010) |
| 07 | Standard | | | | | | | | |
| | Inverted | | | | | | | | |

¹⁾ Recommended PCB hole dimensions may be adjusted to application.

^{a)} For optional ground pin.

PCB / PIN LAYOUT

View from F¹⁾

| Size | Polarity | Number of contacts (layout reference) | | | | | |
|------|----------|---------------------------------------|---------|---------|---------|---------|---------|
| | | 2 (002) | 3 (003) | 4 (004) | 5 (005) | 7 (007) | 9 (009) |
| 08 | Standard | | | | | | |
| | Inverted | | | | | | |

¹⁾ Recommended PCB hole dimensions may be adjusted to application.

^{a)} For optional ground pin.

PCB / PIN LAYOUT

View from F¹⁾

| Size | Polarity | Number of contacts (layout reference) | | | |
|------|----------|---------------------------------------|----------|----------|----------|
| | | 8 (008) | 12 (012) | 16 (016) | 19 (019) |
| 11 | Standard | | | | |
| | Inverted | | | | |

¹⁾ Recommended PCB hole dimensions may be adjusted to application.

^{a)} For optional ground pin.

PCB / PIN LAYOUT

View from F¹⁾

| Size | Polarity | Number of contacts (layout reference) | | |
|------|----------|---------------------------------------|-----------|----------|
| | | 2+3 (203) | 3+3 (303) | 27 (027) |
| 13 | Standard | | | |
| | Inverted | | | |

¹⁾ Recommended PCB hole dimensions may be adjusted to application.

^{a)} For optional ground pin.

All dimensions and images shown are in millimeters and are for reference only.

PCB / PIN LAYOUT

View from F^{1) 2)}

| Size | Polarity | Number of contacts (layout reference) | | | | |
|------|----------|---------------------------------------|---------|---------|------------|----------|
| | | 2 (002) | 4 (004) | 8 (008) | 4+12 (412) | 27 (027) |
| 15 | Standard | | | | | |
| | Inverted | | | | | |

¹⁾ Recommended PCB hole dimensions may be adjusted to application.

²⁾ N/A for pin layout 204H.

^{a)} For optional ground pin.

PCB / PIN LAYOUT

View from F¹⁾

| Size | Polarity | Number of contacts (layout reference) |
|------|----------|---------------------------------------|
| | | 42 (042) |
| 18 | Standard | |
| | Inverted | |

¹⁾ Recommended PCB hole dimensions may be adjusted to application.

^{a)} For optional ground pin.

All dimensions and images shown are in millimeters and are for reference only.

PLUGS & RECEPTACLES

Example:

| Connector Design | | | | Contact Block | | | Housing | | Standard options | | | |
|------------------|---|---|----|---------------|-----|---|---------|---|------------------|---|---|---|
| UP01 | | L | 07 | M | 010 | S | BK | 1 | Z | 2 | Z | B |
| UR01 | W | | 11 | F | 012 | S | BK | 2 | E | 1 | A | A |

Body style

UltiMate Plug = UP

- UP01 = Cable mounted
- UP50 = Panel mounted

UltiMate Receptacle = UR

- UR01 = Panel rear mounted low profile
- UR02 = Panel rear mounted
- UR03 = Panel front mounted low profile
- UR50 = Cable mounted

Sealing level

Panel mounted:

- V = Vacuum sealing ¹⁾
- W (IP68/69) = Water sealing
- N = Non sealing ²⁾

Cable mounted:

- Not applicable = Nothing

Locking system

Cable mounted plug:

- L = Push-pull locking
- Q = Quick release

Cable mounted receptacle:

- Z = Not applicable

Panel mounted:

- No locking = Nothing

Connector size

- 07 = Size 07
- 08 = Size 08
- 11 = Size 11
- 13 = Size 13
- 15 = Size 15
- 18 = Size 18

| | |
|--|--|
| Housing Material | |
| A = ALUMINUM | B = BRASS (Standard) |
| Grounding | |
| Panel mounted: | Cable mounted: |
| A = Grounding pin (for UR01/UR02) | Z = Not applicable |
| N = None (for UR03/UP50) | |
| Insulator Material | |
| 1 = PBT. Size 08/11/13/18 | 2 = PEEK. Size 07/15 |
| O-ring material | |
| Receptacle: | Plug: |
| O-ring at plug interface | Z = Not applicable |
| E = FVMQ (Fluorosilicone) | |
| Keying code | |
| Code 1 = ● | Code 3 = ■ |
| Code 2 = ▼ | Code 4 = ✕ |
| Standard keying = Code 1 | Standard guide mark = White |
| Housing color | |
| BK = Standard (Anthracite) | |
| Contact Type | |
| S = Solder | C = Crimp ⁴⁾ |
| P = PCB | H = Hybrid |
| Layout references | |
| Size 07: 002, 0S2, 003, 004, 005, 007, 009, 010 | Size 13: 203, 303, 027 |
| Size 08: 002, 003, 004, 005, 007, 009 | Size 15: 002, 004, 204 ³⁾ , 008, 412, 027 |
| Size 11: 008, 012, 016, 019 | Size 18: 042 |
| Polarity of contacts | |
| M = Male contacts | |
| Standard polarity: | |
| Male contacts in plug, female contacts in receptacle | |

F = Female contacts

¹⁾ UR0x: only available in "V" version for layout references size 13: 203 and size 15: 002, 004 (no "W" nor "N" versions).

²⁾ Only option for pin layout 204H.

³⁾ Coax contacts must be ordered separately. Please refer to www.fischerconnectors.com/technical for Coax inserts details.

⁴⁾ On request for panel receptacles

BEND RELIEF

Top performance, no hassle

- No tool required: 5 steps to assemble
- Clean cut: perfectly adjust the bend relief to your cable diameter with a simple blade

Long lasting

- Resists 10,000 flex cycles at a 90° angle
- Operating temperature -55 °C to +135 °C
- UV resistant

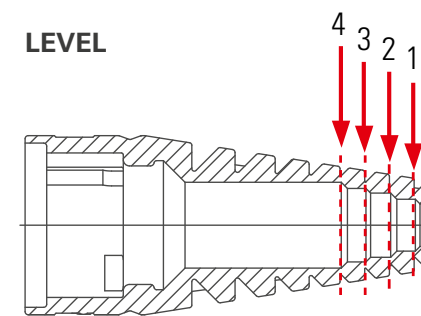


Standard color is black (BK)
 Also available in grey (GY), blue (BL), yellow (YL), green (GN), violet (VT) upon request.

Please contact your Fischer Connectors sales representative.

CUTTING DIAMETERS

| Size | Uncut | Level 1 | Level 2 | Level 3 | Level 4 | Part Number |
|------|-------|---------|---------|---------|---------|-------------|
| 07 | ø1.9 | ø2.9 | ø3.9 | ø4.9 | - | UB07 A1BK |
| 08 | ø2.5 | ø3.7 | ø5.7 | ø7.5 | - | UB08 A1BK |
| 11 | ø3.9 | ø5.4 | ø6.9 | ø8.9 | - | UB11 A1BK |
| 13 | ø6.9 | ø8.9 | ø10.9 | ø12.9 | - | UB13 A1BK |
| 15 | ø6.9 | ø8.6 | ø10.1 | ø11.8 | - | UB15 A1BK |
| 18 | ø6.9 | ø8.4 | ø10.4 | ø11.9 | ø13.9 | UB18 A1BK |



All dimensions and images shown are in millimeters and are for reference only.

SOFT CAPS - LANYARD WITH POLYESTER CORD

FIGURE 1

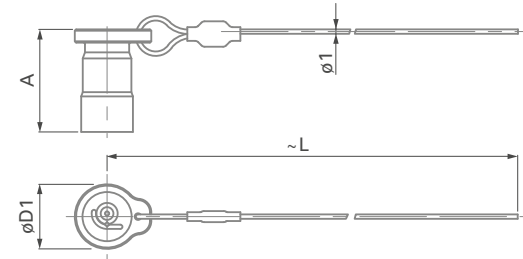
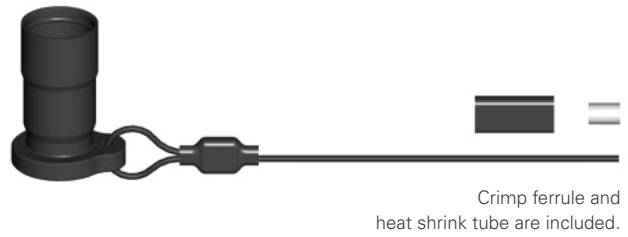


FIGURE 2

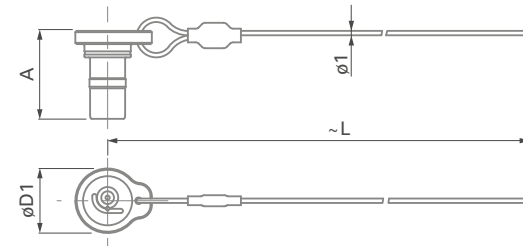
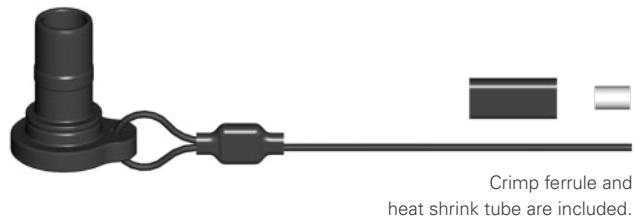
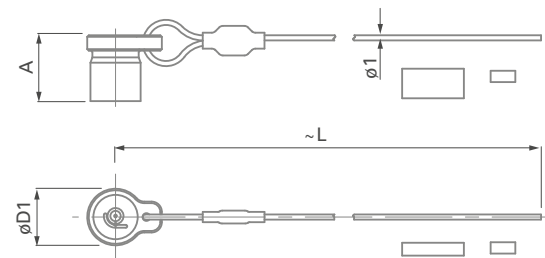
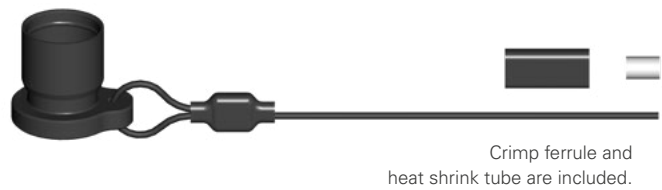
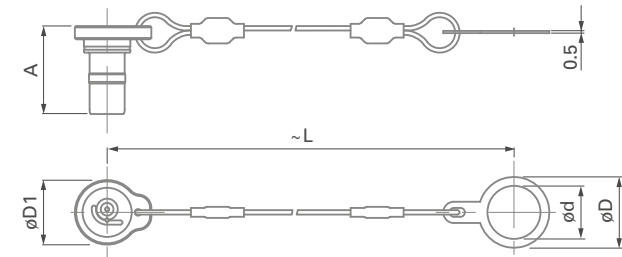


FIGURE 3



SOFT CAPS - LANYARD WITH POLYESTER CORD

FIGURE 4



| Size | Plug | | Receptacle | | | | A | øD1 | L | ød | øD | Part number | Fig. |
|------|------|------|------------|------|------|------|------|------|-----|----|----|-----------------|------|
| | UP01 | UP50 | UR01 | UR02 | UR03 | UR50 | | | | | | | |
| 07 | ● | | | | | | 18.5 | 11.0 | 200 | - | - | UCP07C 1A1 A200 | 1 |
| | | | ● | ● | ● | ● | 16.0 | 11.0 | 200 | - | - | UCR07C 1A1 A200 | 2 |
| | | ● | | | | | 12.8 | 11.0 | 200 | - | - | UCP07P 1A1 A200 | 3 |
| | | | ● | ● | ● | | 16.0 | 11.0 | 95 | 10 | 14 | UCR07P 1A1 A095 | 4 |
| 08 | ● | | | | | | 23.2 | 14.6 | 200 | - | - | UCP08C 1A1 A200 | 1 |
| | | | ● | ● | ● | ● | 19.9 | 14.6 | 200 | - | - | UCR08C 1A1 A200 | 2 |
| | | | ● | ● | ● | | 19.9 | 14.6 | 95 | 12 | 16 | UCR08P 1A1 A095 | 4 |
| 11 | ● | | | | | | 22.0 | 17.6 | 200 | - | - | UCP11C 1A1 A200 | 1 |
| | | | ● | ● | ● | ● | 19.2 | 17.6 | 200 | - | - | UCR11C 1A1 A200 | 2 |
| | | | ● | ● | ● | | 19.2 | 17.6 | 95 | 16 | 21 | UCR11P 1A1 A095 | 4 |
| 13 | ● | | | | | | 25.0 | 20.7 | 200 | - | - | UCP13C 1A1 A200 | 1 |
| | | | ● | ● | ● | ● | 22.5 | 20.7 | 200 | - | - | UCR13C 1A1 A200 | 2 |
| | | | ● | ● | | | 22.5 | 20.7 | 95 | 18 | 23 | UCR13P 1A1 A095 | 4 |
| 15 | ● | | | | | | 25.0 | 20.7 | 200 | - | - | UCP15C 1A1 A200 | 1 |
| | | | ● | ● | | | 22.5 | 20.5 | 95 | 20 | 25 | UCR15P 1A1 A095 | 4 |
| 18 | ● | | | | | | 29.5 | 28.7 | 200 | - | - | UCP18C 1A1 A200 | 1 |
| | | | ● | ● | | | 25.0 | 28.7 | 95 | 25 | 29 | UCR18P 1A1 A095 | 4 |

- Recommended for optimal sealing.
- Compatible but not recommended for optimal sealing.

All dimensions and images shown are in millimeters and are for reference only.

SPANNER & NUT DRIVER

**DOUBLE-ENDED
OPEN SPANNER
EXTRA THIN** 



| Part number | Opening across flats | Length | Fork thickness |
|-------------|----------------------|--------|----------------|
| TX00.008 | 8 | 96 | 2.3 |
| TX00.009 | 9 | 102 | 2.5 |
| TX00.010 | 10 | 104 | 2.5 |
| TX00.011 | 11 | 114 | 2.5 |
| TX00.014 | 14 | 130 | 3.0 |

Material – Chrome Alloy Steel, Chrome plated, Fork Angles – 15° and 75°.

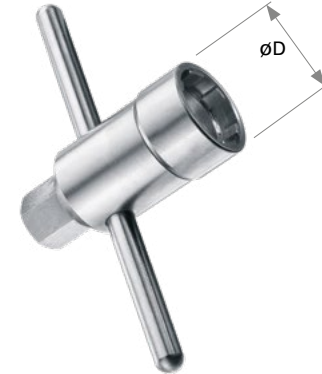
**OPEN SPANNER
EXTRA THIN** 



| Part number | Opening across flats | Length | Fork thickness |
|-------------|----------------------|--------|----------------|
| TX00.015 | 15 | 145 | 5.2 |
| TX00.017 | 17 | 160 | 5.5 |
| TX00.019 | 19 | 175 | 6.0 |
| TX00.020 | 20 | 175 | 6.0 |
| TX00.022 | 22 | 196 | 6.5 |
| TX00.027 | 27 | 240 | 7.4 |

Material – Chrome Vanadium Steel, Chrome plated, Fork Angle – 15°.

**NUT DRIVER WITH T-HANDLE
AND HEX DRIVE** 



| Part number | Thread size | Nut outer dia. | øD | Hex drive |
|-------------|-------------|----------------|----|-----------|
| TC00.000 | M9 x 0.5 | 12 | 15 | 7 |
| TC00.007 | M10 x 0.5 | 13 | 16 | 7 |
| TF00.001 | M12 x 1 | 15 | 18 | 10 |
| TK00.002 | M16 x 1 | 20 | 23 | 12 |
| TP00.011 | M18 x 1 | 23 | 26 | 12 |
| TP00.013 | M20 x 1 | 25 | 28 | 12 |
| TQ00.005 | M25 x 1 | 31 | 35 | 17 |

Material – Hardened Tool Steel, Nickel plated.

MATERIAL & SURFACE FINISH

| Components | Material | | Finish | |
|---|--------------------------------|---|--|---|
| | Designation ISO | Standard | Designation | Standard |
| Spring sleeve (plug), shell (plug), Mounting nut (receptacle) ¹⁾ , bodies (all) | Aluminum AlMgSiSn1Bi | EN-AW-6023 | Anthracite Nickel | SAE-AMS-QQ-N-290 SAE-AMS 2404 |
| | Brass CuZn39Pb3 | CW614N UNS C 38500 | | |
| Back nut (plug & cable mounted receptacle), Mounting nut (receptacle) ²⁾ | Aluminum AlMgSiSn1Bi | EN-AW-6023 | Nickel | SAE-AMS-QQ-N-290 SAE-AMS 2404 |
| | Brass CuZn39Pb3 | CW614N UNS C 38500 | | |
| Ground contact | Brass CuZn39Pb3 | CW614N UNS C 38500 | Nickel | SAE-AMS-QQ-N-290 SAE-AMS 2404 |
| Contacts | - Male, ground pin - Female | Brass ; CuZn39Pb3 Bronze ; CuSn4Zn4Pb4 | CW614N ; UNS C 38500 CW456K ; ASTM B 139 UNS C 54400 | 1 µm Gold over Nickel MIL-DTL-45204D Type I ; ASTM B488 |

| Insulator and sealing | | International symbol | Flammability |
|-----------------------|--------------------------------|-----------------------------|--------------|
| Insulator | - Molded | PBT, PEEK ³⁾ | UL 94 V-0 |
| Inner sleeve | - Cable connectors | POM | UL 94 HB |
| Sealant materials | - «V» Vacuum sealed connectors | Bi-component Epoxy compound | UL 94 HB |
| | - «W» Water sealed connectors | Silicon compound | UL 94 V-0 |
| Bend relief | - Cable connectors | Santoprene™ TPV 101-64 | UL 94 HB |

| Soft caps | | Material | Flammability |
|---------------|--|---|--------------|
| Cap | | TPV (Santoprene™) | UL 94 HB |
| Cord | | Polyester | - |
| Fixing lug | | Black Chrome plated brass (ISO CuZn37) | - |
| Crimp ferrule | | Nickel plated copper | - |

| O-rings | International symbol | Chemical name |
|-----------|----------------------|-----------------------|
| General | FPM (Viton®) | Fluoro elastomer |
| Interface | FVMQ | Fluorosilicone rubber |

¹⁾ For UR01 & UR02.

²⁾ For UR03 & UP50.

³⁾ PBT for size 08, 11, 13 and 18. PEEK for size 07 and 15.

ENVIRONMENTAL & MECHANICAL DATA

| Characteristic | Performance | Standard |
|--|---|---|
| Sealing performance mated and unmated ⁴⁾ | IP68/IP69 2 m submersion for 24 h ¹⁾ | IEC 60529 |
| | "V" sealing level: Hermetic: Tested: <10 ⁻⁹ mbar l/s | IEC 60068-2-17 Test Qk, Method 3 |
| Sealing performance soft caps | IP68, 2 m submersion for 24 hours; IP69; | IEC 60529 |
| Operating temperature range | -55 °C to +135 °C ²⁾ | IEC 60068-2-14-Nb |
| Corrosion resistance ³⁾ | Salt mist, 1,000 hours, 5% salt solution, 35 °C; | IEC 60068-2-11 Test Ka; MIL-STD-202 Method 101 ; EIA-364-26 |
| Endurance | 10,000 mating cycles ⁵⁾ | IEC 60512-9-1; EIA-364-09 |
| Vibration, random (Size 08, 11, 13, 15, 18) | 37.80 Grms | MIL-STD-202 Method 214A Condition I; EIA-364-28 Condition V |
| Vibration (Size 07) | 10 to 2,000 Hz, 1.5 mm or 15 g, 12 sweep cycles per axis, 20 minutes per 10-2,000-10 Hz sweep cycle, no discontinuity > 1 us; | MIL-STD-202 Method 204 Condition B |
| Shock | 300g amplitude, half sine pulse of 3 ms, no discontinuity > 1 μs | MIL-STD-202 Method 213; EIA-364-27 |

¹⁾ 120 m/24 h or other depth/duration requirements available on request, please contact your local sales office.

²⁾ Temperature range of -40 °C to +125 °C for cable connectors overmolded with TPU material. Max. temperature of +85 °C for soft caps.

³⁾ Plug and receptacle in mated position or with cap when unmated. For Brass connectors only.

Aluminum version not recommended for Marine use. Preserved mechanical and electrical functionality. Visual aspect might be altered.

⁴⁾ Sealing performance of pin layout 204H valid only in mated condition due to coax insert.

⁵⁾ 500 mating cycles for pin layout 204H due to coax insert.

ELECTRICAL DATA ⁸⁾

| Characteristic | Contact size | Typical values | Standard |
|---|--------------|----------------------|--------------------------------------|
| Contact resistance over 10,000 mating cycles | ∅0.5 mm | 5.0 mΩ | IEC 60512-2-1-2a IEC 60512-2-2-2b |
| | ∅0.7 mm | 5.0 mΩ | |
| | ∅0.9 mm | 4.0 mΩ | |
| | ∅1.6 mm | 2.5 mΩ | |
| | ∅2.3 mm | 2.5 mΩ | |
| Shell resistance ⁶⁾ | | < 5.0 mΩ | IEC 60512-2-6-2f |
| Insulation resistance | | > 10 ¹⁰ Ω | IEC 60512-3-1-3a Method C |
| Shielding effectiveness ⁷⁾ | | > 54 dB | up to 1 GHz, IEC 60512-23-3 |

⁶⁾ Measurement points on Figure 1.

⁷⁾ Size 08 connector pair.

⁸⁾ Please refer to www.fischerconnectors.com/technical for technical specification of coax insert.

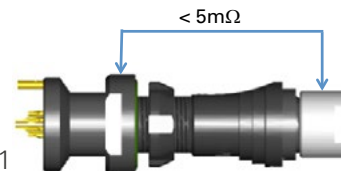






FIGURE 1

DATA TRANSMISSION

| Protocol | Number of contacts required | |
|--|-----------------------------|-------------------------------------|
| USB 2.0  | 4 | yes |
| USB 3.0  | 9 | application dependent ⁹⁾ |
| Ethernet Cat 5e (1 Gbit/s)  | 8 | yes |
| Standard audio/video protocol (10.2 Gbit/s)  | 19 | yes |

The data transmission performance of the Fischer UltiMate™ Series has been tested for most popular protocols that are used in a variety of applications today.

⁹⁾ Test with your application to confirm acceptable functionality

ULTIMATE 80

PLUGS



PRE-CABLED SOLUTION

- Body styles (UP81)..... H-34
- Technical dimensions H-35



CONNECTOR

- Body styles (UP81)..... H-34
- Technical dimensions H-35

RECEPTACLES



PRE-CABLED SOLUTION

- Body styles (UR80)..... H-36
- Technical dimensions H-37



PANEL REAR MOUNTED

- Body styles (UR81)..... H-36
- Technical dimensions H-38



CONNECTOR

- Body styles (UR80)..... H-36
- Technical dimensions H-37



FOR ULTIMATE 80

- Electrical & contact configurations H-39
- PCB hole layout H-39
- Mechanical coding..... H-39
- Part numbering..... H-40
- Pre-cabled plug / receptacle configurations H-41
- Accessories H-43
- Tooling H-43
- Technical information..... H-44

This catalog covers our standard connector solutions. For specific requests, including hybrid or custom connectors, please contact your local sales representative.

All dimensions and images shown are in millimeters and are for reference only.

PLUGS

| | | PRE-CABLED | CONNECTOR | |
|------------------|---------------------|---|---|--|
| | |  |  | |
| Body style | | UP81 | | References to detailed information |
| Protection | Sealed up to IP68 | ● | | Sealing categories, page A-6 |
| Locking system | Quick-release | ● | ● | |
| Termination | Crimp contact | ● | ● | Electrical & contact configurations, page H-39 |
| Housing material | Aluminum | ● | ● | Part numbering, page H-40 |
| Housing color | Black ¹⁾ | ● | ● | Part numbering, page H-40 |
| Design | Straight | ● | | Body styles, page H-40 |
| | Right-angle | | | |
| Cabling | Overmolded | ● | | |
| Accessories | Sealing caps | ● | ● | Accessories, page H-43 |
| Size | 08 | ● | ● | Technical dimensions, page H-35 |

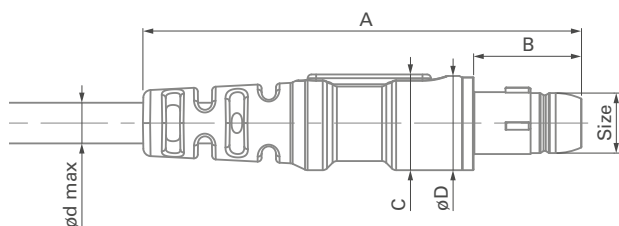
¹⁾ Due to surface treatment process, color may slightly differ from one product to another without impacting technical specifications or product properties.

PLUGS

PRE-CABLED

UP81

BODY STYLE

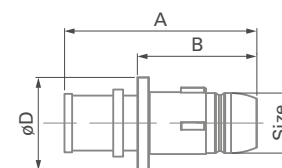


| Size | A | B | C | øD | ød max |
|------|------|------|------|------|--------|
| 08 | 58.0 | 14.2 | 12.6 | 12.4 | 5.5 |

CONNECTOR




UP81

BODY STYLE



| Size | A | B | øD |
|------|------|------|------|
| 08 | 25.2 | 15.7 | 12.4 |

RECEPTACLES

| | | PRE-CABLED SOLUTION | CONNECTORS | | |
|------------------|---------------------|---|--|--|--|
| | |  | PANEL MOUNTED  | CABLE MOUNTED  | |
| Body style | | UR80 | UR81 | UR80 | References to detailed information |
| Protection | Sealed up to IP68 | ● | ● | | Sealing categories, page A-6 |
| Termination | Crimp contact | ● | | ● | Electrical & contact configurations, page H-39 |
| | Solder contact | | ● | | |
| | PCB contact | | ● | | |
| Housing material | Aluminum | ● | ● | ● | Part numbering, page H-40 |
| Housing color | Black ²⁾ | ● | ● | ● | Part numbering, page H-40 |
| Design | Straight | ● | ● | | Body styles, page H-33 |
| | Right-angle | | | | |
| | Flush | | ● | | |
| Assembly | Rear-mounting | | ● | | |
| Cabling | Overmolded | ● | | | |
| Accessories | Sealing caps | ● | ● | ● | Accessories, page H-43 |
| Size | 08 | ● | ● | ● | Technical dimensions, page H-37 |

¹⁾ KIT is delivered with receptacle body, contact block, crimp contacts and crimp shield ferule. SAP 139351

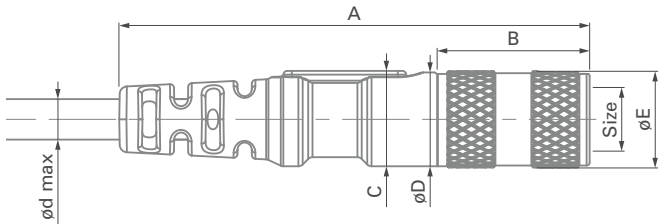
²⁾ Due to surface treatment process, color may slightly differ from one product to another without impacting technical specifications or product properties.

RECEPTACLES

PRE-CABLED SOLUTION

UR80

BODY STYLE

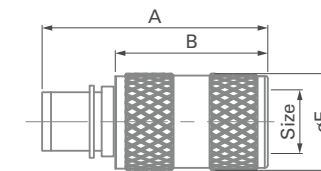


| Size | A | B | C | øD | øE | ød max |
|------|------|------|------|------|------|--------|
| 08 | 62.2 | 20.2 | 12.6 | 12.4 | 12.8 | 5.5 |

CONNECTORS

UR80

BODY STYLE



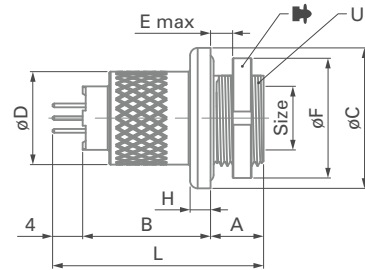
| Size | A | B | øE |
|------|------|------|------|
| 08 | 29.6 | 20.2 | 12.8 |

RECEPTACLES

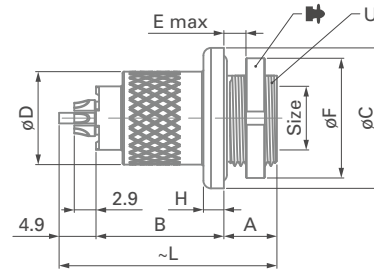
PANEL REAR MOUNTED

UR81

BODY STYLE



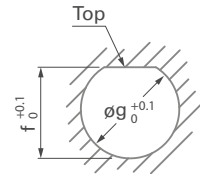
PCB



SOLDER

| Size | Termination | A | B | øC | øD | U | øF | H | E max | L | ⊕ | Torque |
|------|-------------|-----|------|------|------|--------------|------|-----|-------|------|----------|--------|
| 08 | PCB | 7.0 | 16.9 | 18.6 | 12.3 | 1/2-32 UN-2A | 15.9 | 2.8 | 3.2 | 27.9 | TX00.401 | 2.5 Nm |
| | Solder | 7.0 | 16.9 | 18.6 | 12.3 | 1/2-32 UN-2A | 15.9 | 2.8 | 3.2 | 28.8 | TX00.401 | 2.5 Nm |

| Size | f | øg |
|------|-------|------|
| 08 | 12.05 | 12.8 |



PANEL CUT-OUT

ELECTRICAL & CONTACT CONFIGURATIONS

| Size | Pin layout | Layout reference | Number of contacts | Contact diameter [mm] | Wire size ³⁾ | | PCB contacts | Current rating [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | | | | |
|------|------------|------------------------|--------------------|-----------------------|--|--|--------------|---------------------------------------|-------------------------|-------------------------------------|--------------------------------|---------------------------|-----------------------|--------------------|-----------------|--------------------|
| | | | | | Solder contacts ²⁾ | Crimp contacts | | | | Pin diameter [mm] | IEC 60512-5-2-5b ⁴⁾ | IEC 60664-1 ⁵⁾ | IEC 60512-4-1 Test 4a | | | |
| | | | | | | | | | | | | | AC r.m.s. | | DC | |
| | | | | | | | | | | | | | Contact to body | Contact to contact | Contact to body | Contact to contact |
| 08 | | 006 /105 ¹⁾ | 6 | 0.7 | max ϕ 1.02 mm AWG19 [1] AWG20 [26/34] | max ϕ 0.85 mm min ϕ 0.48 mm AWG22-28 | 0.5 | 2x 9 ⁶⁾ 2x 2 2x 0.02 | \leq 200 | 0.8 | 1.3 | 1.5 | 2.3 | | | |
| | | 007 /106 ¹⁾ | 7 | 0.7 | max ϕ 1.02 mm AWG19 [1] AWG20 [26/34] | max ϕ 0.85 mm min ϕ 0.48 mm AWG22-28 | 0.5 | 2x 9 ⁶⁾ 3x 2 2x 0.02 | \leq 200 | 0.8 | 1.3 | 1.5 | 2.3 | | | |

¹⁾ First digit indicates the number of first mate last break (FMLB) contacts.

²⁾ Solder contacts option only for UR81 in replacement of the standard PCB contacts.

³⁾ For a given AWG, the diameter of some stranded cable designs could be larger than the hole diameter of the barrel. Testing may be required.

⁴⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For maximum operating current, a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

⁵⁾ Recommended operating voltage at sea level. This rated voltage is a general guideline where no other electrical safety standard applies. In cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

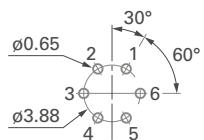
⁶⁾ Alternatively, only 2 contacts loaded : 2x 10 A

PCB / PIN LAYOUT

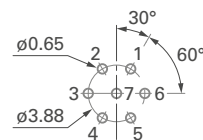
View from the front of the receptacle ⁷⁾

Number of contacts (layout reference)

LAYOUT 006 (105)



LAYOUT 007 (106)



⁷⁾ Recommended PCB hole dimensions may be adjusted to application.

MECHANICAL CODING ⁸⁾

| | Code Y | Code Y |
|-------------|--------|--------|
| PLUGS | | |
| RECEPTACLES | | |

⁸⁾ View from front of connectors. For further details see part numbering.

PLUGS & RECEPTACLES

Example:

| Connector Design | | | | Contact Block | | | Housing | | Standard options | | | |
|------------------|---|---|----|---------------|-----|---|---------|---|------------------|---|---|---|
| UP81 | | Q | 08 | M | 105 | C | BB | Y | Z | 2 | Z | A |
| UR81 | W | | 08 | F | 007 | P | BB | Y | S | 2 | N | A |

Body style

UltiMate Plug = UP

- UP81 = Cable mounted

UltiMate Receptacle = UR

- UR80 = Cable mounted
- UR81 = Panel rear mounted

Sealing level

Panel mounted:

- W (IP68) = Water sealing

Cable mounted receptacle:

- Z = Not applicable

Cable mounted plug:

- Nothing

Locking system

Cable mounted plug:

- Q = Quick release

Cable mounted receptacle:

- Quick release = Nothing

Panel mounted:

- Quick release = Nothing

Connector size

- 08 = Size 08

Housing Material

- A = ALUMINUM

Grounding

Panel mounted:

- N = None (UR81)

Cable mounted:

- Z = Not applicable (UP81, UR80)

Insulator Material

- 2 = PEEK

O-ring material

Receptacle:

O-rings at plug and panel interfaces

- S = FVMQ (Fluorosilicone)

Plug:

- Z = Not applicable

Keying code

- Code Y

Standard keying = Code Y (95° / 230°)

Housing color

- BB = Black

Contact Type

- S = Solder

- P = PCB

- C = Crimp

Layout references

- Size 08:

Plug:

105, 106

Receptacle

006, 007

Polarity of contacts

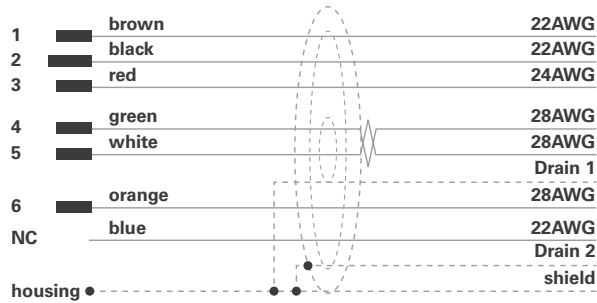
- M = Male contacts

- F = Female contacts

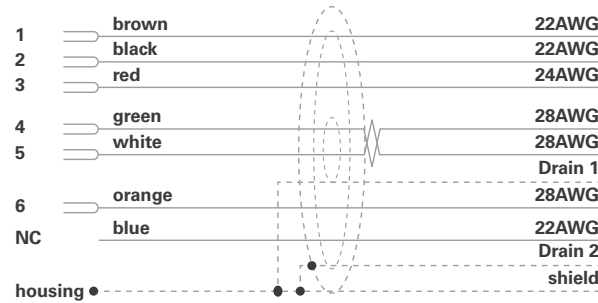
CABLE SPECIFICATION FOR PRE-CABLED 6 CONTACTS

- PUR halogen free, flame retardant outer sheath, nominal thickness 0.55 mm, TAN (RAL 7002 matt) / BLACK (RAL 9005 matt)
- Working voltage: 300 V
- Weight: 52 kg/km
- Breaking strength: 800 N (Vectran central strength member)
- Minimum bending radius: 27 mm static / 60 mm dynamic
- Working temperature: -40 °C to +90 °C
- Overall diameter: nominal 5.40 mm +/-0.20 mm

Pre-cabled plug 6 contacts (UP81)



Pre-cabled receptacle 6 contacts (UR80)



AWG22

Tinned copper conductor 19x0.16 mm / FEP insulation, nominal diameter 1.20 mm, color blue, brown, black

AWG24

Tinned copper conductor 19x0.13 mm / FEP insulation, nominal diameter 0.86 mm, color red

AWG28

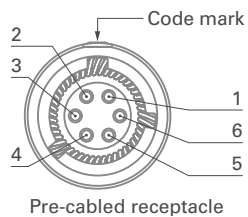
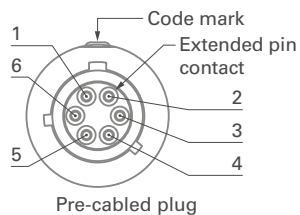
Tinned copper conductor 7x0.13 mm / FEP insulation, nominal diameter 0.90 mm, color white, green / Cores twisted in a pair 90 ohm / Screen of aluminium/polyester tape, tinned copper drain wire 7x0.13 mm, polyester tape

Shield

Overall screen of aluminium/polyester tape, tinned copper drain wire 7x0.13 mm / Overall tinned copper shield, nominal coverage >= 90%

WIRING DIAGRAM FOR STANDARD PRE-CABLED 6 CONTACTS

View from front



| WIRE | PRE-CABLED PLUG SOLUTION |
|--------------|---|
| | 1 m, open end Pin number |
| AWG22 brown | 1 |
| AWG22 black | 2 Extended pin |
| AWG24 red | 3 |
| AWG28 green | 4 |
| AWG28 white | 5 |
| AWG28 orange | 6 |
| AWG22 blue | Not connected |
| Part number | 140599 CA S 06 UP81Q08BBYA/OE PUR TN 1.0M |
| | 140608 CA S 06 UP81Q08BBYA/OE PUR BK 1.0M |

| WIRE | PRE-CABLED RECEPTACLE SOLUTION |
|--------------|---|
| | 1 m, open end Pin number |
| AWG22 brown | 1 |
| AWG22 black | 2 |
| AWG24 red | 3 |
| AWG28 green | 4 |
| AWG28 white | 5 |
| AWG28 orange | 6 |
| AWG22 blue | Not connected |
| Part number | 140601 CA S 06 UR80Z08BBYA/OE PUR TN 1.0M |
| | 140610 CA S 06 UR80Z08BBYA/OE PUR BK 1.0M |

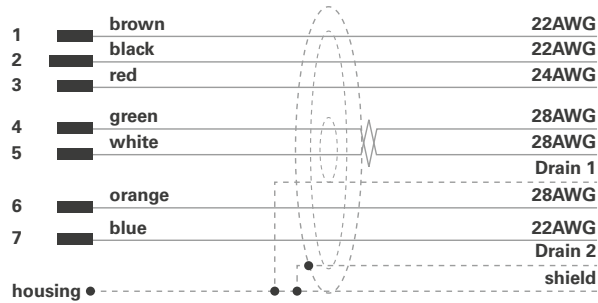
REMARK: Pin No. can be assigned according to NATO AEP-4851 & NATO AEP-4695.

All dimensions and images shown are in millimeters and are for reference only.

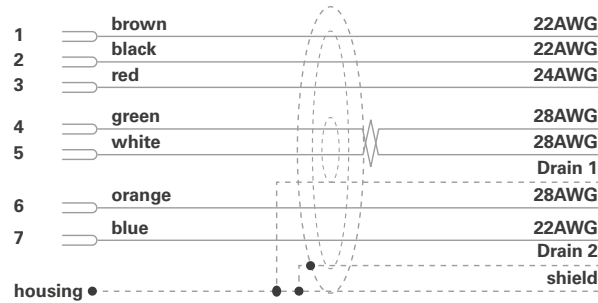
CABLE SPECIFICATION FOR PRE-CABLED 7 CONTACTS

- PUR halogen free, flame retardant outer sheath, nominal thickness 0.55 mm, TAN (RAL 7002 matt) / BLACK (RAL 9005 matt)
- Working voltage: 300 V
- Weight: 52 kg/km
- Breaking strength: 800 N (Vectran central strength member)
- Minimum bending radius: 27 mm static / 60 mm dynamic
- Working temperature: -40 °C to +90 °C
- Overall diameter: nominal 5.40 mm +/-0.20 mm

Pre-cabled plug 6 contacts (UP81)



Pre-cabled receptacle 6 contacts (UR80)



AWG22

Tinned copper conductor 19x0.16 mm / FEP insulation, nominal diameter 1.20 mm, color blue, brown, black

AWG24

Tinned copper conductor 19x0.13 mm / FEP insulation, nominal diameter 0.86 mm, color red

AWG28

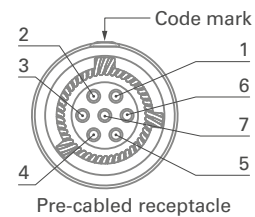
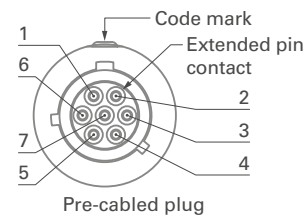
Tinned copper conductor 7x0.13 mm / FEP insulation, nominal diameter 0.90 mm, color white, green / Cores twisted in a pair 90 ohm / Screen of aluminium/polyester tape, tinned copper drain wire 7x0.13 mm, polyester tape

Shield

Overall screen of aluminium/polyester tape, tinned copper drain wire 7x0.13 mm / Overall tinned copper shield, nominal coverage >= 90%

WIRING DIAGRAM FOR STANDARD PRE-CABLED 7 CONTACTS

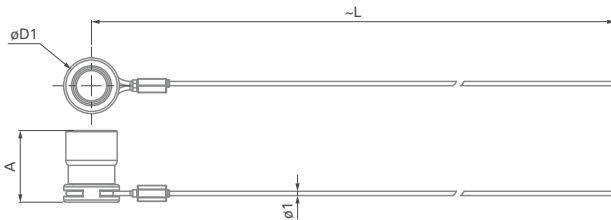
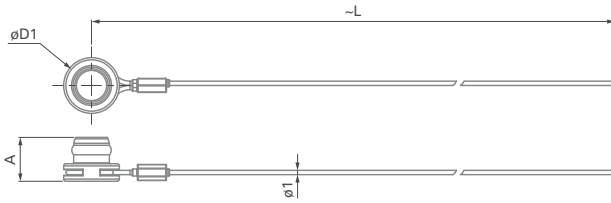
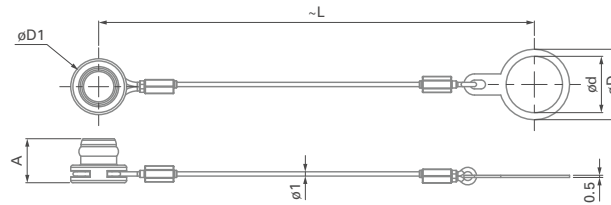
View from front



| WIRE | PRE-CABLED PLUG SOLUTION | |
|--------------|---|--|
| | 1 m, open end | |
| | Pin number | |
| AWG22 brown | 1 | |
| AWG22 black | 2 Extended pin | |
| AWG24 red | 3 | |
| AWG28 green | 4 | |
| AWG28 white | 5 | |
| AWG28 orange | 6 | |
| AWG22 blue | 7 | |
| Part number | 140600 CA S 07 UP81Q08BBYA/OE PUR TN 1.0M | |
| | 140609 CA S 07 UP81Q08BBYA/OE PUR BK 1.0M | |

| WIRE | PRE-CABLED RECEPTACLE SOLUTION | |
|--------------|---|--|
| | 1 m, open end | |
| | Pin number | |
| AWG22 brown | 1 | |
| AWG22 black | 2 | |
| AWG24 red | 3 | |
| AWG28 green | 4 | |
| AWG28 white | 5 | |
| AWG28 orange | 6 | |
| AWG22 blue | 7 | |
| Part number | 140602 CA S 07 UR80Z08BBYA/OE PUR TN 1.0M | |
| | 140611 CA S 07 UR80Z08BBYA/OE PUR BK 1.0M | |

SOFT CAPS - LANYARD WITH STAINLESS STEEL CABLE



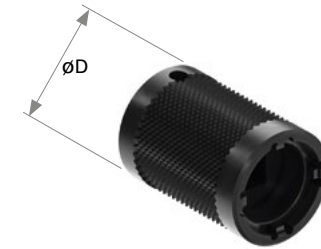
| Size | Plug | Receptacle | | A | øD1 | L | ød | øD | Part number |
|------|------|------------|--------------------|------|------|-----|------|----|--------------------|
| | | UP81 | UR80 ¹⁾ | | | | | | |
| 08 | | ● | | 10.0 | 12.7 | 200 | - | - | UCR80C 1B2 A200 |
| | | | ● | 10.0 | 12.7 | 95 | 12.8 | 16 | UCR80P 1B2 A095 |
| | ● | | | 16.9 | 12.7 | 200 | - | - | UCP80C 1B2 A200 AA |

¹⁾ Crimp ferrule and heat shrink tube are included.

All dimensions and images shown are in millimeters and are for reference only.

NUT DRIVER (FOR UR81)

NUT DRIVER WITH SQUARE SOCKET*



* For use with torque wrenches 1/4" (6.4 mm).

| Part number | Nut thread size | Nut outer dia. | øD |
|-------------|-----------------|----------------|----|
| TX00.401 | 1/2-32 UN | 16 | 20 |

Material – PA

ENVIRONMENTAL & MECHANICAL DATA

| Characteristic | Performance | Standard |
|--|---|--------------------------------------|
| Sealing performance mated and unmated | IP68 2m/24h | IEC 60529; MIL-STD-810 Method 512.6 |
| Operating temperature range | -55 °C to +135 °C | MIL-STD-810 Method 501.6 and 502.6 |
| Corrosion resistance | Salt mist, 500 hours ^{1) 2)} , 5% salt solution, 35 °C ; | MIL-STD-810 Method 509.6 |
| Endurance | 10.000 mating cycles (plug), 5.000 mating cycles (receptacle) ³⁾ | IEC 60512-9-1 |
| Vibration, random | 7.7 Grms | MIL-STD-810 Method 514.7 |
| Unmating force | Typical 55 ± 15 N | IEC 60512-13-1 |
| Shock | 100g half sine pulse amplitude 6 ms duration, no discontinuity > 1 µs | MIL-STD-810 Method 516.7 Condition I |

¹⁾ Corrosion resistance dependent on body style. 400h for UR81 (panel rear mounted receptacle).

²⁾ Cosmetic changes may appear over time without impacting mechanical or electrical functions.

³⁾ Preserved mechanical and electrical functionality. Normal wear could appear.

ELECTRICAL DATA

| Characteristic | Performance | Standard |
|---|---|--|
| Contact resistance (typical value) | < 10 mΩ (typical value) | MIL-STD-202 Method 307 |
| Shell resistance (typical value) | < 10 mΩ (cabled; new condition) | MIL-STD-202 Method 307 |
| Insulation resistance | > 10 ¹⁰ Ω | MIL-STD-883 Method 1003 MIL-STD-202 Method 302 |
| Shielding effectiveness | 360° shielded. The equipment under test, with two different Fischer Connectors systems that use both UltiMate 80 plug and receptacle, is compliant according to limits of MIL-Standard. | MIL-STD-461G (CE101, CE102, CS101, RE101, RE102, RS101, RS102) |

MATERIAL & SURFACE FINISH

| Components | Material | | Finish | |
|----------------------------------|--|-----------------------|---------------------------------|---|
| | Designation ISO | Standard | Designation | Standard |
| Housing, nut | Aluminum AlMg1SiCu | EN-AW-6061 | Black Nickel | SAE-AMS-QQ-N-290 SAE-AMS 2404 |
| Locking spring (receptacles) | Stainless steel X5CrNiMo18-10 | 316/1.4401 | 0.64 µm Gold over Copper | - |
| Crimping ring (cable connectors) | Brass CuZn39Pb3 | CW614N UNS C 38500 | - | - |
| Contacts | - Male or Female (Crimp) - Female (Solder or PCB) | CuNi1Pb1P | UNS C 19160 ASTM C 19160 | 1 µm Gold over Nickel MIL-DTL-45204D Type I ; ASTM B488 |

| Insulator and sealing | | International symbol | Flammability |
|-----------------------|--------------------|-----------------------------|--------------|
| Insulator | - Molded | PEEK ¹⁾ | UL 94 V-0 |
| Sealant materials | - Cable connectors | Bi-component Epoxy compound | - |
| | - Panel connectors | Silicone compound | UL 94 V-0 |

| O-rings & seals | International symbol | Chemical name |
|-------------------------|----------------------|-----------------------|
| O-rings | FVMQ | Fluorosilicone rubber |
| Interfacial seal (plug) | FVMQ | Fluorosilicone rubber |

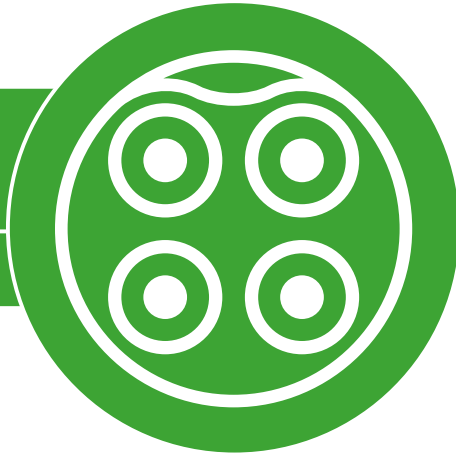
| Pre-cabled solutions | Material | Flammability |
|----------------------|----------------------------|--------------|
| Overmolding | TPU (Estane [®]) | UL94 V-0 |
| Cable jacket | PUR | UL94 V-2 |

| Soft caps | Material | Flammability |
|------------------|---|--------------|
| Cap | TPV (Santoprene™) | UL 94 HB |
| Cable | FEP coated stainless steel | - |
| Fixing lug | Black Chrome plated brass (ISO CuZn37) | - |
| Crimp ferrule | Aluminum | - |
| Heat shrink tube | Polyolefin | - |

¹⁾ Or any material in the PAEK family that provides equal or better overall performances.

I

CHAPTER



FISCHER FIBEROPTIC SERIES

ROBUST | OPTICAL PERFORMANCE | EASY CLEANING

KEY FEATURES

- Faultless optical performance
- Indoor, outdoor and extreme applications
- Up to IP67 (unmated) / IP68 (mated)
- Easy field cleaning



FIBEROPTIC

FIBEROPTIC



PLUGS



CABLE MOUNTED

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RECEPTACLES



CABLE MOUNTED

- Body styles (R50)..... I-8
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PANEL REAR MOUNTED

- Body styles (R01) I-12
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PANEL FRONT MOUNTED

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FOR ALL FIBEROPTIC

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This catalog covers our standard connector solutions. For specific requests, including hybrid or custom connectors, please contact your local sales representative.

PLUGS & RECEPTACLES

| Wire set | P01 | R01 | R03 | R13 | R50 |
|----------|-----|-----|-----|-----|-----|
| FO1 | | ● | ● | ● | |
| FO2 | | ● | ● | ● | |
| FO4 | | ● | ● | ● | |
| FOH | | ● | ● | ● | |

| Cable Clamp set | P01 | R01 | R03 | R13 | R50 |
|-----------------|-----|-----|-----|-----|-----|
| FO1 | ● | ● | ● | - | ● |
| FO2 | ● | ● | ● | ● | ● |
| FO4 | ● | ● | ● | ● | ● |
| FOH | | | | | |

| Potting set | P01 | R01 | R03 | R13 | R50 |
|-------------|-----|-----|-----|-----|-----|
| FO1 | ● | ● | ● | - | ● |
| FO2 | ● | ● | ● | ● | ● |
| FO4 | ● | ● | ● | ● | ● |
| FOH | ● | ● | ● | ● | ● |

FIBEROPTIC

PLUGS

CABLE MOUNTED



FIBEROPTIC

| Body style | | P01 | References to detailed information |
|--------------------------------|--|-----|--|
| Protection | Unsealed (IP50) | | Sealing categories, page A-6 |
| | Sealed up to IP68 | ● | |
| Locking system | Friction | | Locking systems, page A-5 |
| | Push-pull | ● | |
| | Quick-release | | |
| | Lanyard | | |
| | Tamperproof | | |
| Termination | Fiber optic termini | ● | Fiber type and pin layout, page I-30 |
| | Electrical solder contacts ¹⁾ | ● | |
| Housing color | Natural chrome | ● | Technical information, page I-29 |
| Design | Shortened body | | |
| | Straight | ● | |
| | Right-angle | | |
| Rear Accessories ²⁾ | Wire sets | | Rear Accessories, pages I-5 to I-7 |
| | Cable clamp set | ● | |
| | Potting set | ● | |
| Accessories | Cable bend reliefs | | Accessories, page I-25 |
| | Protective sleeves | | |
| | Soft caps | ● | |
| Size | FO1 | ● | Technical dimensions, pages I-5 to I-7 For more information visit our website www.fischerconnectors.com/technical |
| | FO2/FO4 | ● | |
| | FOH | ● | |

¹⁾ FOH only.

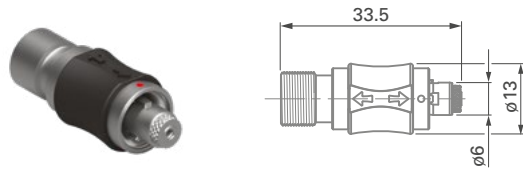
²⁾ Please refer to configurations matrix on page I-3.

PLUGS - FO1

CABLE MOUNTED

P01

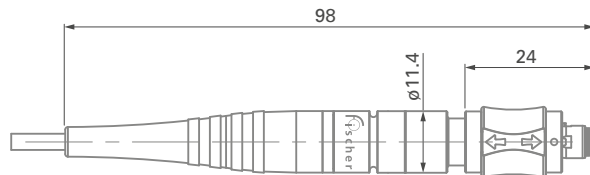
BODY STYLE



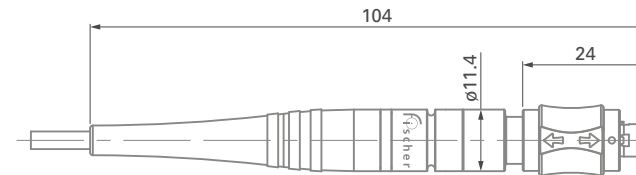
| Part number | Description |
|--|--------------------------------|
| FO1 P01LGR1 00A00 A 000 | FO1 - P01 Plug |
| FO1 P01 CABLE CLAMP SET L36 D3.5 ¹⁾ | FO1 - P01 Plug cable clamp set |
| FO1 P01 POTTING SET L41 D3.5 ¹⁾ | FO1 - P01 Plug potting set |

REAR ACCESSORIES

CABLE CLAMP SET



POTTING SET



¹⁾ The last number indicates the max compatible cable diameter in mm.
 Note: indicated connector P/N = delivered without contact, termini and rear accessory

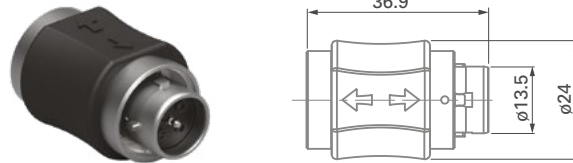
All dimensions and images shown are in millimeters and are for reference only.

PLUGS - FO2/FO4

CABLE MOUNTED

P01

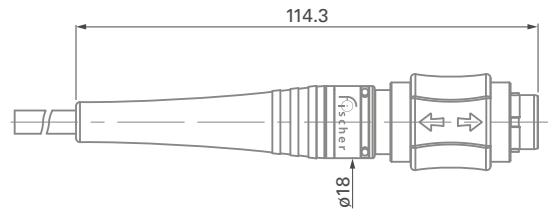
BODY STYLE



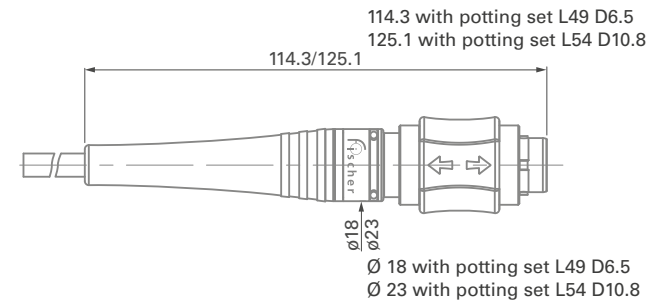
| Part number | Description |
|--|------------------------------------|
| FO2 P01LGR1 00A00 A 000 | FO2 - P01 Plug |
| FO4 P01LGR1 00A00 A 000 | FO4 - P01 Plug |
| FO2-4 P01 CABLE CLAMP SET L49 D6 ¹⁾ | FO2/FO4 - P01 Plug cable clamp set |
| FO2-4 P01 POTTING SET L49 D6.5 ¹⁾ | FO2/FO4 - P01 Plug potting set |
| FO2-4 P01 POTTING SET L54 D10.8 ¹⁾ | FO2/FO4 - P01 Plug potting set |

REAR ACCESSORIES

CABLE CLAMP SET



POTTING SET



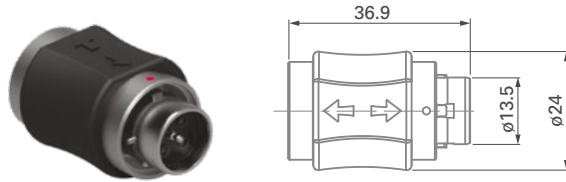
¹⁾The last number indicates the max compatible cable diameter in mm.
 Note: indicated connector P/N = delivered without contacts, termini and rear accessory

PLUGS - FOH

CABLE MOUNTED

P01

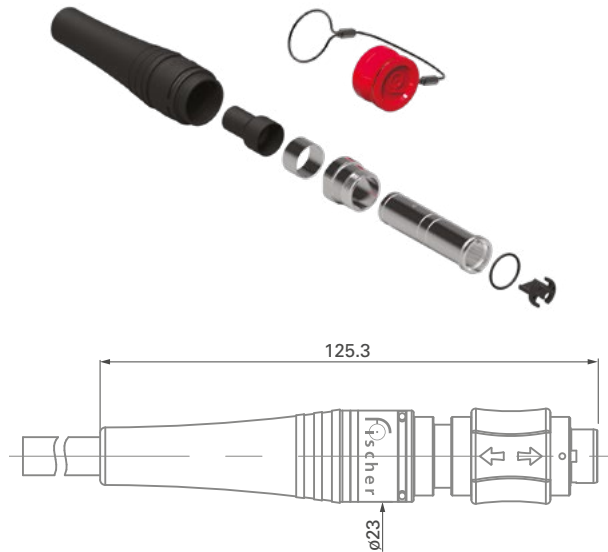
BODY STYLE



| Part number | Description |
|---|----------------------------|
| FOH P01LGR1 00A00 A 000 | FOH - P01 Plug |
| FOH P01 POTTING SET L54 D10.8 ¹⁾ | FOH - P01 Plug potting set |

REAR ACCESSORIES

POTTING SET



¹⁾ The last number indicates the max compatible cable diameter in mm.
 Note: indicated connector P/N = delivered without contacts, termini and rear accessory

All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

CABLE MOUNTED



| Body style | | R50 | References to detailed information |
|--------------------------------|--|-----|--|
| Protection | Unsealed (IP50) | | Sealing categories, page A-6 |
| | Sealed up to IP68 | ● | |
| Locking system | Friction | | Locking systems, page A-5 |
| | Push-pull | ● | |
| | Quick-release | | |
| | Lanyard | | |
| | Tamperproof | | |
| Termination | Fiber optic termini | ● | Fiber type and pin layout, page I-30 |
| | Electrical solder contacts ¹⁾ | ● | |
| Housing color | Natural chrome | ● | Technical information, page I-29 |
| Design | Shortened body | | |
| | Straight | ● | |
| | Right-angle | | |
| Rear Accessories ¹⁾ | Wire sets | | Rear accessories, pages I-9 to I-11 |
| | Cable clamp set | ● | |
| | Potting set | ● | |
| Accessories | Cable bend reliefs | | Accessories, page I-25 |
| | Protective sleeves | | |
| | Soft caps | ● | |
| Size | FO1 | ● | Technical dimensions, page I-9 to I-11 For more information visit our website www.fischerconnectors.com/technical |
| | FO2/FO4 | ● | |
| | FOH | ● | |

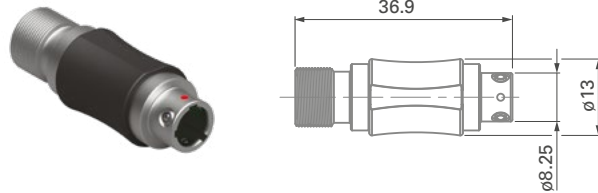
¹⁾ Please refer to configurations matrix on page I-3.

RECEPTACLES - FO1

CABLE MOUNTED

R50

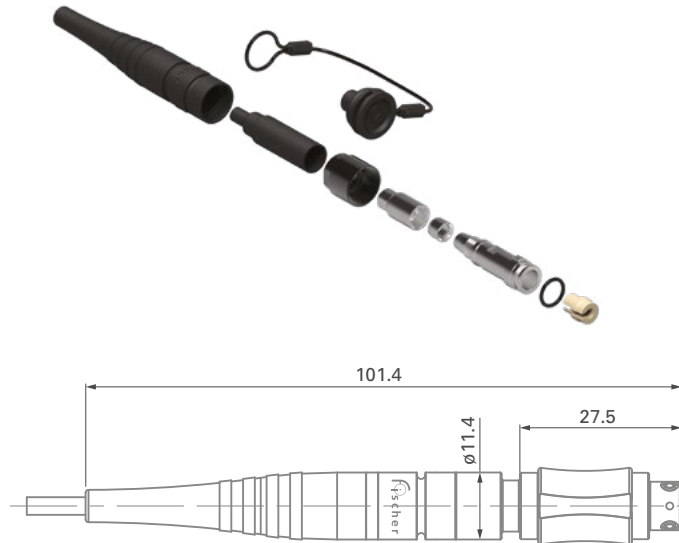
BODY STYLE



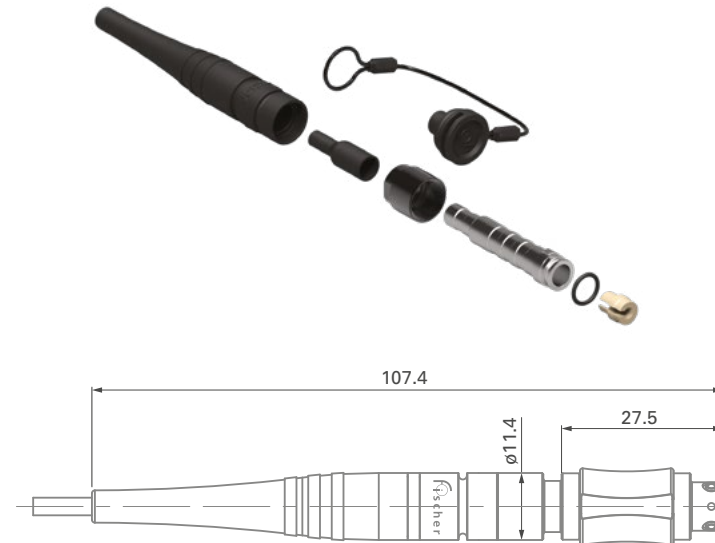
| Part number | Description |
|--|--------------------------------------|
| FO1 R50LGR1 00A00 A 000 | FO1 - R50 Receptacle |
| FO1 R50 CABLE CLAMP SET L36 D3.5 ¹⁾ | FO1 - R50 Receptacle cable clamp set |
| FO1 R50 POTTING SET L41 D3.5 ¹⁾ | FO1 - R50 Receptacle potting set |

REAR ACCESSORIES

CABLE CLAMP SET



POTTING SET



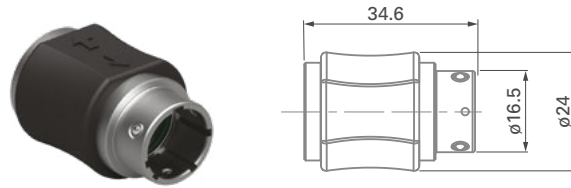
¹⁾ The last number indicates the max compatible cable diameter in mm.
 Note: indicated connector P/N = delivered without contact, termini and rear accessory

RECEPTACLES - FO2/FO4

CABLE MOUNTED

R50

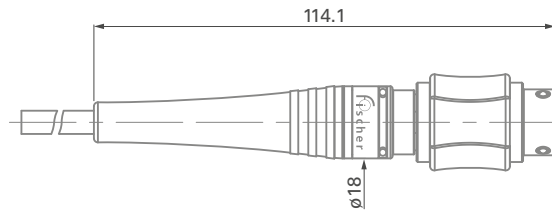
BODY STYLE



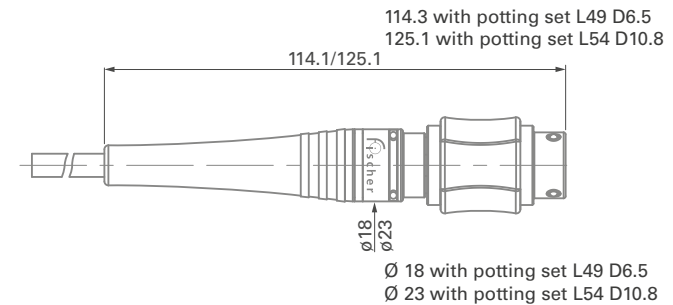
| Part number | Description |
|--|--|
| FO2 R50LGR1 00A00 A 000 | FO2 - R50 Receptacle |
| FO4 R50LGR1 00A00 A 000 | FO4 - R50 Receptacle |
| FO2-4 R50 CABLE CLAMP SET L49 D6 ¹⁾ | FO2/FO4 - R50 Receptacle cable clamp set |
| FO2-4 R50 POTTING SET L49 D6.5 ¹⁾ | FO2/FO4 - R50 Receptacle potting set |
| FO2-4 R50 POTTING SET L54 D10.8 ¹⁾ | FO2/FO4 - R50 Receptacle potting set |

REAR ACCESSORIES

CABLE CLAMP SET



POTTING SET



¹⁾ The last number indicates the max compatible cable diameter in mm.

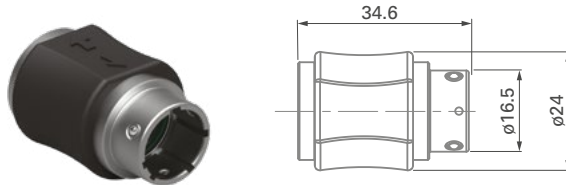
Note: indicated connector P/N = delivered without contacts, termini and rear accessory

RECEPTACLES - FOH

CABLE MOUNTED

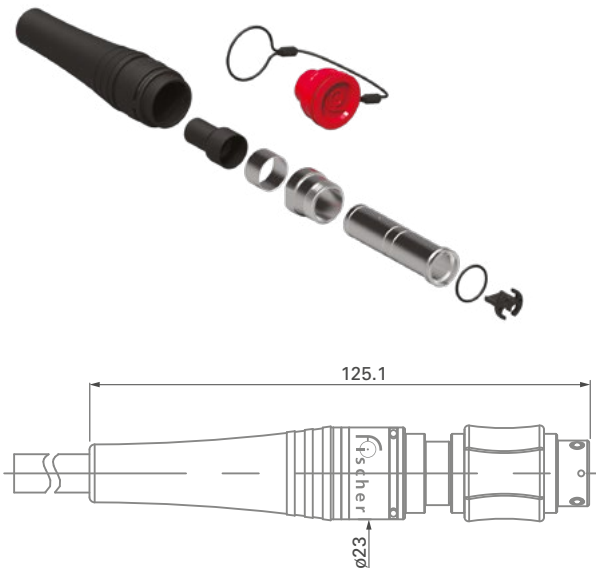
R50

BODY STYLE



| Part number | Description |
|---|----------------------------------|
| FOH R50LGR1 00A00 A 000 | FOH - R50 Receptacle |
| FOH R50 POTTING SET L54 D10.8 ¹⁾ | FOH - R50 Receptacle potting set |

POTTING SET



¹⁾ The last number indicates the max compatible cable diameter in mm.
 Note: indicated connector P/N = delivered without contact, termini and rear accessory

All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

PANEL MOUNTED



FIBEROPTIC

| Body style | | R01 | R03 | R13 | References to detailed information |
|--------------------------------|--|-----|-----|-----|---|
| Protection | Unsealed (IP50) | | | | Sealing categories, page A-6 |
| | Sealed up to IP68 | ● | ● | ● | |
| Locking system | Friction | | | | Locking systems, page A-5 |
| | Push-pull | ● | ● | ● | |
| | Quick-release | | | | |
| | Lanyard | | | | |
| | Tamperproof | | | | |
| Termination | Fiber optic termini | ● | ● | ● | Fiber type and pin layout, page I-30 |
| | Electrical solder contacts ¹⁾ | ● | ● | ● | |
| Housing color | Natural chrome | ● | ● | ● | Technical information, page I-29 |
| Design | Shortened body | | | | |
| | Straight | ● | ● | ● | |
| | Right-angle | | | | |
| Rear Accessories ¹⁾ | Wire sets | ● | ● | ● | Pages I-13 to I-21 |
| | Cable clamp set | ● | ● | ● | |
| | Potting set | ● | ● | ● | |
| Accessories | Cable bend reliefs | | | | Accessories, section I-25 |
| | Protective sleeves | | | | |
| | Soft caps | ● | ● | ● | |
| Size | FO1 | ● | ● | ● | Technical dimensions, page I-13 to I-21 For more information visit our website www.fischerconnectors.com/technical |
| | FO2/FO4 | ● | ● | ● | |
| | FOH | ● | ● | ● | |

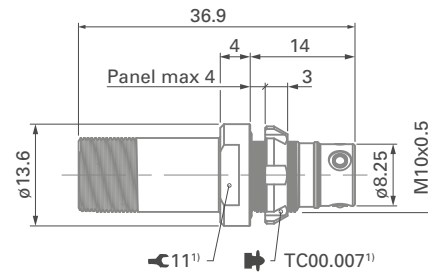
¹⁾ Please refer to configurations matrix on page I-3.

RECEPTACLES - FO1

PANEL REAR MOUNTED

R01

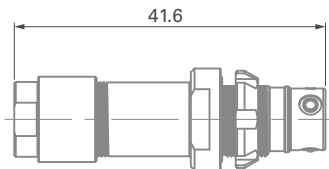
BODY STYLE



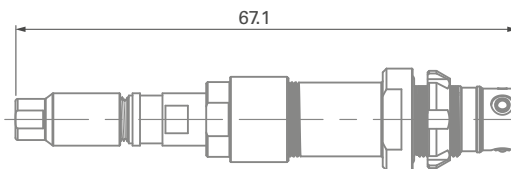
| Part number | Description |
|--|--------------------------------------|
| FO1 R01LGR1 00A00 A 000 | FO1 - R01 Receptacle |
| FO1 R01 WIRE SET L18 D3.5 | FO1 - R01 Receptacle wire set |
| FO1 R01 CABLE CLAMP SET L36 D3.5 ²⁾ | FO1 - R01 Receptacle cable clamp set |
| FO1 R01 POTTING SET L41 D3.5 ²⁾ | FO1 - R01 Receptacle potting set |

REAR ACCESSORIES

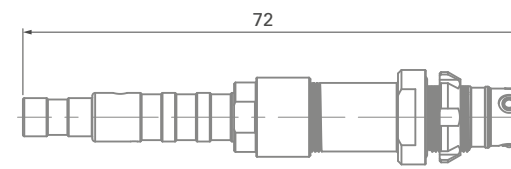
WIRE SET



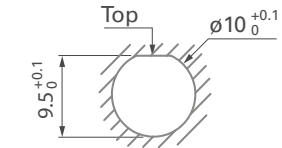
CABLE CLAMP SET



POTTING SET



PANEL CUT-OUT



¹⁾ Torque 5.0 Nm. Torque (Nm) are recommended values that may be influenced by the quality of the panel surface. Tests have to be made to evaluate the exact values.

²⁾ The last number indicates the max compatible cable diameter in mm.

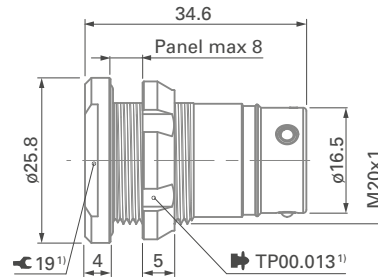
Note: indicated connector P/N = delivered without contact, termini and rear accessory

All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES - FO2/FO4

PANEL REAR MOUNTED

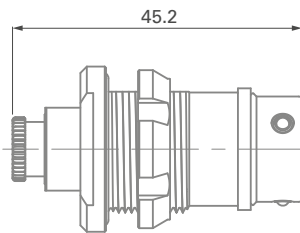
R01
BODY STYLE



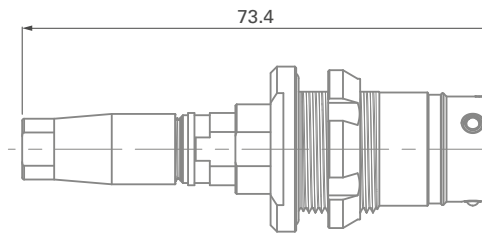
| Part number | Description |
|--|--|
| FO2 R01LGR1 00A00 A 000 | FO2/FO4 - R01 Receptacle |
| FO4 R01LGR1 00A00 A 000 | FO2/FO4 - R01 Receptacle |
| FO2 R01 WIRE SET L20 D6.5 | FO2 - R01 Receptacle wire set |
| FO4 R01 WIRE SET L20 D6.5 | FO4 - R01 Receptacle wire set |
| FO2-4 R01 CABLE CLAMP SET L49 D6.5 ²⁾ | FO2/FO4 - R01 Receptacle cable clamp set |
| FO2-4 R01 POTTING SET L49 D6.5 ²⁾ | FO2/FO4 - R01 Receptacle potting set |
| FO2-4 R01 POTTING SET L54 D10.8 ²⁾ | FO2/FO4 - R01 Receptacle potting set |

REAR ACCESSORIES

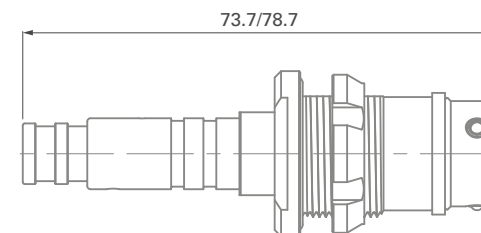
WIRE SET



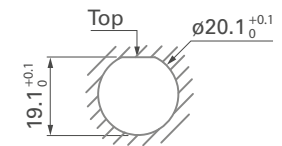
CABLE CLAMP SET



POTTING SET



PANEL CUT-OUT



73.7 with potting set L49 D6.5
78.7 with potting set L54 D10.8

¹⁾ Torque 6.5 Nm. Torque (Nm) are recommended values that may be influenced by the quality of the panel surface. Tests have to be made to evaluate the exact values.

²⁾ The last number indicates the max compatible cable diameter in mm.

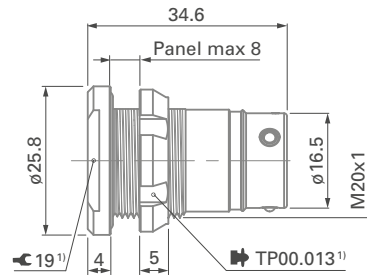
Note: indicated connector P/N = delivered without contacts, termini and rear accessory

RECEPTACLES - FOH

PANEL REAR MOUNTED

R01

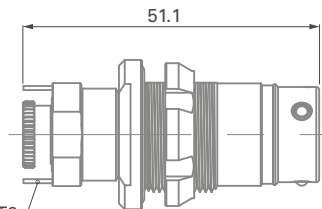
BODY STYLE



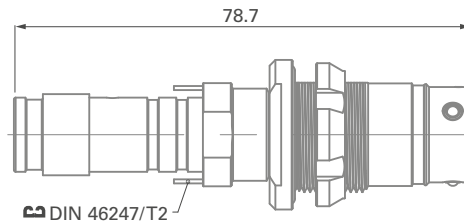
| Part number | Description |
|---|----------------------------------|
| FOH R01LGR1 00A00 A 000 | FOH - R01 Receptacle |
| FOH R01 WIRE SET L26 D8 | FOH - R01 Receptacle wire set |
| FOH R01 POTTING SET L54 D10.8 ²⁾ | FOH - R01 Receptacle potting set |

REAR ACCESSORIES

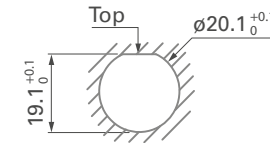
WIRE SET



POTTING SET



PANEL CUT-OUT



¹⁾ Torque 6.5 Nm. Torque (Nm) are recommended values that may be influenced by the quality of the panel surface. Tests have to be made to evaluate the exact values.

²⁾ The last number indicates the max compatible cable diameter in mm.

Note: indicated connector P/N = delivered without contacts, termini and rear accessory

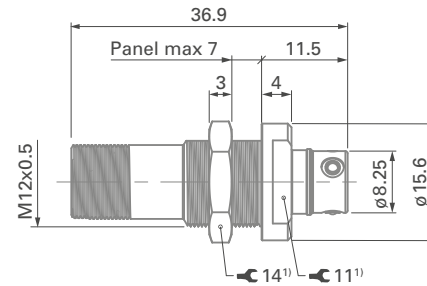
All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES - FO1

PANEL FRONT MOUNTED

R03

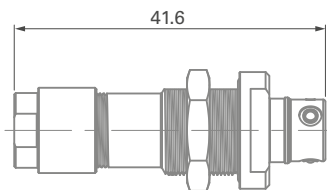
BODY STYLE



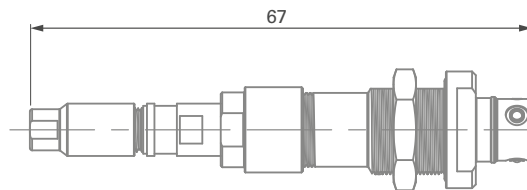
| Part number | Description |
|--|--------------------------------------|
| FO1 R03LGR1 00A00 A 000 | FO1 - R03 Receptacle |
| FO1 R03 WIRE SET L18 D3.5 | FO1 - R03 Receptacle wire set |
| FO1 R03 CABLE CLAMP SET L36 D3.5 ²⁾ | FO1 - R03 Receptacle cable clamp set |
| FO1 R03 POTTING SET L41 D3.5 ²⁾ | FO1 - R03 Receptacle potting set |

REAR ACCESSORIES

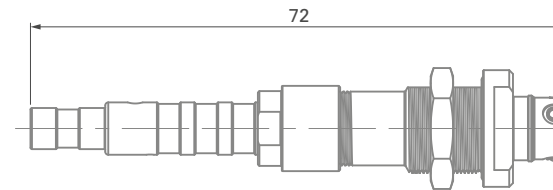
WIRE SET



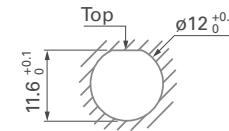
CABLE CLAMP SET



POTTING SET



PANEL CUT-OUT



¹⁾Torque 5.0 Nm. Torque (Nm) are recommended values that may be influenced by the quality of the panel surface. Tests have to be made to evaluate the exact values.

²⁾The last number indicates the max compatible cable diameter in mm.

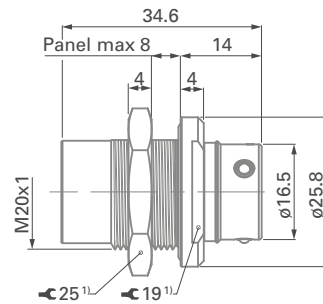
Note: indicated connector P/N = delivered without contact, termini and rear accessory

RECEPTACLES - FO2/FO4

PANEL FRONT MOUNTED

R03

BODY STYLE

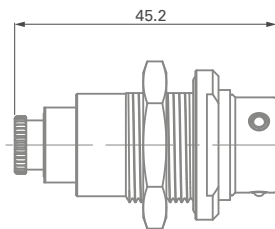


| Part number | Description |
|--|--|
| FO2 R03LGR1 00A00 A 000 | FO2 - R03 - R13 Receptacle |
| FO4 R03LGR1 00A00 A 000 | FO4 - R03 - R13 Receptacle |
| FO2 R03-R13 WIRE SET L20 D6.5 | FO2 - R03 - R13 Receptacle wire set |
| FO4 R03-R13 WIRE SET L20 D6.5 | FO4 - R03 - R13 Receptacle wire set |
| FO2-4 R03-R13 CABLE CLAMP SET L49 D6.5 ²⁾ | FO2/FO4 - R03 - R13 Receptacle cable clamp set |
| FO2-4 R03-R13 POTTING SET L49 D6.5 ²⁾ | FO2/FO4 - R03 - R13 Receptacle potting set |
| FO2-4 R03-R13 POTTING SET L54 D10.8 ²⁾ | FO2/FO4 - R03-R13 Receptacle potting set |

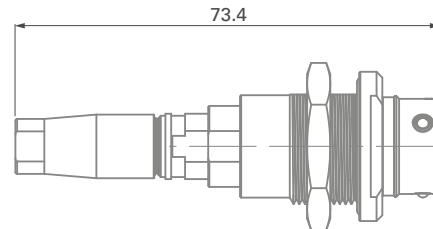
REAR ACCESSORIES

PANEL CUT-OUT

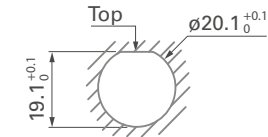
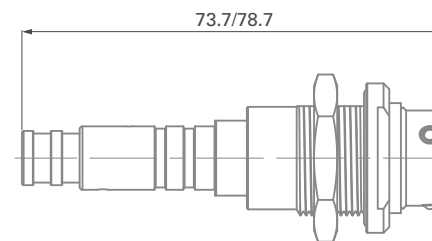
WIRE SET



CABLE CLAMP SET



POTTING SET



73.7 with potting set L49 D6.5
78.7 with potting set L54 D10.8

¹⁾ Torque 6.5 Nm. Torque (Nm) are recommended values that may be influenced by the quality of the panel surface. Tests have to be made to evaluate the exact values.

²⁾ The last number indicates the max compatible cable diameter in mm.

Note: indicated connector P/N = delivered without contacts, termini and rear accessory

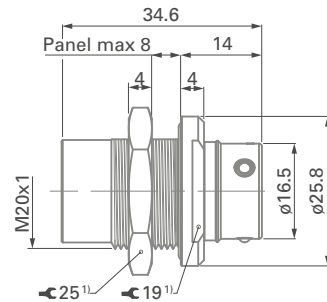
All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES - FOH

PANEL FRONT MOUNTED

R03

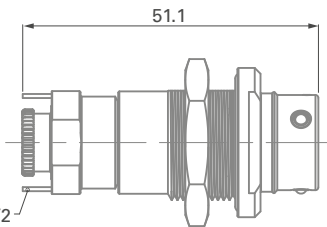
BODY STYLE



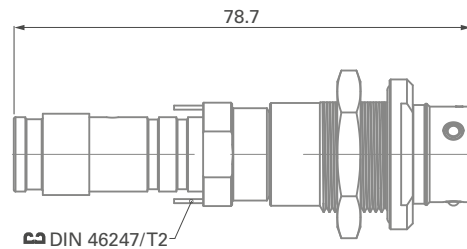
| Part number | Description |
|---|-----------------------------------|
| FOH R03LGR1 00A00 A 000 | FOH - R03 Receptacle |
| FOH R03-R13 WIRE SET L26 D8 | FOH - R03-R13 Receptacle wire set |
| FOH R03 POTTING SET L54 D10.8 ²⁾ | FOH - R03 Receptacle potting set |

REAR ACCESSORIES

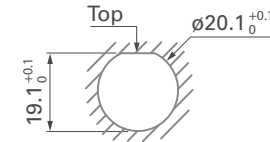
WIRE SET



POTTING SET



PANEL CUT-OUT



¹⁾ Torque 6.5 Nm. Torque (Nm) are recommended values that may be influenced by the quality of the panel surface. Tests have to be made to evaluate the exact values.

²⁾ The last number indicates the max compatible cable diameter in mm.

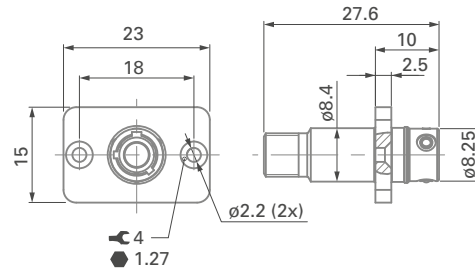
Note: indicated connector P/N = delivered without contacts, termini and rear accessory

RECEPTACLES - FO1

PANEL FRONT MOUNTED

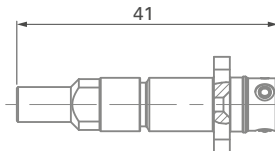
R13 - SQUARE FLANGE¹⁾

BODY STYLE



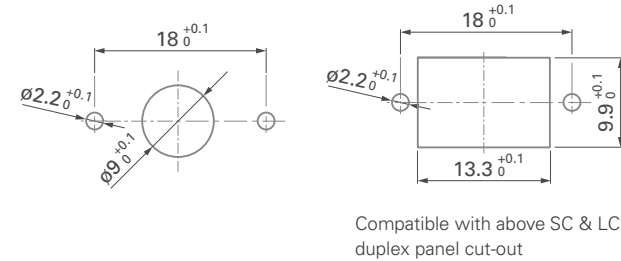
REAR ACCESSORY

WIRE SET



| Part number | Description |
|---------------------------|-------------------------------|
| FO1 R13LGR1 00A00 A 000 | FO1 - R13 Receptacle |
| FO1 R13 WIRE SET L20 D3.5 | FO1 - R13 Receptacle wire set |

PANEL CUT-OUT



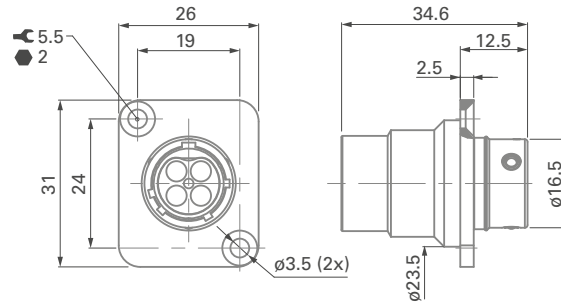
¹⁾ Due to panel mounting with screws, sealing can't be guaranteed at panel level.
Note: indicated connector P/N = delivered without contact, termini and rear accessory

RECEPTACLES - FO2/FO4

PANEL FRONT MOUNTED

R13 - SQUARE FLANGE¹⁾

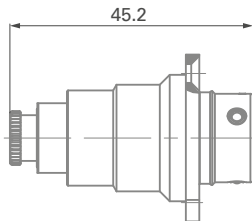
BODY STYLE



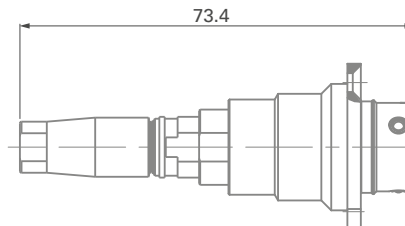
| Part number | Description |
|--|--|
| FO2 R13LGR1 00A00 A 000 | FO2 - R13 Receptacle |
| FO4 R13LGR1 00A00 A 000 | FO4 - R13 Receptacle |
| FO2 R03-R13 WIRE SET L20 D6.5 | FO2 - R03-R13 Receptacle wire set |
| FO4 R03-R13 WIRE SET L20 D6.5 | FO4 - R03-R13 Receptacle wire set |
| FO2-4 R03-R13 CABLE CLAMP SET L49 D6 ²⁾ | FO2/FO4 - R03-R13 Receptacle cable clamp set |
| FO2-4 R03-R13 POTTING SET L54 D10.8 ²⁾ | FO2/FO4 - R03-R13 Receptacle potting set |

REAR ACCESSORIES

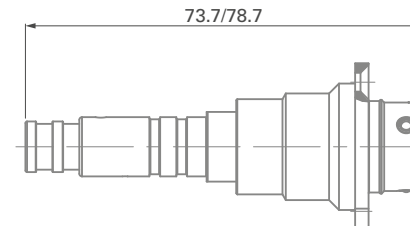
WIRE SET



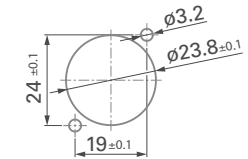
CABLE CLAMP SET



POTTING SET



PANEL CUT-OUT



73.7 with potting set L49 D6.5
78.7 with potting set L54 D10.8

¹⁾ Due to panel mounting with screws, sealing can't be guaranteed at panel level.

²⁾ The last number indicates the max compatible cable diameter in mm.

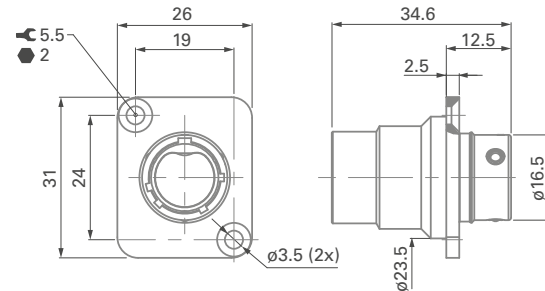
Note: indicated connector P/N = delivered without contacts, termini and rear accessory

RECEPTACLES - FOH

PANEL FRONT MOUNTED

R13 - SQUARE FLANGE¹⁾

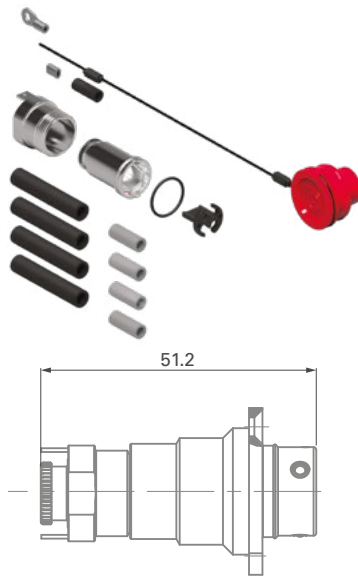
BODY STYLE



| Part number | Description |
|---|--------------------------------------|
| FOH R13LGR1 00A00 A 000 | FOH - R13 Receptacle |
| FOH R03-R13 WIRE SET L26 D8 | FOH - R03-R13 Receptacle wire set |
| FOH R03-R13 POTTING SET L54 D10.8 ²⁾ | FOH - R03-R13 Receptacle potting set |

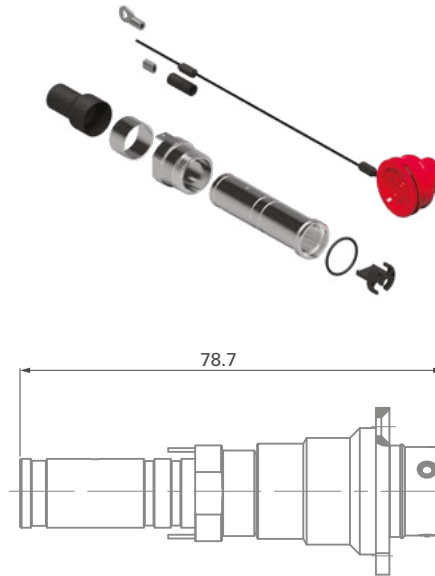
REAR ACCESSORIES

WIRE SET



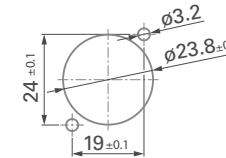
51.2

POTTING SET



78.7

PANEL CUT-OUT



¹⁾ Due to panel mounting with screws, sealing can't be guaranteed at panel level.

²⁾ The last number indicates the max compatible cable diameter in mm.

Note: indicated connector P/N = delivered without contacts, termini and rear accessory

OPTICAL TERMINI AND ELECTRICAL CONTACTS

FIBEROPTIC



| Designation | Part Number |
|---------------------|-------------------|
| Singlemode terminus | FO TERMINI SMA PC |



| | |
|--------------------|-------------------|
| Multimode terminus | FO TERMINI MMA PC |
|--------------------|-------------------|



| | |
|-------------------------------|----------------------------------|
| Electrical contact (FOH Only) | FO Termini EL M ϕ 1.25 SR A |
|-------------------------------|----------------------------------|

CONNECTORS

Example:

| FO Type | | Housing design | | | | Contacts | | | Rear accessory | Modification code |
|---------|---|----------------|---|----|---|----------|---|----|----------------|-------------------|
| FO | 4 | P01 | L | GR | 1 | 04 | S | 00 | W | 000 |

Series

- FO = FiberOptic Series

Number of channels (optic +Electric)

- 1 = Single channel
- 2 = Two channels
- 4 = Four channels
- H = Hybrid

Body style

Plugs

- P01 = Cable mounted

Receptacles

- R01 = Panel rear mounted, circular flange
- R03 = Panel front mounted, circular flange
- R13 = Panel front mounted, rectangular flange
- R50 = Cable mounted

Locking system

- L = Push-pull locking system

Housing color

- GR = Grey

Keying code

- 1 = Code 1

Modification code

- 000 = Default

Rear accessory

- A = Delivered without rear accessory
- W = Delivered with wire set accessory
- C = Delivered with cable clamp set accessory
- P = Delivered with potting set accessory

Number of electrical contacts (FOH only)

- 00 = Delivered without electrical contact
- 01 = Delivered with one electrical contact
- 02 = Delivered with two electrical contacts
- 03 = Delivered with three electrical contacts
- 04 = Delivered with four electrical contacts

Optical contact type

- A = Delivered without optical terminus
- S = Single-mode optical terminus
- M = Multi-mode optical terminus

Number of optical termini

- 00 = Delivered without optical terminus
- 01 = Delivered with one optical terminus
- 02 = Delivered with two optical termini
- 03 = Delivered with three optical termini
- 04 = Delivered with four optical termini

FIBEROPTIC

CABLED PRODUCTS

FIBEROPTIC

Example:

| Nbr. | | End A | | | Cable | | | | | End B | | | Options | | |
|------|---|-------|---|---|-------|------|---|-----|---|-------|---|---|---------|---|---|
| FO | 2 | P01 | P | 0 | S9 | 002. | 0 | 00. | 0 | P01 | P | 0 | A | A | A |

Series

- **FiberOptic** = FO
- **FiberOptic hybrid** = FOH

Fiber count

- **1** = Single channel
- **2** = Two channels
- **4** = Four channels
- **2-2** = Hybrid 2+2

A-End connector body style

Plugs

- **P01** = Cable mounted plug

Receptacles

- **R01** = Panel rear mounted, circular flange
- **R03** = Panel front mounted, circular flange
- **R13** = Panel front mounted, rectangular flange
- **R50** = Cable mounted

Other connectors ¹⁾

- **CNA** = Free-end
- **CLC** = LC
- **CSC** = SC
- **CFC** = FC
- **CST** = ST

Cable fixture

- **N** = None (not cable potting or clamping)
- **C** = Cable clamp
- **P** = Potting

Contact polishing

Single-mode

- **0°** = PC
- **8°** = APC

Multi-mode

- **0°** = PC

Fiber type

- **S9** = Single-mode 9/125
- **M5** = Multi-mode 50/125
- **M6** = Multi-mode 62.5/125

Total length L [meters]

Break-out length L_B [meters]

for breakout & sealed (if applicable / min. 0.3, max. 1.0)

Supply source

- **A** = OCC
- **B** = DRAKA
- **C** = LEONI
- **D** = BRUGG
- **E** = KAIPHONE
- **Z** = Customer project

Application environment

- **A** = Indoor / outdoor
- **B** = Outdoor rodent
- **C** = Outdoor armored
- **Z** = Specific / custom

Packaging

- **A** = Cardboard box
- **B** = Bag
- **R** = Reel

A = Up to 20 meters length (10 meters for rodent and armored cables). From 20.1 meters length (10 meters for rodent and armored cables), select B.
 B = Available from 20.1 to 49.9 meters. From 50 meters length, select R.
 R = from 50 meters length, cable assemblies are delivered on a reel.

Contact polishing

Single-mode

- **0°** = PC
- **8°** = APC

Multi-mode

- **0°** = PC

No connector on end B

- **Z** = Not applicable

Cable fixture

- **N** = None (not cable potting nor clamping)
- **C** = Cable clamp
- **P** = Potting

B-End connector body style

Plugs

- **P01** = Cable mounted plug

Receptacles

- **R01** = Panel rear mounted, circular flange
- **R03** = Panel front mounted, circular flange
- **R13** = Panel front mounted, rectangular flange
- **R50** = Cable mounted

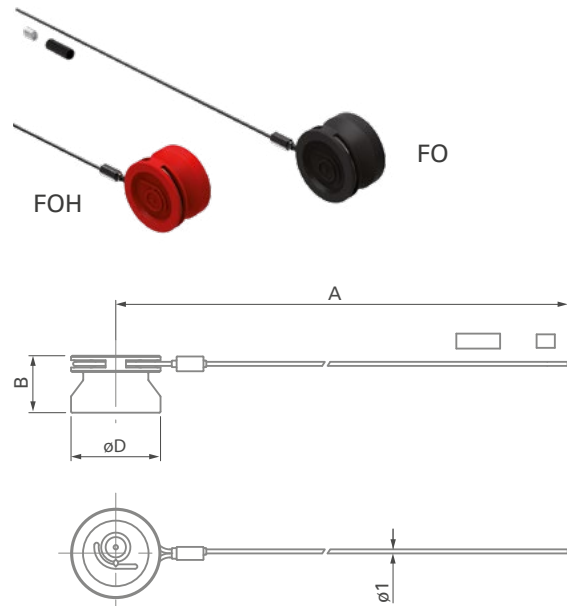
Other connectors

- **CNA** = Free-end
- **CLC** = LC
- **CSC** = SC
- **CFC** = FC
- **CST** = ST

¹⁾ Only for reel packaging option (R).

SOFT CAPS

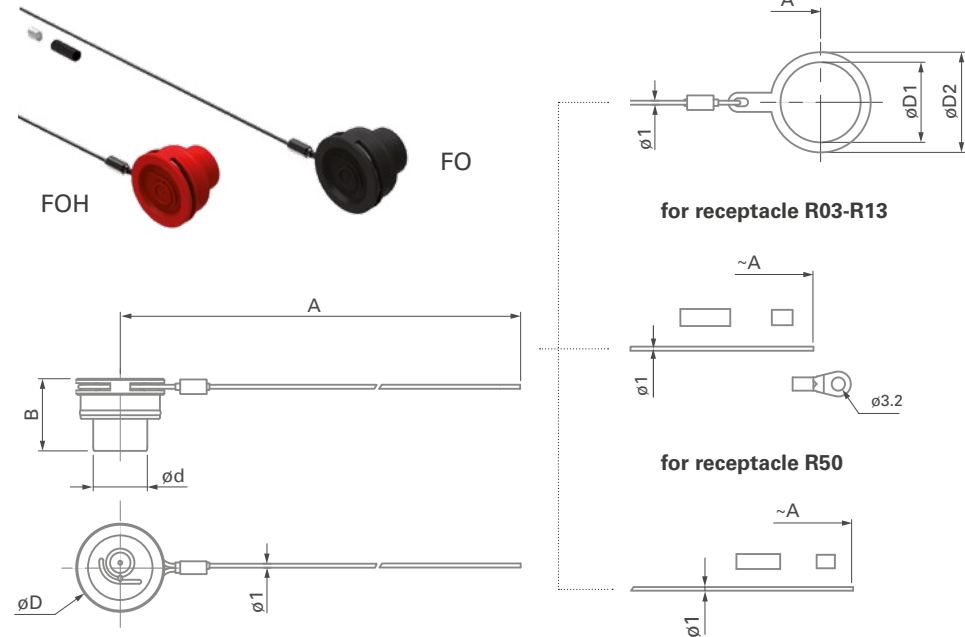
FOR PLUGS



| Body size & style | | Part number | A | B | øD |
|-------------------|------------|-------------------|-----|------|----|
| FO1 | P01 | FOCP06C 1B2 A120 | 120 | 10.5 | 13 |
| FO2/4 | P01 | FOCP14C 1B2 A150 | 150 | 14.0 | 22 |
| FOH | P01 | FOHCP14C 1B2 A150 | 150 | 14.0 | 22 |

Crimp ferrule and heat shrink tube are included.

FOR RECEPTACLES



| Body size & style | | Part number | A | B | ød | øD | øD1 | øD2 |
|-------------------|----------------|-------------------|-----|------|------|----|-----|-----|
| FO1 | R01 | FOCR06P 1B2 A70 | 70 | 11.5 | 6.0 | 13 | 10 | 14 |
| | R03-R13 | FOCR06P 1B2 E150 | 150 | | | | - | - |
| | R50 | FOCR06C 1B2 A120 | 120 | | | | - | - |
| FO2/4 | R01 | FOCR14P 1B2 A110 | 110 | 14.0 | 13.5 | 22 | 20 | 25 |
| | R03-R13 | FOCR14P 1B2 E150 | 150 | 14.0 | 13.5 | 22 | - | - |
| | R50 | FOCR14C 1B2 A150 | | | | | - | - |
| FOH 2-2 | R01 | FOHCR14P 1B2 A110 | 110 | 14.0 | 13.5 | 22 | 20 | 25 |
| | R03-R13 | FOHCR14P 1B2 E150 | 150 | 14.0 | 13.5 | 22 | - | - |
| | R50 | FOHCR14C 1B2 A150 | | | | | - | - |

All dimensions and images shown are in millimeters and are for reference only.

DAISY CHAINING



| Fiber type | Fiber count | Part number |
|--------------------------|-------------------------------|--------------------|
| SM 9 (G657.A1) | 2 | FO2 DC 0 S9 AAA |
| | 4 | FO4 DC 0 S9 AAA |
| | Hybrid | FOH2-2 DC 0 S9 AAA |
| MM 50 (OM3) | 2 | FO2 DC 0 M5 AAA |
| | 4 | FO4 DC 0 M5 AAA |
| | Hybrid | FOH2-2 DC 0 M5 AAA |
| MM 62.5 (OM1+) | 2 | FO2 DC 0 M6 AAA |
| | 4 | FO4 DC 0 M6 AAA |
| | Hybrid | FOH2-2 DC 0 M6 AAA |
| Pin layout | Applies to all configurations | |

LOOPBACK



| Fiber type | Fiber count | Part number |
|--------------------------|-------------------------------|-----------------|
| SM 9 (G657.A1) | 4 | FO4 LB 0 S9 AAA |
| MM 50 (OM3) | 4 | FO4 LB 0 M5 AAA |
| MM 62.5 (OM1+) | 4 | FO4 LB 0 M6 AAA |
| Pin layout | Applies to all configurations | |

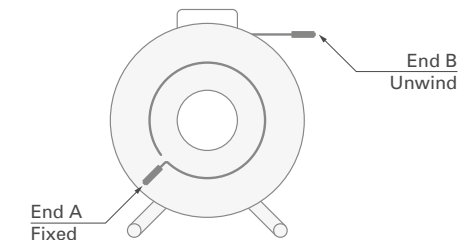
The use of caps is recommended for maximum robustness during handling.

PRE-CONFIGURED FIBEROPTIC REELS



| | | 50 meter reels | | 100 meter reels | |
|--------------------------|-------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Fiber type | Fiber count | Part number | Part number | Part number | Part number |
| SM 9 (G657.A1) | 1 | FO1 P01P0 S9-050.0-00.0 P01P0 RAA | FO1 P01P0 S9-100.0-00.0 P01P0 RAA | FO1 P01P0 S9-050.0-00.0 P01P0 RAC | FO1 P01P0 S9-100.0-00.0 P01P0 RAC |
| | 2 | FO2 P01P0 S9-050.0-00.0 P01P0 RAC | FO2 P01P0 S9-100.0-00.0 P01P0 RAC | FO4 P01P0 S9-050.0-00.0 P01P0 RAC | FO4 P01P0 S9-100.0-00.0 P01P0 RAC |
| | 4 | FO4 P01P0 S9-050.0-00.0 P01P0 RAC | FO4 P01P0 S9-100.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-050.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-100.0-00.0 P01P0 RAC |
| | Hybrid | FOH2-2 P01P0 S9-050.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-100.0-00.0 P01P0 RAC | | |
| MM 50 (OM3) | 1 | FO1 P01P0 M5-050.0-00.0 P01P0 RAA | FO1 P01P0 M5-100.0-00.0 P01P0 RAA | FO2 P01P0 M5-050.0-00.0 P01P0 RAC | FO2 P01P0 M5-100.0-00.0 P01P0 RAC |
| | 2 | FO2 P01P0 M5-050.0-00.0 P01P0 RAC | FO2 P01P0 M5-100.0-00.0 P01P0 RAC | FO4 P01P0 M5-050.0-00.0 P01P0 RAC | FO4 P01P0 M5-100.0-00.0 P01P0 RAC |
| | 4 | FO4 P01P0 M5-050.0-00.0 P01P0 RAC | FO4 P01P0 M5-100.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-050.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-100.0-00.0 P01P0 RAC |
| | Hybrid | FOH2-2 P01P0 M5-050.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-100.0-00.0 P01P0 RAC | | |
| | | 150 meter reels | | 200 meter reels | |
| Fiber type | Fiber count | Part number | Part number | Part number | Part number |
| SM 9 (G657.A1) | 1 | FO1 P01P0 S9-150.0-00.0 P01P0 RAA | FO1 P01P0 S9-200.0-00.0 P01P0 RAA | FO2 P01P0 S9-150.0-00.0 P01P0 RAC | FO2 P01P0 S9-200.0-00.0 P01P0 RAC |
| | 2 | FO2 P01P0 S9-150.0-00.0 P01P0 RAC | FO2 P01P0 S9-200.0-00.0 P01P0 RAC | FO4 P01P0 S9-150.0-00.0 P01P0 RAC | FO4 P01P0 S9-200.0-00.0 P01P0 RAC |
| | 4 | FO4 P01P0 S9-150.0-00.0 P01P0 RAC | FO4 P01P0 S9-200.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-150.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-200.0-00.0 P01P0 RAC |
| | Hybrid | FOH2-2 P01P0 S9-150.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-200.0-00.0 P01P0 RAC | | |
| MM 50 (OM3) | 1 | FO1 P01P0 M5-150.0-00.0 P01P0 RAA | FO1 P01P0 M5-200.0-00.0 P01P0 RAA | FO2 P01P0 M5-150.0-00.0 P01P0 RAC | FO2 P01P0 M5-200.0-00.0 P01P0 RAC |
| | 2 | FO2 P01P0 M5-150.0-00.0 P01P0 RAC | FO2 P01P0 M5-200.0-00.0 P01P0 RAC | FO4 P01P0 M5-150.0-00.0 P01P0 RAC | FO4 P01P0 M5-200.0-00.0 P01P0 RAC |
| | 4 | FO4 P01P0 M5-150.0-00.0 P01P0 RAC | FO4 P01P0 M5-200.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-150.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-200.0-00.0 P01P0 RAC |
| | Hybrid | FOH2-2 P01P0 M5-150.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-200.0-00.0 P01P0 RAC | | |
| | | 300 meter reels | | 450 meter reels | |
| Fiber type | Fiber count | Part number | Part number | Part number | Part number |
| SM 9 (G657.A1) | 1 | FO1 P01P0 S9-300.0-00.0 P01P0 RAA | FO1 P01P0 S9-450.0-00.0 P01P0 RAA | FO2 P01P0 S9-300.0-00.0 P01P0 RAC | FO2 P01P0 S9-450.0-00.0 P01P0 RAC |
| | 2 | FO2 P01P0 S9-300.0-00.0 P01P0 RAC | FO2 P01P0 S9-450.0-00.0 P01P0 RAC | FO4 P01P0 S9-300.0-00.0 P01P0 RAC | FO4 P01P0 S9-450.0-00.0 P01P0 RAC |
| | 4 | FO4 P01P0 S9-300.0-00.0 P01P0 RAC | FO4 P01P0 S9-450.0-00.0 P01P0 RAC | FOH2-2 P01P0 S9-300.0-00.0 P01P0 RAC | - |
| | Hybrid | FOH2-2 P01P0 S9-300.0-00.0 P01P0 RAC | - | | |
| MM 50 (OM3) | 1 | FO1 P01P0 M5-300.0-00.0 P01P0 RAA | FO1 P01P0 M5-450.0-00.0 P01P0 RAA | FO2 P01P0 M5-300.0-00.0 P01P0 RAC | FO2 P01P0 M5-450.0-00.0 P01P0 RAC |
| | 2 | FO2 P01P0 M5-300.0-00.0 P01P0 RAC | FO2 P01P0 M5-450.0-00.0 P01P0 RAC | FO4 P01P0 M5-300.0-00.0 P01P0 RAC | FO4 P01P0 M5-450.0-00.0 P01P0 RAC |
| | 4 | FO4 P01P0 M5-300.0-00.0 P01P0 RAC | FO4 P01P0 M5-450.0-00.0 P01P0 RAC | FOH2-2 P01P0 M5-300.0-00.0 P01P0 RAC | - |
| | Hybrid | FOH2-2 P01P0 M5-300.0-00.0 P01P0 RAC | - | | |

Assembled on Schill drum with OCC cable (FO1) and LEONI cable (FO2, FO4, FOH 2-2).



FIBEROPTIC

COLOR CODING SILICONE RING



FO1 – FOCR06

- Beige Red
- Blue Green

FO2/4/H – FOCR14

- Beige Red
- Blue Green

OPEN SPANNER



FO1

- TX00.004 TX00.014
- TX00.011

FO2/4/H

- TX00.019
- TX00.025

HEXAGON SPANNER



FO1 - R13

- TX00.384

NUT DRIVER



FO1

- TC00.007

FO2/4/H

- TP00.013

SLEEVES HOLDER MATE ADAPTER



FO1

- FOP06 Sleeve Holder



FO2/FO4

- FOP14 Sleeve Holder

PANEL SEAL



FO1

- FO R13 Panel Seal FO1



FO2/4/H

- FO R13 Panel Seal FO2/4/H

TELECOM MATE ADAPTER



- LC Adapter SM/APC
- LC Adapter SM/UPC
- LC Adapter MM/UPC



- SC Adapter SM/APC
- SC Adapter SM/UPC
- SC Adapter MM/UPC



- FC Adapter SM/APC
- FC Adapter SM-MM



- ST Adapter SM-MM

PRE-CABLED REEL*



- GT235.RM
- GT310.RM
- GT380.RMFK
- GT450.RMFK
- HT582.RM

WEDGE CLAMP JAWS



- Wedge Clamp Black Jaws

FIBER OPTIC CLEANING KIT



- FO Cleaning Kit (complete kit)**
- Cleaning kit components
- Laser pen
- Laser pen adapter
- IBC brand cleaner H125
- Precision tweezers
- 50 alcohol wipes

* Pre-configured reels can be found on page I-27.
Reel selection can vary following cable choice and length.

Contact your local sales for details or visit: www.fischerconnectors.com/fiberoptic

MATERIAL & SURFACE FINISH

| Metal components | Material | | Finish | |
|---|--------------------|------------------------|-----------------------------|--|
| | Designation ISO | Standard | Designation | Standard |
| Housing, nut | Brass CuZn39Pb3 | CW614N | Chrome over Nickel | SAE-AMS 2460 |
| | | UNS C 38500 | | |
| Back nut (plug) FO1 | Brass CuZn39Pb3 | CW614N | Black Chrome over Nickel | SAE-AMS 2460 |
| | | UNS C 38500 | | |
| Back nut (plug) FO2, FO4, FOH | Brass CuZn39Pb3 | CW614N | Nickel | SAE-AMS-QQ-N-290 |
| | | UNS C 38500 | | SAE-AMS 2404 |
| Electrical contact | Brass CuZn39Pb3 | CW614N UNS C 38500 | 1 µm Gold over Nickel | MIL-DTL-45204D Type 1 + ASTM B488 / SAE-AMS- QQ-N-290 / SAE-AMS 2404 |
| Shell contact | Stainless steel | X5CrNiMo18-10 (1.4401) | - | - |
| Spring | Stainless steel | X10CrNi18-8 (1.4310) | - | - |
| Mantel clip | Stainless steel | X5CrNiMo18-10 (1.4401) | - | - |
| Sleeve holder (plug) FO1 | Brass CuZn39Pb3 | CW614N | Nickel | SAE-AMS-QQ-N-290 |
| | | UNS C 38500 | | SAE-AMS 2404 |
| Sleeve holder (center pin) FO2, FO4, FOH | Stainless steel | X8CrNiS18-9 (1.4305) | - | - |
| Locking balls | Stainless steel | X46Cr13 (1.4034) | - | - |

| Non-metallic components | Material | Flammability |
|--|-------------------|--------------|
| Ferrules & sleeves | Zirconia | - |
| Contact housing | LCP | UL 94 V-0 |
| Contact block & sleeve holder | PBT | UL 94 V-0 |
| | PEEK | - |
| Mantel ring | PTFE | UL 94 V-0 |
| O-rings | FPM (Viton®) | - |
| | NBR (Nitrile) | - |
| Sealant material | Epoxy compound | - |
| Cable strain relief | TPE | UL 94 HB |
| Caps | TPE | UL 94 HB |
| Locking protection sleeve | TPE | UL 94 HB |

FIBEROPTIC

ENVIRONMENTAL & MECHANICAL DATA

| Characteristic | Performance | Standard |
|------------------------------------|--|----------------|
| Sealing mated | IP68; 2 m submersion for 24 hours ¹⁾ | IEC 60529 |
| Sealing unmated | IP67 ¹⁾ | IEC 60529 |
| Operating temperature range | -40 °C to +85 °C (cable dependent) | IEC 61300-2-22 |
| Vibration | Sinusoidal, 10 - 55 Hz, 3 axes, 0.75 mm amplitude (max 10 g) ¹⁾ | IEC 61300-2-1 |
| Shock | 100 g ¹⁾ | IEC 61300-2-9 |
| Salt mist | 1000 hours, 5% salt solution, 35 °C ^{1) 2)} | IEC 61300-2-26 |
| Mating durability | 1000 mating cycles ^{1) 3)} | IEC 61300-2-2 |

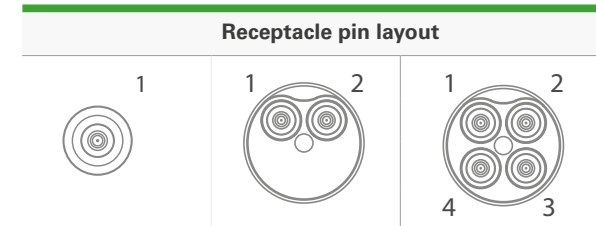
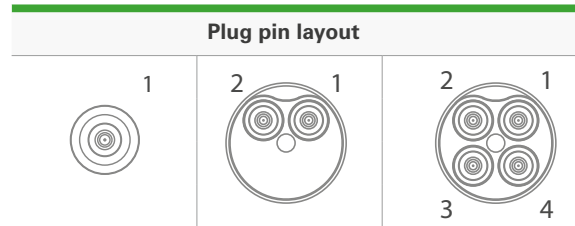
¹⁾Exceeds IEC 61753-1 Cat.E Extreme Environment. Fischer Connectors can offer FO cable assemblies that are sealed to IP68 deeper than 2 m on request.

²⁾Connector must be mated

³⁾Recommended cleaning every 50 cycles.

FIBER TYPE AND PIN LAYOUT

| Contact type | | Fiber standards |
|---------------------|-----|-----------------|
| Single-mode 9/125 | UPC | G.657.A1 |
| Single-mode 9/125 | APC | |
| Multi-mode 50/125 | - | OM3 |
| Multi-mode 62.5/125 | - | OM1 / OM1+ |



OPTICAL DATA

| Characteristic | Performance | Standard |
|----------------|-------------|---|
| Insertion loss | SM and MM | ≤0.20 dB mean |
| | | ≤0.45 dB max for >97% of samples |
| | | ≤0.2 dB change during and after testing |
| | | IEC 61300-3-34 Random mated |
| | | IEC 61300-3-3 |
| Return loss | SM UPC | ≥50 dB |
| | SM APC | ≥70 dB (mated) and ≥50 dB (unmated) |
| | | IEC 61300-3-6 Random mated |

ELECTRICAL DATA - FOH 2-2

| Characteristic | Performance | Standard |
|-------------------------------------|------------------------------|---------------------------|
| Number of contacts | 2 contacts, ground by shell | - |
| Current | 10 [A] ¹⁾ | IEC 60512-5-2-5b |
| Rated voltage | 400 [V] r.m.s. ²⁾ | EIA-364-20-B |
| Contact resistance (power contact) | < 10 mΩ | IEC 60512-2-1, Test 2a |
| Contact resistance (ground contact) | < 50 mΩ | IEC 60512-2-1, Test 2a |
| Insulation resistance | > 10 ¹⁰ Ω | IEC 60512-3-1-3a Method C |
| Contact termination | Solder | - |
| Wire size | AWG17 / 1 mm ² | - |
| Test voltage AC | 1.5 [kV] r.m.s | IEC 60512-4-1 Test 4a |
| Test voltage DC | 2.8 [kV] | IEC 60512-4-1 Test 4a |

¹⁾ Current per contact at 40°C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. Please refer to section A-12 to determine the maximum operating current.

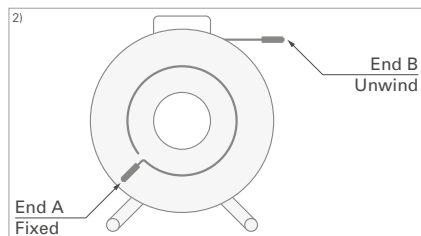
²⁾ Recommended operating voltage at sea level measured according to IEC 60664-1. Please refer to A-11

CONFIGURE YOUR SOLUTION

Quantity - Please use one request form per cable assembly type

| Cable assembly types | | |
|----------------------|-------|-------|
| | End A | End B |
| Patch cord | | |
| Receptacle | | |
| Sealed receptacle | | |
| Breakout | | |
| Single Fiber | | |

Drawings are for reference only. Available for FO1, FO2, FO4 and FOH 2-2



All images shown are for reference only.

DOWNLOAD REQUEST QUOTE FORM







| End A | Assembly | End B |
|--|--|--|
| FiberOptic connectors <input type="checkbox"/> P01 - Plug <input type="checkbox"/> R50 - Receptacle cable mounted <input type="checkbox"/> R01 - Receptacle panel rear mounted <input type="checkbox"/> R03 - Receptacle panel front mounted <input type="checkbox"/> R13 - Receptacle panel square flange <input type="checkbox"/> CNA - Free end No Connector ²⁾ | Total length L_{tot} ¹⁾ <i>end-to-end total (min. 0.5 except receptacles)</i> <input type="checkbox"/> 1 meter <input type="checkbox"/> 2 meters Breakout length L_b ¹⁾ <i>for breakout & sealed (if applicable / min. 0.3, max. 1.0)</i> <input type="checkbox"/> 0.5 meter <input type="checkbox"/> 1 meter Telecom connector ²⁾ <input type="checkbox"/> LC <input type="checkbox"/> SC <input type="checkbox"/> FC <input type="checkbox"/> ST Short length receptacles <i>For receptacles < 0.5 meters 900 μm buffered fibers wires</i> | FiberOptic connectors <input type="checkbox"/> P01 - Plug <input type="checkbox"/> R50 - Receptacle cable mounted <input type="checkbox"/> R01 - Receptacle panel rear mounted <input type="checkbox"/> R03 - Receptacle panel front mounted <input type="checkbox"/> R13 - Receptacle panel square flange <input type="checkbox"/> CNA - Free end No Connector Telecom connector <input type="checkbox"/> LC <input type="checkbox"/> SC <input type="checkbox"/> FC <input type="checkbox"/> ST Contact End-face <i>Available for SM only</i> <input type="checkbox"/> 0° PC <input type="checkbox"/> 8° APC Short length receptacles <i>For receptacles \geq 0.5 meters 2.0 mm tight buffered wires</i> |

¹⁾ Cable length in 0.1 meter units only.
 Cable length tolerance according IPC-WHMA-A-620.
²⁾ Only for reel packaging option (R).

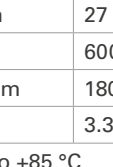


CHOOSE YOUR CABLE

FIBEROPTIC

INDOOR/OUTDOOR

| Supplier Brand | Fiber Count | SM 9/125 G.657.A1 | MM 50/125 OM3 | MM 62.5/125 OM1 /OM1+ | |
|----------------|-------------|--------------------------|--------------------------|--------------------------|--|
| OCC | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| | 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| LEONI | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| | 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| LEONI | Hybrid 2+2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |

RODENT PROOF

| Supplier Brand | Fiber Count | SM 9/125 G.657.A1 | MM50/125 OM3 | MM 62.5/125 OM1 /OM1+ | |
|----------------------|-------------|--------------------------|--------------------------|--------------------------|--|
| LEONI Glass Fiber | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| | 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| METAL ARMORED | | | | | |
| KAIPHONE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| BRUGG | 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| | 4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

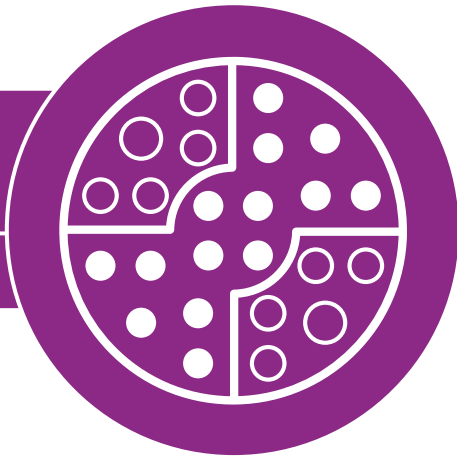
See our Cable Specifications for detailed information.

Available Available under special lead time- please contact your local sales departement for details.

| Outdoor cable features | OCC | | LEONI | LEONI | KAIPHONE | BRUGG |
|-------------------------------|--|-----------|--|---|--|---|
| | FO1 | FO2, FO4 | FO2, FO4 | FO2, FO4 | FO1 | FO2, FO4 |
| Best for | Premium application | | High load application | Rodent proof | Metal armored | Metal armored |
| | <ul style="list-style-type: none"> - Overall ruggedness - Easy deployment - High end tactical cable | | <ul style="list-style-type: none"> - High load resistance - Easy deployment - High end tactical cable | <ul style="list-style-type: none"> - Semi-static applications - Easy deployment - Dielectric rodent protection - High flexibility | <ul style="list-style-type: none"> - High rodent protection - Static & deployable applications - Ultra-light armored technology - Sensing applications | <ul style="list-style-type: none"> - High rodent protection - Static & deployable applications - Self supporting applications - Ultra-light armored technology - Direct burial |
| Technology | <ul style="list-style-type: none"> - Tight buffered fibers - Aramid yarn - PUR jacket | | <ul style="list-style-type: none"> - Tight buffered fibers - Aramid yarn - PUR jacket | <ul style="list-style-type: none"> - Tight buffered fibers - Aramid yarn / - PUR double skin jacket | <ul style="list-style-type: none"> - Stainless steel loose tube - Aramid yarn - LDPE jacket | <ul style="list-style-type: none"> - Stainless steel loose tube - Stainless steel yarn - PA Jacket |
| Outer diameter | 2.9 mm | 5.5 mm | 5.5 mm | 9.4 mm | 3.0 mm | 3.8 mm |
| Weight | 8 kg/km | 27 kg/km | 28 kg/km | 105 kg/km | 18 kg/km | 25 kg/km |
| Operating tensile load | 300 N | 600 N | 1500 N | 2000 N | 300 N | 900 N |
| Crush resistance | 500 N/cm | 1800 N/cm | 800 N/cm | 800 N/cm | 300 N/cm | 800 N/cm |
| Min. bend radius | 1.5 cm | 3.3 cm | 5.5 cm | 9.4 cm | 3.0 cm | 5.7 cm |
| Operating temperature | -40 °C to +85 °C | | -55 °C to +85 °C | -55 °C to +85 °C | -40 °C to + 85 °C | |

J

CHAPTER



FISCHER MINIMAX™ SERIES

HIGH-DENSITY MINIATURIZATION | HIGH-SPEED DATA TRANSFER | RELIABILITY

KEY FEATURES

- Signal and Power
- Designed and tested to high-speed data transfer protocols
- IP68 sealed to-20m | 24h



MINIMAX

MINIMAX



MINIMAX

PLUGS



CABLE MOUNTED

- Body styles (MP11-L/S/Q)..... J-7
- Technical dimensions J-8
- Dimensions of overmolding..... J-9

RECEPTACLES



CABLE MOUNTED

- Body styles (MR50-L/S/Q) J-10
- Technical dimensions J-11
- Dimensions of overmolding..... J-9



PANEL REAR MOUNTED

- Body styles (MR11-L/S/Q; MR12-L/S/Q) J-12
- Technical dimensions J-13

FOR ALL MINIMAX

- Features..... J-3
- Body styles & technical dimensions J-7
- Electrical & contact configurations..... J-16
- Mechanical coding..... J-17
- PCB hole layout J-18
- Part numbering..... J-22
- Accessories J-23
- Tooling J-25
- Technical information..... J-26

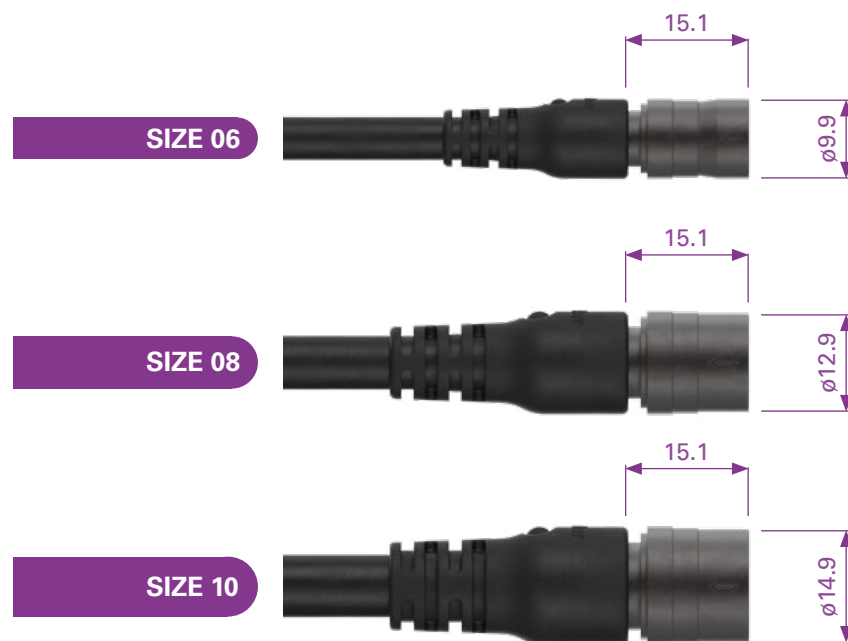
This catalog covers our standard connector solutions. For specific requests, including hybrid or custom connectors, please contact your local sales representative.

HIGH-DENSITY MINIATURIZATION

- Unique combinations of signal and power
- Replace multiple large connectors with fewer and smaller ones
- Combine multiple protocols into one connector

SIZE COMPARISON 1:1

SIZE 06, 08 AND 10



UPTO 45% SMALLER

SIZE 08

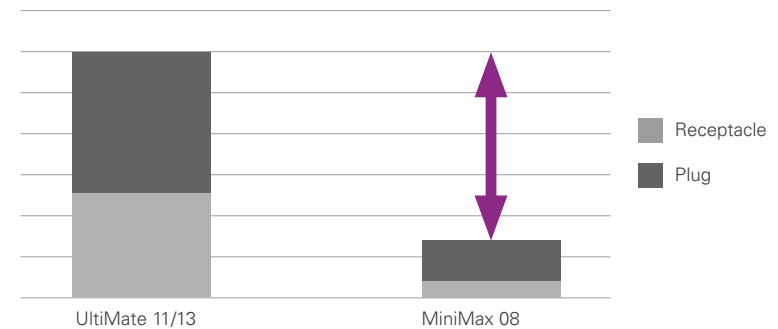
COMPARED TO STANDARD RECEPTACLES WITH SIMILAR NUMBER OF CONTACTS



UPTO 75% LIGHTER

SIZE 08

PLUGS & RECEPTACLES WEIGHT COMPARISON WITH SIMILAR NUMBER OF CONTACTS



All dimensions and images shown are in millimeters and are for reference only.

HIGH-SPEED DATA TRANSFER



| | | Size 06-4 pins | Size 06-7 pins | Size 06-12 pins | Size 08-8 pins | Size 08-09 pins | Size 08-19 pins | Size 08-19 pins | Size 08-24 pins | Size 10-12 pins | Size 10-30 pins |
|---|--|----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| USB 2.0 | | YES | YES | YES | YES | YES | YES | - | YES | YES | YES |
| USB 3.2 GEN 1 (5 Gbit/s) | | - | - | - | - | YES | - | - | - | YES | - |
| USB 3.2 GEN 2 (10 Gbit/s) | | - | - | - | - | - | - | - | - | - | - |
| ETHERNET (10 Gbit/s) | | - | - | YES* | YES | - | - | - | - | - | - |
| Standard audio/video protocol (10.2 Gbit/s) | | - | - | - | - | - | YES* | YES | - | - | - |
| Standard audio/video protocol (18.0 Gbit/s) | | - | - | - | - | - | - | YES | - | - | - |
| Single pair Ethernet (1 Gbit/s) | | YES | - | - | - | - | - | - | - | - | - |

* Application dependent
 Note that for USB 3.2 the full spec is set with 1 m cable

ETHERNET SIZE 08 | 8 PINS

A unique robust and sealed miniature connector for Ethernet applications in harsh environments.

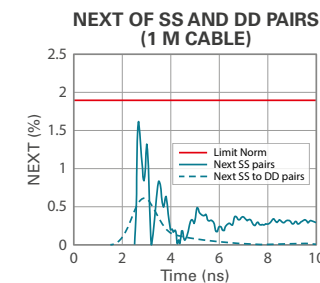
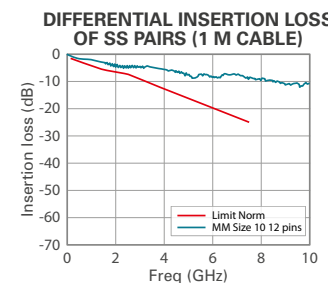
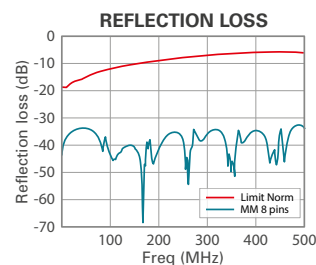
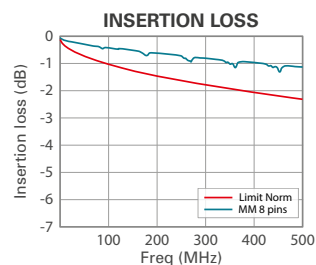
- AWG24, compatible with long range standard Ethernet cables
- Symmetrical hermaphroditic contact block
- 0.5 mm contacts



USB 3.2 SIZE 08 | 9 PINS + SIZE 10 | 12 PINS

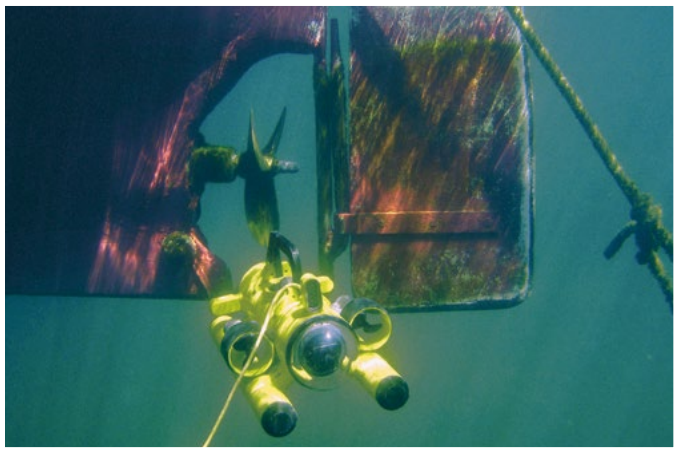
Optimized design for full USB 3.2 Gen 1 and Gen 2 performance, successfully tested to the full S-parameter standards with cables up to 1 m.

- Advanced power contacts
- Hermaphroditic contact block
- 0.5 mm contacts



RELIABILITY

- IP68, -20m/24h* water sealing
 10^{-6} mbar l/s gas sealing
- 5,000 mating cycles
- 1,000 h salt mist spray



*The standard sealing level can be achieved on all MiniMax panel mounted receptacles when correctly integrated.

For all cabled mounted connectors, the sealing level depends on the quality of the assembly process and the size and type of cable being used. For MiniMax, Fischer Connectors guarantees an IP64 cable assembly sealing as standard. Upon request, MiniMax cable assemblies with an IP68 sealing rating-20 m for a duration of 24 hours are available and might require additional testing.

MINIMAX

HOUSING COLORS

MiniMax is available in two housing colors:
ANTHRACITE Nickel and **BLACK Chrome**. ¹⁾

- Both color solutions are non-reflective and offer a discreet connector solution for military applications.
- The anthracite treatment offers an improved panel grounding of <5 mΩ as required by MIL specs.

Anthracite
standard

Black
optional

Ground contact connected to housing:
 - Pin for PCB contact (P) versions
 - Solder barrel for solder contact (S) versions



CONTACT COMBINATIONS

The MiniMax contact block is specified by a combination of 4 digits:

- First digit indicates the number of advanced contacts for first mate / last break.
- Second digit indicates the number of larger contacts (and with larger solder cup) for power.
- Digits 3 and 4 are to be considered as one number and will indicate the number of remaining contacts (of standard size and not advanced).

MiniMax uses a hermaphroditic contact block for all configurations except for the 4-pin (2 power + 2 signal) and the 7-pin (3 power + 4 signal) in size 06.

For the 4-pin and 7-pin in size 06, a polarity choice²⁾ has to be specified and the mating part will reflect an opposite polarity (F mating M; M mating F).

For clarity reasons, the 4-pin in size 06 with 2 power contacts that are also advanced is designated by the digits 0202 and not 2202. A designation by the digits 2202 may confusingly suggest it has 6 contacts instead of the actual 4.

The table on the right shows **all** available standard contact block combinations to help specify the correct product designation. (Also see page J-20).




| Size | MR11 / MR12 / MR50 | MP11 |
|------|--------------------|-----------|
| 06 | 0202 xxFx | 0202 xxMx |
| | 0202 xxMx | 0202 xxFx |
| | 0304 xxFx | 0304 xxMx |
| 08 | 0210 | 0210 |
| | 0008 | 0008 |
| | 0009 | 2007 |
| | 0019 | 0019 |
| | 2017 | |
| | 0420 2418 | 0420 |
| 10 | 0309 | 2307 |
| | 0624 | 0624 |

Mates with

¹⁾ MR12 body style not available in BLACK. Please contact your local sales representative.

²⁾ Size 06 7-pin configuration is receptacle with female contacts and plug with male contacts. For customization please contact your local sales representative.

PLUGS

| CABLE MOUNTED | |  |  |  | |
|-----------------------|---|---|---|--|---|
| Body style | | MP11-L | MP11-S | MP11-Q | References to detailed information |
| Protection | Sealed up to IP68 | ● | ● | ● | Sealing categories, page A-6 |
| | Hermetic | | | | |
| Locking system | Push-pull | ● | | | Electrical & contact configurations, page J-16 |
| | Quick-release | | | ● | |
| | Screw | | ● | | |
| Termination | Crimp contact | | | | Part numbering, page J-20 |
| | Solder contact | ● | ● | ● | |
| Housing color | ANTHRACITE Nickel | ● | ● | ● | Body styles, chapter J |
| | BLACK Chrome | ● | ● | ● | |
| Design | Shortened body | | | | - |
| | 60° angle ¹⁾ | ● | ● | ● | |
| | Straight | ● | ● | ● | |
| | Right-angle ¹⁾ | ● | ● | ● | |
| Cabling | Cable clamp sets | | | | Accessories, page J-21 and J-22 |
| | Overmoldable | ● | ● | ● | |
| | Heat shrinkable | ● | ● | ● | |
| Accessories | Cable bend reliefs ¹⁾ | ● | ● | ● | Technical dimensions, page J-8 and J-9 For more information visit our website www.fischerconnectors.com/technical |
| | Protective sleeves | | | | |
| | Sealing caps | ● | ● | ● | |
| Size | 06 | ● | ● | ● | |
| | 08 | ● | ● | ● | |
| | 10 | ● | | ● | |

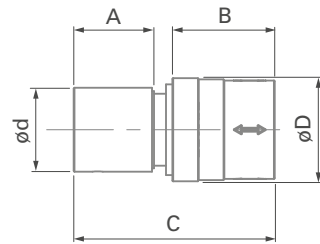
¹⁾ Not available for size 10.

PLUGS

CABLE MOUNTED

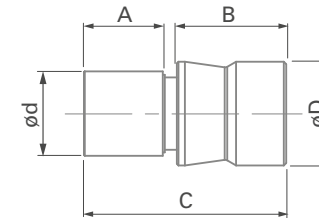
MP11-L / PUSH-PULL

BODY STYLE



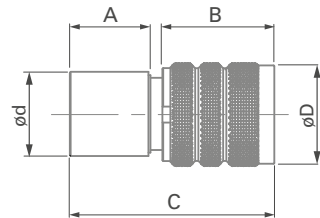
MP11-Q / QUICK-RELEASE

BODY STYLE



MP11-S / SCREW-LOCKING

BODY STYLE



MINIMAX

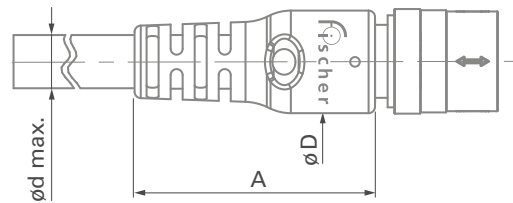
| Size | Locking | ød | øD | A | B | ~ C |
|------|---------------|------|------|------|------|-----|
| 06 | Push-pull | 8.5 | 9.9 | 10.1 | 12.8 | 25 |
| | Quick-release | 8.5 | 9.9 | 10.1 | 13.6 | 25 |
| | Screw | 8.5 | 9.9 | 10.1 | 14.0 | 25 |
| 08 | Push-pull | 10.4 | 12.9 | 10.1 | 12.8 | 25 |
| | Quick-release | 10.4 | 12.9 | 10.1 | 13.6 | 25 |
| | Screw | 10.4 | 12.9 | 10.1 | 14.0 | 25 |
| 10 | Push-pull | 12.4 | 14.9 | 10.1 | 12.8 | 25 |
| | Quick-release | 12.4 | 14.9 | 10.1 | 13.6 | 25 |
| | Screw | - | - | - | - | - |

DIMENSIONS OF OVERMOLDING¹⁾

CABLE MOUNTED

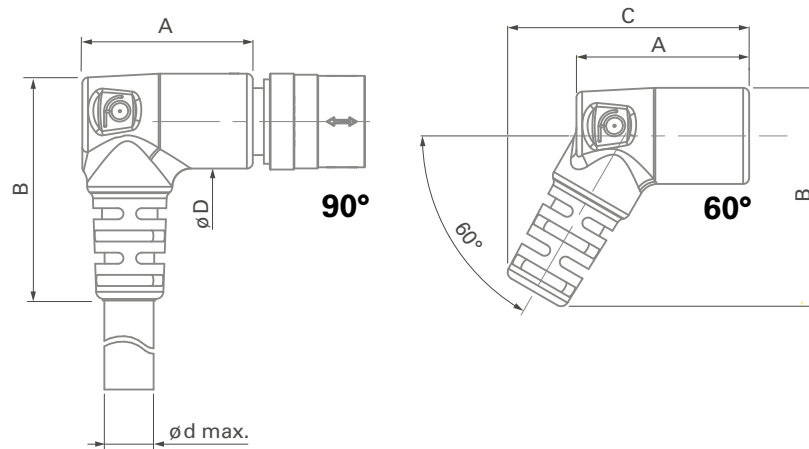
MP11-L/S/Q – MR50-L/S/Q

STRAIGHT OVERMOLDING



MP11-L/S/Q

RIGHT ANGLE & 60° OVERMOLDING

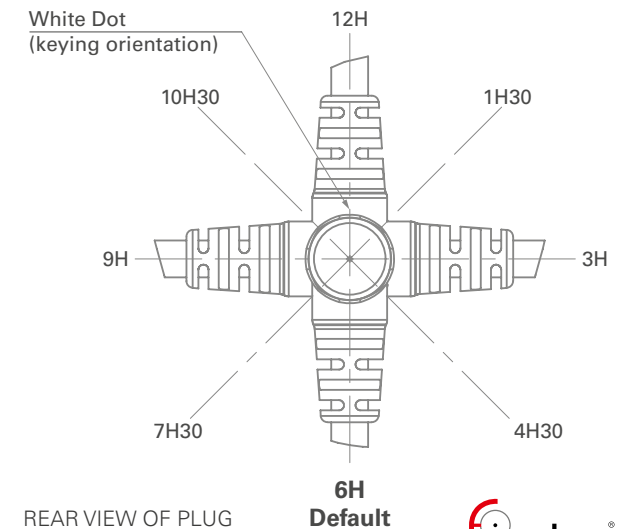


| Size | Angle | $\varnothing d \text{ max.}$ | $\varnothing D$ | A | B | C |
|------|----------|------------------------------|-----------------|----|------|------|
| 06 | Straight | 4.7 ²⁾ | 10.8 | 30 | - | - |
| | 60° | 4.7 ²⁾ | 10.8 | 23 | 29.1 | 32.2 |
| | 90° | 4.7 ²⁾ | 10.8 | 23 | 30 | - |
| 08 | Straight | 6.7 | 12.8 | 30 | - | - |
| | 60° | 6.7 | 12.8 | 23 | 29.1 | 32.2 |
| | 90° | 6.7 | 12.8 | 23 | 30 | - |
| 10 | Straight | 8.7 | 14.8 | 30 | - | - |
| | 60° | - | - | - | - | - |
| | 90° | - | - | - | - | - |

²⁾ 5.8 for MiniMax size 06 with 7 contacts.

8 POSITIONS

ORIENTATION PARALLEL TO PANEL



REAR VIEW OF PLUG

6H Default



¹⁾ Overmolding available on request. Contact your Fischer Connectors sales representative for details.

All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

CABLE MOUNTED



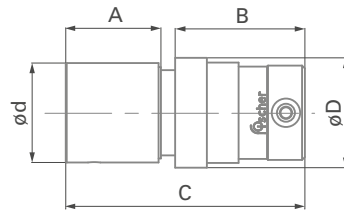
| Body style | | MR50-L | MR50-S | MR50-Q | References to detailed information |
|----------------|--------------------|--------|--------|--------|--|
| Protection | Sealed up to IP68 | ● | ● | ● | Sealing categories, page A-6 |
| | Hermetic | | | | |
| Locking system | Push-pull | ● | | | |
| | Quick-release | | | ● | |
| | Screw | | ● | | |
| Termination | Crimp contact | | | | Electrical & contact configurations, page J-16 |
| | Solder contact | ● | ● | ● | |
| Housing | ANTHRACITE Nickel | ● | ● | ● | Part numbering, page J-20 |
| | BLACK Chrome | ● | ● | ● | |
| Design | Shortened body | | | | Body styles, chapter J |
| | 60° angle | | | | |
| | Straight | ● | ● | ● | |
| | Right-angle | | | | |
| Cabling | Cable clamp sets | | | | - |
| | Overmoldable | ● | ● | ● | |
| | Heat shrinkable | ● | ● | ● | |
| Accessories | Cable bend reliefs | ● | ● | ● | Accessories, page J-21 and J-22 |
| | Protective sleeves | | | | |
| | Sealing caps | ● | ● | ● | |
| Size | 06 | ● | ● | ● | Technical dimensions, page J-11 For more information visit our website www.fischerconnectors.com/technical |
| | 08 | ● | ● | ● | |
| | 10 | | | | |

RECEPTACLES

CABLE MOUNTED

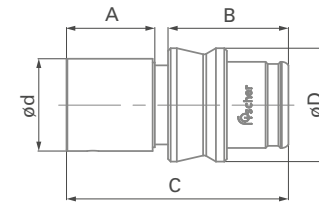
MR50-L / PUSH-PULL

BODY STYLE



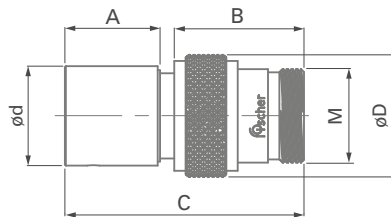
MR50-Q / QUICK-RELEASE

BODY STYLE



MR50-S / SCREW-LOCKING

BODY STYLE



| Size | Locking | ød | øD | A | B | ~ C | M |
|------|---------------|------|------|------|------|-----|-------|
| 06 | Push-pull | 8.5 | 9.9 | 10.1 | 13.7 | 25 | - |
| | Quick-release | 8.5 | 9.9 | 10.1 | 13.7 | 25 | - |
| | Screw | 8.5 | 9.9 | 10.1 | 13.7 | 25 | M8x2 |
| 08 | Push-pull | 10.5 | 11.6 | 10.1 | 13.7 | 25 | - |
| | Quick-release | 10.5 | 12.9 | 10.1 | 13.7 | 25 | - |
| | Screw | 10.5 | 12.9 | 10.1 | 13.7 | 25 | M10x2 |
| 10 | Push-pull | - | - | - | - | - | - |
| | Quick-release | - | - | - | - | - | - |
| | Screw | - | - | - | - | - | - |

All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

PANEL MOUNTED



| Body style | | MR11-L | MR11-S | MR11-Q | MR12-L | MR12-S | MR12-Q | References to detailed information |
|---------------|----------------------|--------|--------|--------|--------|--------|--------|--|
| Protection | Sealed up to IP68 | ● | ● | ● | ● | ● | ● | Sealing categories, page A-6 |
| | Hermetic | | | | | | | |
| Termination | Crimp contact | | | | | | | Electrical & contact configurations, page J-16 |
| | Solder contact | ● | ● | ● | ● | ● | ● | |
| | PCB contact | ● | ● | ● | ● | ● | ● | |
| Housing color | ANTHRACITE Nickel | ● | ● | ● | ● | ● | ● | Part numbering, page J-20 |
| | BLACK Chrome | ● | ● | ● | | | | |
| Design | Right-angle | | | | | | | Body styles, chapter J |
| | Flush | | | | | | | |
| | Front-projecting | ● | ● | ● | ● | ● | ● | |
| | Bulkhead feedthrough | | | | | | | |
| Assembly | Front-mounting | | | | | | | |
| | Rear-mounting | ● | ● | ● | ● | ● | ● | |
| Accessories | Sealing caps | ● | ● | ● | ● | ● | ● | Accessories, page J-21 and J-22 |
| | Spacers | | | | | | | |
| | Color-coded washers | | | | | | | |
| | Grounding washers | | | | | | | |
| | Locking washers | | | | | | | |
| Size | 06 | ● | ● | ● | ● | ● | ● | Technical dimensions, page J-13 to J-15 For more information visit our website www.fischerconnectors.com/technical |
| | 08 | ● | ● | ● | ● | ● | ● | |
| | 10 | ● | | ● | | | | |

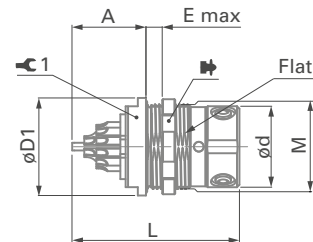
MINIMAX

RECEPTACLES

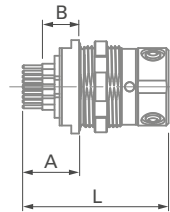
PANEL REAR MOUNTED

MR11-L / PUSH-PULL

BODY STYLE



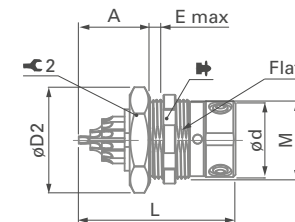
SOLDER



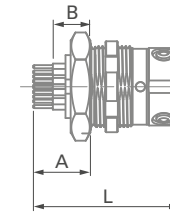
PCB

MR12-L / PUSH-PULL

BODY STYLE

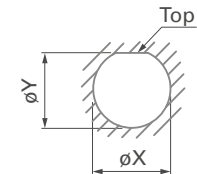


SOLDER



PCB

PANEL CUT-OUT



| Size | Locking | Termination | ød | øD1 | øD2 | A | B | L | E max | M Panel thread | 1 | 2 | Torque |
|------|-----------|----------------|------|------|------|-----|-----|------|-------|----------------|----|----|--------|
| 06 | Push-pull | Solder contact | 8.0 | 10.0 | 11.4 | 7.6 | - | 19.1 | 3.0 | M8.5x0.35 | 8 | 10 | 1.0 Nm |
| | | PCB contact | 8.0 | 10.0 | 11.4 | 7.3 | 4.7 | 18.8 | 3.0 | M8.5x0.35 | 8 | 10 | 1.0 Nm |
| 08 | Push-pull | Solder contact | 10.0 | 12.0 | 13.7 | 9.1 | - | 20.6 | 3.0 | M10.5x0.5 | 10 | 12 | 1.5 Nm |
| | | PCB contact | 10.0 | 12.0 | 13.7 | 7.3 | 4.7 | 18.8 | 3.0 | M10.5x0.5 | 10 | 12 | 1.5 Nm |
| 10 | Push-pull | Solder contact | 12.0 | 14.0 | - | 7.6 | - | 19.1 | 3.0 | M12.5x0.5 | 12 | - | 2.0 Nm |
| | | PCB contact | 12.0 | 14.0 | - | 7.3 | 4.7 | 18.8 | 3.0 | M12.5x0.5 | 12 | - | 2.0 Nm |

| Size | øX | øY |
|------|--------------|-------------|
| 06 | 8.58 +0.1/0 | 8.25 +0.1/0 |
| 08 | 10.45 +0.1/0 | 10.2 +0.1/0 |
| 10 | 12.45 +0.1/0 | 12.2 +0.1/0 |

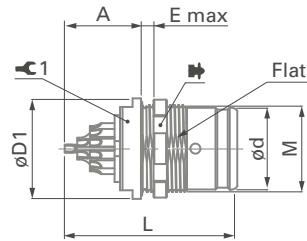
All dimensions and images shown are in millimeters and are for reference only.

RECEPTACLES

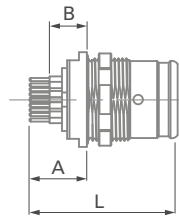
PANEL REAR MOUNTED

MR11-Q / QUICK-RELEASE

BODY STYLE



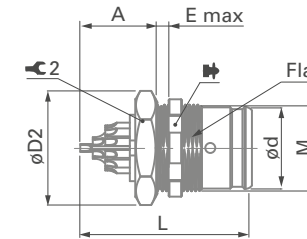
SOLDER



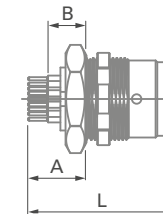
PCB

MR12-Q / QUICK-RELEASE

BODY STYLE

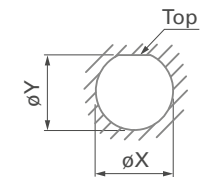


SOLDER



PCB

PANEL CUT-OUT



| Size | Locking | Termination | ød | øD1 | øD2 | A | B | L | E max | M Panel thread | C 1 | C 2 | Torque |
|------|---------------|----------------|------|------|------|-----|-----|------|-------|----------------|-----|-----|--------|
| 06 | Quick-release | Solder contact | 7.8 | 10.0 | 11.4 | 7.6 | - | 19.1 | 3.0 | M8.5x0.35 | 8 | 10 | 1.0 Nm |
| | | PCB contact | 7.8 | 10.0 | 11.4 | 7.3 | 4.7 | 18.8 | 3.0 | M8.5x0.35 | 8 | 10 | 1.0 Nm |
| 08 | Quick-release | Solder contact | 9.8 | 12.0 | 13.7 | 9.1 | - | 20.6 | 3.0 | M10.5x0.5 | 10 | 12 | 1.5 Nm |
| | | PCB contact | 9.8 | 12.0 | 13.7 | 7.3 | 4.7 | 18.8 | 3.0 | M10.5x0.5 | 10 | 12 | 1.5 Nm |
| 10 | Quick-release | Solder contact | 11.8 | 14.0 | - | 7.6 | - | 19.1 | 3.0 | M12.5x0.5 | 12 | - | 2.0 Nm |
| | | PCB contact | 11.8 | 14.0 | - | 7.3 | 4.7 | 18.8 | 3.0 | M12.5x0.5 | 12 | - | 2.0 Nm |

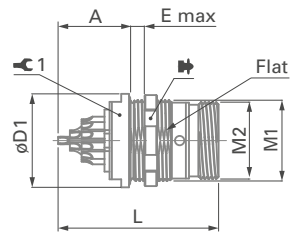
| Size | X | Y |
|------|--------------|-------------|
| 06 | 8.58 +0.1/0 | 8.25 +0.1/0 |
| 08 | 10.45 +0.1/0 | 10.2 +0.1/0 |
| 10 | 12.45 +0.1/0 | 12.2 +0.1/0 |

RECEPTACLES

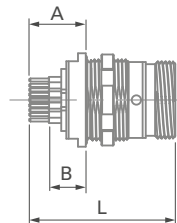
PANEL REAR MOUNTED

MR11-S / SCREW-LOCKING

BODY STYLE



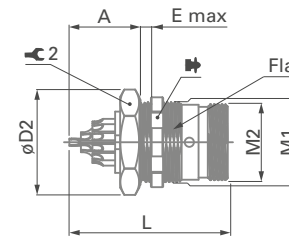
SOLDER



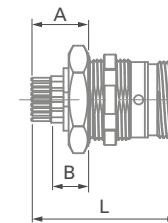
PCB

MR12-S / SCREW-LOCKING

BODY STYLE



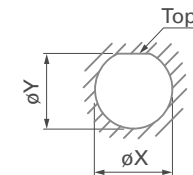
SOLDER



PCB













| Size | Locking | Termination | $\phi D1$ | $\phi D2$ | A | B | L | E max | M1 Panel thread | M2 Locking thread | $\hookrightarrow 1$ | $\hookrightarrow 2$ | Torque |
|------|---------|----------------|-----------|-----------|-----|-----|------|-------|-----------------|-------------------|---------------------|---------------------|--------|
| 06 | Screw | Solder contact | 10.0 | 11.4 | 7.6 | N/A | 19.1 | 2.3 | M8.5x0.35 | M8x2 | 8 | 10 | 1.0 Nm |
| | | PCB contact | 10.0 | 11.4 | 7.3 | 4.7 | 18.8 | 2.3 | M8.5x0.35 | M8x2 | 8 | 10 | 1.0 Nm |
| 08 | Screw | Solder contact | 12.0 | 13.7 | 9.1 | - | 20.6 | 2.3 | M10.5x0.5 | M10x2 | 10 | 12 | 1.5 Nm |
| | | PCB contact | 12.0 | 13.7 | 7.3 | 4.7 | 18.8 | 2.3 | M10.5x0.5 | M10x2 | 10 | 12 | 1.5 Nm |
| 10 | Screw | Solder contact | - | - | - | - | - | - | - | - | - | - | - |
| | | PCB contact | - | - | - | - | - | - | - | - | - | - | - |

PANEL CUT-OUT



| Size | ϕX | ϕY |
|------|--------------|-------------|
| 06 | 8.58 +0.1/0 | 8.25 +0.1/0 |
| 08 | 10.45 +0.1/0 | 10.2 +0.1/0 |
| 10 | - | - |

All dimensions and images shown are in millimeters and are for reference only.

| Size | Pin layout | Number of contacts | Contact diameter [mm] | Wire size ¹⁾ | | PCB contacts | Current [A] | Rated voltage r.m.s [V] | Test voltage [kV] in mated position | | | |
|---|--|--------------------|-----------------------|------------------------------|------------------------------|-------------------|--------------------------------|-------------------------|-------------------------------------|-----------------------|-----------------|--------------------|
| | | | | Solder contacts | | Pin diameter [mm] | IEC 60512-5-2-5b ²⁾ | | IEC 60664-1 ³⁾ | IEC 60512-4-1 test 4a | | |
| | | | | | | | | AC r.m.s. | | DC | | |
| | | | | | | | | Contact to body | | Contact to contact | Contact to body | Contact to contact |
| 06 |  | 4 | 2 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 1.0 | ≤200 | 1.4 | 1.2 | 2.3 | 1.9 |
| | | | 2 | 1.3 | Max ø1.33 mm – AWG18 [19/30] | 0.7 | 10 | | | | | |
| |  | 7 | 4 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 0.02 (2x) + 1.5 (2x) | ≤160 | 1.0 | 1.2 | 2.0 | 1.7 |
| | | | 3 | 0.7 | Max ø0.90 mm – AWG22 [19/34] | 0.5 | | | | | | |
| |  | 12 | 10 | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | 1.0 | ≤50 | 0.9 | 0.9 | 1.5 | 1.2 |
| | | | 2 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | |
| 08 |  ETHERNET | 8 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 3.8 | ≤320 | 1.6 | 1.6 | 2.2 | 2.2 | |
| |  USB 3.2 | 9 | 7 | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | 1.0 | ≤250 | 1.5 | 1.2 | 2.4 | 1.8 |
| | | | 2 ⁵⁾ | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | |
| |  | 19 | 15 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 1.0 | ≤100 | 0.9 | 0.9 | 1.5 | 1.2 |
| | | | 4 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | |
| |  | 19H | 13+2 ⁴⁾ | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 1.0 | ≤100 | 0.9 | 0.9 | 1.5 | 1.2 |
| | | | 4 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | |
| |  UHD | 19H | 12 | 0.5 | Max ø0.55 mm – AWG26 [19/38] | 0.4 | 1.5 ¹⁰⁾ | ≤125 | 1.0 | 1.0 | 1.8 | 1.8 |
| | | | 7 | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | | | | | | |
| |  | 24 | 20 | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | 1.0 | ≤63 | 0.9 | 0.9 | 1.5 | 1.2 |
| 4 | | | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | | |
|  | 24 | 18+2 ⁴⁾ | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | 1.0 | ≤63 | 0.9 | 0.9 | 1.5 | 1.2 | |
| | | 4 | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | | |
| 10 |  USB 3.2 | 12 | 7 | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | 0.02 | ≤250 | 1.7 | 1.5 | 2.3 | 2.0 |
| | | | 2 ⁵⁾ | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 3.0 | | | | | |
| | | | 3 | 0.9 | Max ø1.03 mm – AWG20 [26/34] | 0.7 | 8.0 | | | | | |
| | | | - | - | - | - | 2.7 ⁶⁾ | | | | | |
| |  | 30 | 24 | 0.5 | Max ø0.43 mm – AWG28 [19/40] | 0.4 | 1.0 | ≤160 | 1.2 | 1.0 | 1.9 | 1.7 |
| 6 | | | 0.5 | Max ø0.70 mm – AWG24 [19/36] | 0.4 | 5.0 | | | | | | |

¹⁾ Stranding values in brackets.

²⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For the max. operating current a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account. See page A-12 for details.

³⁾ Recommended operating voltage at sea level. This rated voltage is a general guideline where no other electrical safety standard applies. In

cases where other standards rule a specific use of the connector, the application-specific safety criteria shall be considered first. This must be evaluated in the framework of equipment engineering.

⁴⁾ Two advanced signal contacts for USB power are available for Solder (S) or PCB (P) receptacles.

⁵⁾ USB 3.2 contact blocks come with two advanced power contacts on the plug side (MP11) as standard (size 08 plug 9-pin contact block 2007 and size 10 plug 12-pin contact block 2307).

⁶⁾ Test voltage between contacts 0.9 and contacts 0.5 for configuration MiniMax size 10 2307/0309.

⁷⁾ Test voltage between contacts 0.7 and contacts 0.5 for configuration MiniMax size 06 0304.

⁸⁾ Contacts 0.7mm suitable for SPE data protocol 1 Gbit/s.

⁹⁾ Layout dedicated to 4K UHD Audio/Video Protocol 18.0 Gbit/s.









¹⁰⁾ Current of 1.4 A at a maximum temperature rise of 30 °C according to UHD specifications.









MECHANICAL AND VISUAL CODING









The mechanical coding for MiniMax is available as standard in 4 different variants : code 1, 2, 3, 4.

When size, body type, configuration and code matches the plug and receptacle will mate by aligning the exterior white marks (coding guide).

For additional differentiation, the odd codes are visually identified by a beige contact block while the even codes will vary with a black insulator.

| PLUGS | Size 06 | | | |
|---------------|---|---|---|---|
| | Code 1 | Code 2 | Code 3 | Code 4 |
| |  |  |  |  |
| Visual coding |  |  |  |  |

| PLUGS | Size 08 | | | |
|---------------|---|---|---|---|
| | Code 1 | Code 2 | Code 3 | Code 4 |
| |  |  |  |  |
| Visual coding |  |  |  |  |

| PLUGS | Size 10 | | | |
|---------------|---|---|---|---|
| | Code 1 | Code 2 | Code 3 | Code 4 |
| |  |  |  |  |
| Visual coding |  |  |  |  |

MINIMAX



Ground contact connected to housing:
 - Pin for PCB contact (P) versions
 - Solder barrel for solder contact (S) versions

Recommended wiring

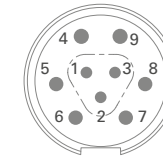
| Size | 06 | | | 08 | | | 10 |
|----------------------|------|---------|--|---|--|---|------------------------------|
| | 2+2 | 3+4 | 12 | 8 | 19 | 24 | 30 |
| Configuration | 2+2 | 3+4 | 12 | 8 | 19 | 24 | 30 |
| Power | 2; 4 | 5; 6; 7 | 5; 9 | any2 | 9; 12; 15; 18 ¹⁾ | 14; 17; 20; 23 | 14; 17; 20; 23; 26; 29 |
| Ethernet | - | - | 1/6; 3/10; 7/8; 11/12 ¹⁾ | 1/2; 3/4; 5/6; 7/8 ¹⁾ | 8/19; 10/11; 13/14; 16/17 ¹⁾ | 15/16; 18/19; 21/22; 13/24 ¹⁾ | Any other ¹⁾ |
| Advanced pin | 2; 4 | - | - | - | 13; 19 ²⁾ | 18; 24 ²⁾ | - |

¹⁾ Recommended

²⁾ Optional on MR11 / MR12

USB Signal name ³⁾

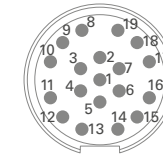
Size 08, configuration 9 contacts



- | | |
|---------------|-------------|
| 1) USB 2.0 D- | 5) SS TX+ |
| 2) SS drain | 6) SS TX- |
| 3) USB 2.0 D+ | 7) SS RX+ |
| 4) Vbus 5 V | 8) SS RX- |
| | 9) Vbus GND |

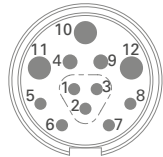
UHD 18.0 Gbit/s protocol

Size 08, configuration 19 contacts



- | | |
|--------------------------|--------------------------|
| 1) +5 Power | 11) TMDS data 1- |
| 2) DDC/CEC Ground | 12) TMDS data 0 shield |
| 3) Utility | 13) TMDS data 0+ |
| 4) Hot plug detect | 14) TMDS data 0- shield |
| 5) SDA | 15) TMDS data CLK shield |
| 6) SCL | 16) TMDS data CLK + |
| 7) CEC (delayed contact) | 17) TMDS data CLK - |
| 8) TMDS data 2- | 18) TMDS data 2 shield |
| 9) TMDS data 1 shield | 19) TMDS data 2+ |
| 10) TMDS data 1+ | |

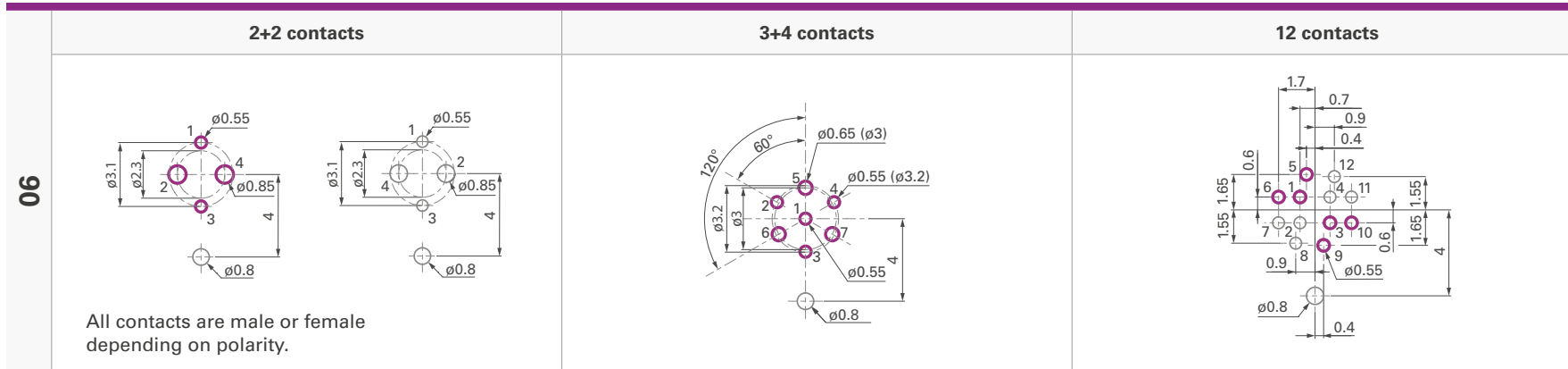
Size 10, configuration 12 contacts



- | | |
|---------------|-------------|
| 1) USB 2.0 D- | 7) SS RX+ |
| 2) SS drain | 8) SS RX- |
| 3) USB 2.0 D+ | 9) Vbus GND |
| 4) Vbus 5 V | 10) Power |
| 5) SS TX+ | 11) Power |
| 6) SS TX- | 12) Power |

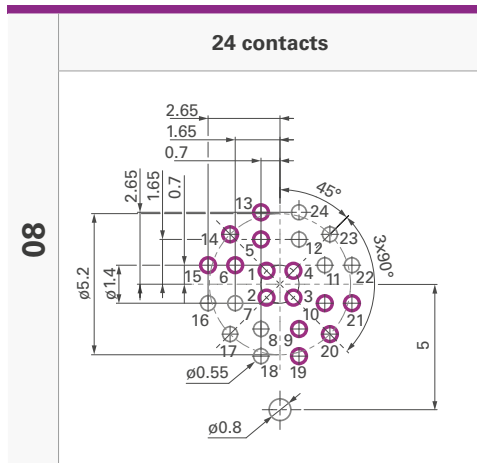
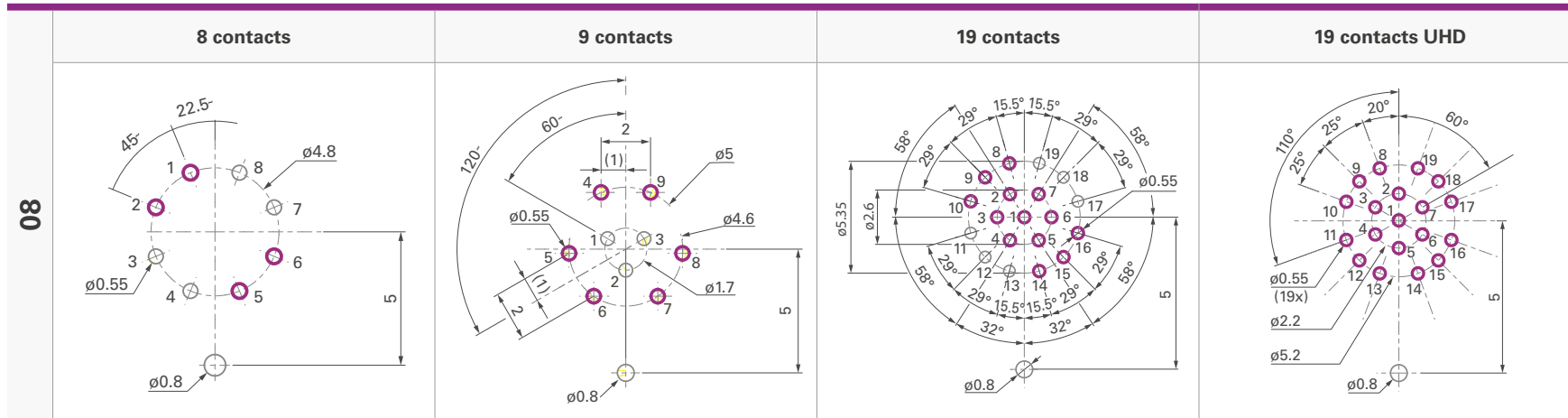
³⁾ RXTX labelling of Fischer Rugged Flash Drive. The RX of one device must always connect to the TX of the other device and vice versa.

View from the back of the plug/front of receptacle (guide mark at 12 o'clock)



| | Contacts | |
|--|----------|-------------|
| | Plugs | Receptacles |
| | Male | Female |
| | Female | Male |

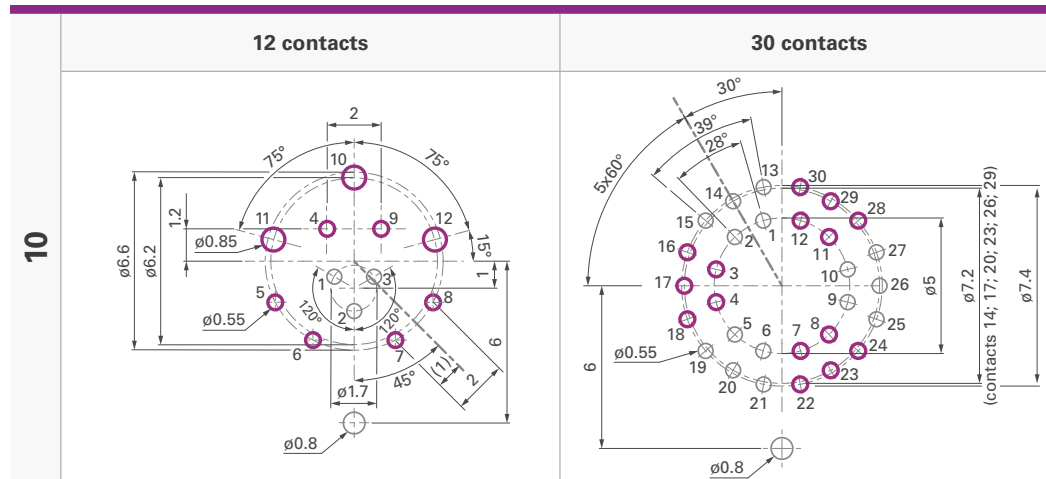
View from the back of the plug/front of receptacle (guide mark at 12 o'clock)



| Contacts | |
|----------|-------------|
| Plugs | Receptacles |
| | Female |
| | Male |

PCB hole layout

View from the back of the plug/front of receptacle (guide mark at 12 o'clock)



| Contacts | | |
|----------|--------|-------------|
| | Plugs | Receptacles |
| ○ | Male | Female |
| ○ | Female | Male |

MINIMAX

PLUGS & RECEPTACLES

| Example: | Connector design | | | | Contact block | Housing | | Standard options | | | |
|----------|------------------|---|---|----|---------------|---------|---|------------------|---|---|---|
| | MP11 | Z | L | 08 | 0420 | BK | 1 | Z | 1 | A | S |
| | MR11 | W | S | 08 | 2017 | BK | 2 | E | 1 | A | P |
| | MR50 | Z | Q | 08 | 0019 | BK | 4 | E | 1 | A | S |



Body style

- MiniMax plug = MP**
- MP11 = Cable mounted
- MiniMax receptacle = MR**
- MR11 = Panel mounted
 - MR12 = Panel mounted
 - MR50 = Cable mounted

Sealing level

- MP11, MR50**
- Z = not applicable
- MR11, MR12**
- W = water sealing (IP68)

Locking system

- MiniMax plug & receptacle**
- L = Push-pull locking
 - S = Screw-locking
 - Q = Quick-release

Connector size

- 06 = Size 6
- 08 = Size 8
- 10 = Size 10

Number of contacts (see page J-6)

- Digit 1 = Advanced contacts (if applicable)
- Digit 2 = Power contacts (where physically larger than the other contacts)
- Digit 3+4 = Remaining contacts

Termination

- MP11, MR50**
- S = Solder contact
- MR11, MR12**
- P = PCB contact
 - S = Solder contact

Contact bloc

- A = Hermaphroditic (both MR and MP need to be "A")
 - F* = Female contacts
 - M* = Male contacts
- * only for size 06 configuration 0202 and 0304²⁾
(if MR = "F" then MP = "M"; if MR = "M" then MP = "F")

Insulating material

- 1 = PEEK

Interface O-ring material

- MP11**
- Z = Not applicable
- MR11, MR12, MR50**
- E = EPDM

Keying code

- 1 = Code 1 (insulator= Beige)
- 2 = Code 2 (insulator= Black)
- 3 = Code 3 (insulator= Beige)
- 4 = Code 4 (insulator= Black)

Housing color

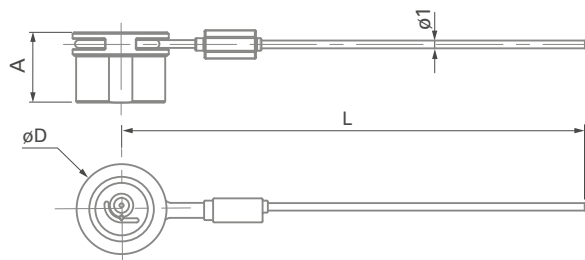
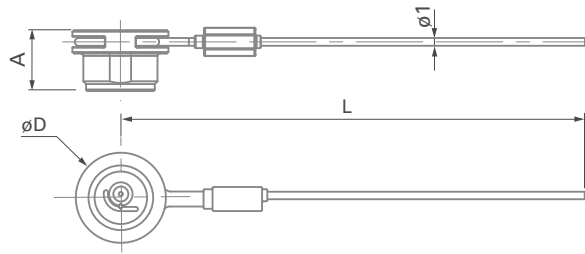
- AN = Anthracite
- BK = Black¹⁾

¹⁾ MR12 body style not available in Black (BK). Please contact your local sales representative.

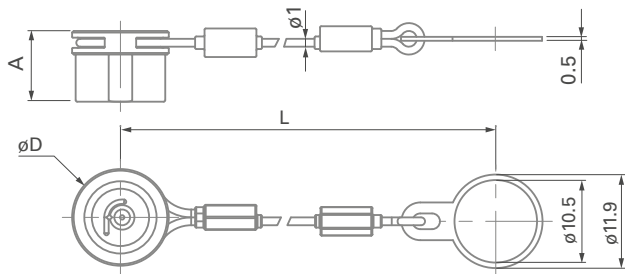
²⁾ Configuration 0304 is standard with F for receptacle and M for plug. For customization please contact your local sales representative.

SOFT CAPS

CABLE MOUNTED



PANEL MOUNTED



| Size | Body style | Images | Push-pull | Quick-release | Screw-lock | A | øD | L | Part number |
|------|--------------------|--------|-----------|---------------|------------|-----|------|-----|--------------------|
| 06 | MP11 ¹⁾ | | ● | | | 9.6 | 10.0 | 200 | MCP06C 1B2 A200 AA |
| | | | | ● | ● | 7.8 | 10.0 | 200 | MCP06C 1B2 A200 BA |
| 08 | | | ● | | | 9.6 | 12.3 | 200 | MCP08C 1B2 A200 AA |
| | | | | ● | ● | 7.8 | 12.3 | 200 | MCP08C 1B2 A200 BA |
| 10 | | | ● | | - | 9.6 | 14.3 | 200 | MCP10C 1B2 A200 AA |
| | | | | ● | - | 7.8 | 14.3 | 200 | MCP10C 1B2 A200 BA |
| 06 | MR50 ¹⁾ | | ● | ● | ● | 9.0 | 10.0 | 200 | MCR06C 1B2 A200 AA |
| 08 | | | ● | ● | ● | 9.0 | 12.3 | 200 | MCR08C 1B2 A200 AA |
| 10 | | | - | - | - | - | - | - | - |

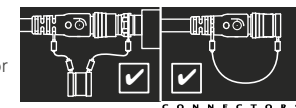
¹⁾Crimp ferrule and heat shrink tube are included.

| Size | Body style | Images | Push-pull | Quick-release | Screw-lock | A | øD | L | ød1 | ød2 | Part number |
|------|--|--------|-----------|---------------|------------|-----|------|----|------|------|--------------------|
| 06 | MR11 ¹⁾ MR12 ¹⁾ | | ● | ● | ● | 9.0 | 10.0 | 95 | 8.5 | 9.9 | MCR06P 1B2 A095 AA |
| 08 | | | ● | ● | ● | 9.0 | 12.3 | 95 | 10.5 | 11.9 | MCR08P 1B2 A095 AA |
| 10 | | | ● | ● | - | 9.0 | 14.3 | 95 | 12.6 | 13.9 | MCR10P 1B2 A095 AA |

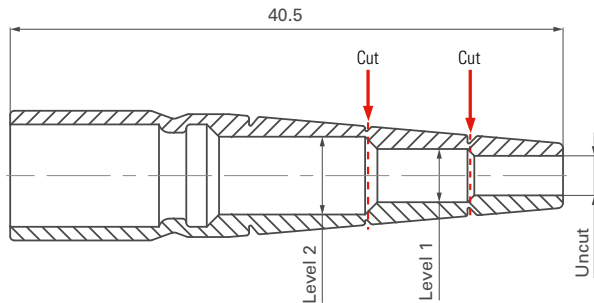
¹⁾Crimp ferrule, heat shrink tube and mounting ring are included.

All dimensions and images shown are in millimeters and are for reference only.

To avoid getting debris into the caps when the connectors are mated, please mate the caps together. Please make sure that the cap is in place when the plug or the receptacle is in unmated position.



STRAIGHT BEND RELIEF



CUTTING DIAMETERS

| Size | Uncut | Level 1 | Level 2 | Part Number |
|------|-------|---------|---------|-------------|
| 06 | ø2.9 | ø3.9 | ø5.7 | MB06 A1BK |
| 08 | ø3.9 | ø5.4 | ø6.7 | MB08 A1BK |
| 10 | - | - | - | - |

PC-BOARD TERMINATION



- Rigid flex solution available for SMD connectors
- Compatible with signal & power
- Available for 19 & 24 pin configuration.¹⁾

| Size | Configuration | Part number | Designation | Description |
|------|---------------|-------------|-------------------------------|--|
| 08 | 19-pin | 221725 | Flex MiniMax 502615A-19 pôles | Rigid Flex for SMD connector for receptacles size 08 19 pins with PCB terminations |
| | 19-pin | 127897 | CA S 19xFX MR11L1/OE 0.03m | Assembled Rigid Flex with MR11 receptacle push-pull size 08 19 pins with PCB terminations, black, code 1 |
| | 24-pin | 221726 | Flex MiniMax 502735A-24 pôles | Rigid Flex for SMD connector for receptacles size 08 24 pins with PCB terminations |
| | 24-pin | 127898 | CA S 24xFX MR11L1/OE 0.03m | Assembled Rigid Flex with MR11 receptacle push-pull size 08 24 pins with PCB terminations, black, code 1 |

¹⁾ Custom design and other configurations available upon request. Contact your Fischer Connectors sales representative.

SPANNER & NUT DRIVER

DOUBLE-ENDED OPEN SPANNER EXTRA THIN



| Size | Part number | Opening across flats | Length | Fork thickness |
|------|-------------|----------------------|--------|----------------|
| 06 | TX00.008 | 8 | 96 | 2.3 |
| 08 | TX00.010 | 10 | 104 | 2.5 |
| | TX00.012 | 12 | | |
| 10 | TX00.012 | 12 | 104 | 2.5 |

Material – Chrome Alloy Steel, Chrome plated, Fork Angles – 15° and 75°.

NUT DRIVER WITH T-HANDLE AND HEX DRIVE



| Part number | Thread size | Nut outer dia. | øD | Hex drive |
|-------------|-------------|----------------|----|-----------|
| TX00.383 | M8.5x0.35 | 10 | 14 | 7 |
| TC00.007 | M10.5x0.5 | 12 | 16 | 7 |
| TX00.403 | M12.5x0.5 | 14 | 18 | 7 |

Material – Hardened Tool Steel, Nickel plated.

SINGLE SIDED HEX NUT DRIVER



| Part number | Thread size | Nut outer dia. | øD | Hex drive |
|-------------|-------------|----------------|----|-----------|
| TX00.386 | M8.5x0.35 | 10 | 14 | 12 |
| TX00.385 | M10.5x0.5 | 13 | 16 | 12 |
| TX00.412 | M12.5x0.5 | 15 | 18 | 12 |

Material – Hardened Tool Steel, Nickel plated and plastic.

CABLE ASSEMBLY

Note: Cable assembly is only possible with special tooling developed by Fischer Connectors. Due to the complexity of the connector purchase costs may be significant. As an alternative solution, Fischer Connectors offers premium cable assembly services.



| Part number | Description |
|-------------|---------------------------------------|
| 130257 | Hand press Luthy HP150T or equivalent |



| Part number | Description |
|-------------|----------------------|
| 130254 | MiniMax support tool |



| Part number | Description |
|-------------|---------------------------------------|
| 130252 | MiniMax tool kit Size 06 |
| 139451 | MiniMax tool kit Size 06 (7 contacts) |
| 130253 | MiniMax tool kit Size 08 |
| 137461 | MiniMax tool kit Size 10 |

All dimensions and images shown are in millimeters and are for reference only.

MATERIAL & SURFACE FINISH

| Metal components | | Material | | Finish | |
|--|--------------------|-----------------------|----------------------------------|---|--|
| | | Designation ISO | Standard | Designation | Standard |
| Housing, Nut | | Brass CuZn39Pb3 | CW614N UNS C 38500 | Black Chrome over Nickel Anthracite Nickel | SAE-AMS2460 SAE-AMS2404 SAE-AMS-QQ-N-290 |
| Back nut (MP11, MR50) | | Brass CuZn39Pb3 | CW614N UNS C 38500 | Nickel | SAE-AMS-QQ-N-290B SAE-AMS2404G |
| Ground contact | | Brass CuZn39Pb3 | CW614N UNS C 38500 | Nickel | SAE-AMS-QQ-N-290B SAE-AMS2404G |
| Push-pull locking spring Quick-release locking spring | | Stainless steel | X10CrNi18-8 (1.4310) | - | - |
| Contacts | - Male, Ground Pin | Brass CuZn39Pb3 | CW614N; UNS C 38500 | 1 µm Gold over Nickel | MIL-DTL-45204D Type I; ASTM B488 |
| | - Female | Bronze CuSn4Zn4Pb4 | CW456K; ASTM B139 UNS C 54400 | 1 µm Gold over Nickel | MIL-DTL-45204D Type I; ASTM B488 |
| Ball-locking | | Ceramic Si3N4 | - | - | - |

| Insulator and sealing | | International symbol | Flammability |
|-----------------------|---------------------|---------------------------------------|--------------|
| Insulators | | PEEK ¹⁾ | UL 94 V-0 |
| O-rings | - General | FPM (Viton®) | - |
| | - Interface | EPDM | - |
| Sealant | - Cable connectors | Epoxy compound | - |
| | - Panel receptacles | Silicone/Epoxy ²⁾ compound | UL 94 V-0 |
| Bend relief | - Cable connectors | Santoprene™ TPV 101-73 | UL 94 HB |
| Cap | - Cable connectors | TPV (Santoprene™) | UL 94 HB |
| | - Panel receptacles | | |

¹⁾ Or any material in the PAEK family that provides equal or better overall performances.

²⁾ For panel receptacle size 10.

ENVIRONMENTAL & MECHANICAL DATA

| Characteristic | Performance | Standard |
|--|---|---|
| Sealing performance mated and unmated | IP68, -20m/24h water sealing <10 ⁻⁶ mbar l/s gas sealing | IEC 60529 IEC 60068-2-17 Test Qk, Method 3 |
| Sealing performance Soft Cap | IP67; 15 cm submersion for 30 min | IEC 60529 |
| Operating temperature range ¹⁾ | -40 °C to +135 °C | IEC 60512-6-1 IEC 60068-2-14-Nb |
| Corrosion resistance mated | Salt mist 1,000 hours ; 5% salt solution, 35 °C Plug and receptacle in mated position or with cap when unmated. Appearance may change over time without impacting mechanical or electrical functions. | IEC 60068-2-11 Test Ka; MIL-STD-202 Method 101; EIA-364-26 |
| Endurance | 5,000 mating cycles Preserved mechanical and electrical functionality. Normal wear will appear. | IEC 60512-9-1 |
| Vibration Screw-locking version only | 10 to 2,000 Hz, 1.5 mm or 15 g, 12 sweep cycles per axis, 20 minutes per 10-2,000-10 Hz sweep cycle, no discontinuity >1 µs, no visible signs of damage | MIL-STD-202 Method 204 Condition B |
| Vibration Push-pull version | 10 to 500 Hz, (1.5 mm or 10 g, 12 sweep cycles per axis, 15 minutes per 10-500-10 Hz sweep cycle, no discontinuity >1 µs, no visible signs of damage | MIL-STD-202 Method 204 Condition A |
| Unlocking Force Quick-release version only | Size 06 = Typical 25 N±40% Size 08 = Typical 35 N±40% Size 10 = Typical 60 N±40% | |
| Shock | 300 g | MIL-STD-202 Method 213; EIA-364-27 |

¹⁾ Max temperature of +85 °C for soft caps.

ELECTRICAL DATA

| Characteristic | Performance | Standard |
|---------------------------------------|----------------------|-------------------------------------|
| Contact resistance | 5 mΩ (typical value) | IEC 60512-2-1-2a; IEC 60512-2-2-2b |
| Shell resistance ²⁾ | ANTHRACITE | <5 mΩ (Cabled) IEC 60512-2-6-2f |
| | BLACK | <50 mΩ (Cabled) IEC 60512-2-6-2f |
| Insulation resistance | >10 ¹⁰ Ω | IEC 60512-3-1-3a |
| Shielding effectiveness | 360° shielded | - |

²⁾ Measured for a mated pair of panel receptacle and cable plug between the grounding pin and the cable shielding.

K

CHAPTER



FISCHER **FREEDOM™** SERIES

EASY MATING | EASY CLEANING | EASY INTEGRATION

KEY FEATURES

- No key code: 360° mating freedom & optimized cable management
- Non-magnetic locking mechanism
- Membrane-sealed contacts (patent pending)
- Low profile
- IP68 sealed to 20 m/24 h



FREEDOM

K-2 / K-18

FREEDOM



PLUGS



CABLE MOUNTED

- Body style (FLP01) K-4
- Technical dimensions K-5



PANEL MOUNTED

- Body style (FLP03) K-4
- Technical dimensions K-6

RECEPTACLES



PANEL MOUNTED

- Body style (FLR01) K-7
- Technical dimensions K-8



CABLE MOUNTED

- Body style (FLR50) K-7
- Technical dimensions K-10

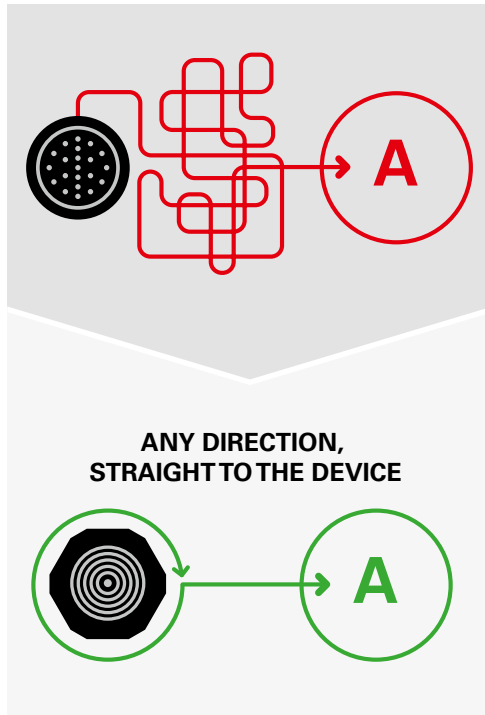
FOR ALL FREEDOM

- Key features K-3
- Body styles & technical dimensions K-4
- Electrical & contact configurations K-11
- PCB hole layout K-11
- Part numbering K-12
- Pre-cabled plug / receptacle configurations K-13
- Accessories K-15
- Technical information K-17

This catalog covers our standard connector solutions. For specific requests, including custom connectors, please contact your local sales representative.
 Note: The images shown in this catalog are for illustrative purposes only.

EASY MATING

- No key code = 360° mating freedom
- Optimized cable management – no more tangles and turns, cables always go in a straight line
- Non-magnetic quick-release locking mechanism



EASY CLEANING

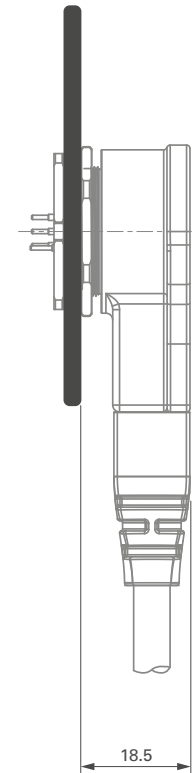
- Surface contacts = fixed tracks & membrane-sealed contacts
- No female contacts that can accumulate dirt, no long male contacts that can get broken
- A true cleanable solution on both receptacle and plug sides



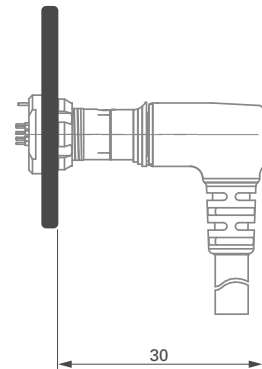
EASY INTEGRATION

- 2x less protruding compared to a normal pin-socket type of connector
- A true low-profile solution
- Ideal for integration in wearable applications or on panels where space and access are limited

LP360™
CONNECTOR



STANDARD PIN-SOCKET
CONNECTOR



PLUG

CABLE MOUNTED

PANEL MOUNTED



| Body style | | FLP01 | FLP01 | FLP03 | References to detailed information |
|------------------|--------------------|-------|-------|-------|---|
| Protection | Sealed to IP67 | | ● | | Sealing categories, pages K-17 & 18 |
| | Sealed up to IP68 | ● | | ● | |
| Locking system | Friction | | | | - |
| | Push-pull | | | | |
| | Quick-release | ● | ● | ● | |
| | Lanyard | | | | |
| | Tamperproof | | | | |
| Termination | Wires | ● | ● | | Electrical & contacts configurations, page K-11 |
| | Solder | | | ● | |
| | ZIF | | | ● | |
| Housing material | Brass | ● | | ● | Page K-12 |
| | Aluminum | | | | |
| | Plastic | | ● | | |
| Housing color | Anthracite | ● | | ● | Page K-12 |
| | Black | | ● | | |
| Cabling | Cable clamp sets | | | | - |
| | Overmoldable | ● | ● | | |
| | Heat shrinkable | ● | ● | | |
| Accessories | Cable bend reliefs | ● | ● | | Page K-15 |
| | Protective sleeves | | | | |
| | Sealing caps | ● | ● | ● | |
| Size | 08 | | ● | ● | Technical dimensions, pages K-5 & 6 |
| | 14 | ● | | ● | |

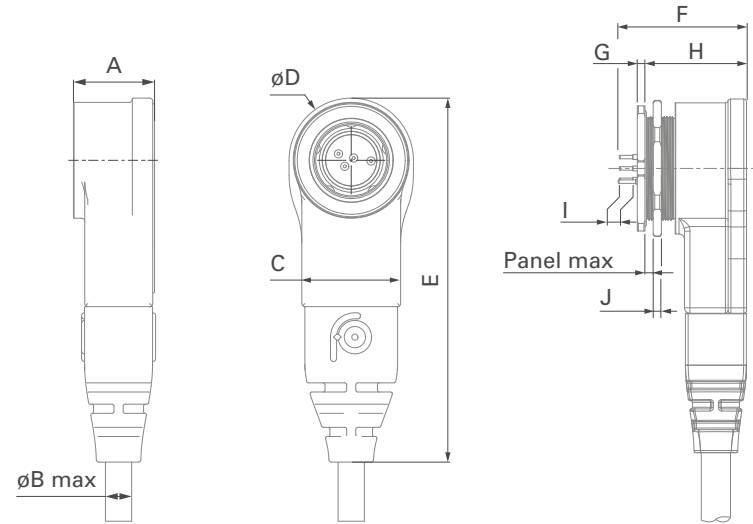
PLUG FLP01

CABLE MOUNTED

METAL SIZE 14



PLASTIC SIZE 08



Note: Plug is only available pre-cabled with a standard length (1 m). For customized solutions, please contact sales.

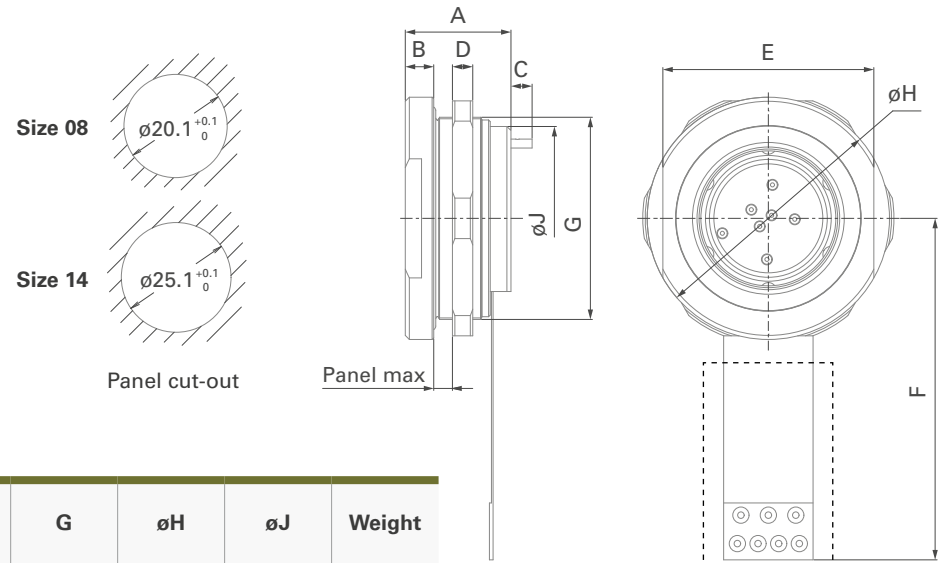
| Size | A | $\phi B \text{ max}$ | C | ϕD | E | Panel max | F | G | H | I | J | Weight (without cable) |
|----------------------|------|----------------------|------|----------|------|-----------|------|-----|------|-----|-----|------------------------|
| 08 Plastic | 13.3 | 4.8 | 16.0 | 21.5 | 59.3 | 3 | 23.8 | 2.2 | 18.9 | 2.5 | 2 | 15.8 g |
| 14 Metal | 13 | 5.5 | 15.6 | 25.4 | 67.4 | 3 | 23.4 | 1.4 | 18.5 | 2.5 | 1.5 | 44.5 g |

All dimensions are in millimeters and images are for reference only.

PLUG FLP03

PANEL MOUNTED

METAL



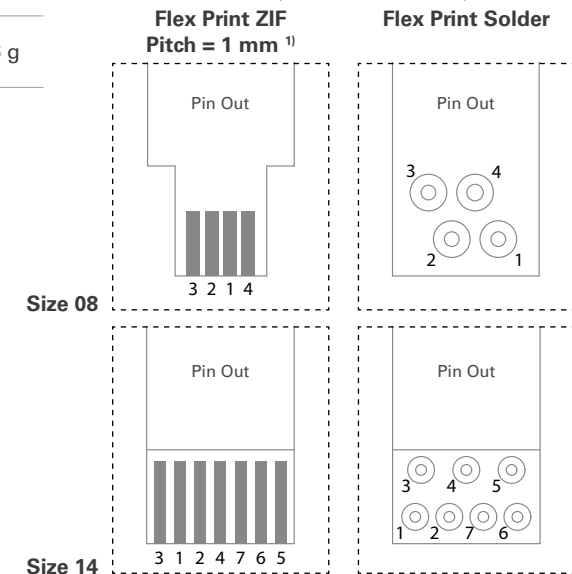
| Size | A | B | C | D | E | Panel max | F | G | øH | øJ | Weight |
|-----------------|----|-----|-----|-----|----|-----------|----|---------|----|------|--------|
| 08 Metal | 13 | 3.5 | 2.7 | 2.5 | 21 | 3.7 | 42 | M20x0.5 | 25 | 17.6 | 20.5 g |
| 14 Metal | 13 | 3.5 | 2.7 | 2.5 | 26 | 3.7 | 42 | M25x0.5 | 30 | 22.6 | 32.6 g |

NUT ACCESSORY

Nut to be ordered separately. Available in different sizes.



| Size | Part number | Inner thread size | Outer diameter | Flat open spanner | Material |
|-----------------|-------------|-------------------|----------------|-------------------|----------|
| 08 Metal | 223881 | M20x0.5 | ø26 | 24 | Metal |
| 14 Metal | 224113 | M25x0.5 | ø31 | 29 | Metal |



¹⁾ ZIF connectors have a current limitation of 1 A.

RECEPTACLE

PANEL MOUNTED

CABLE MOUNTED



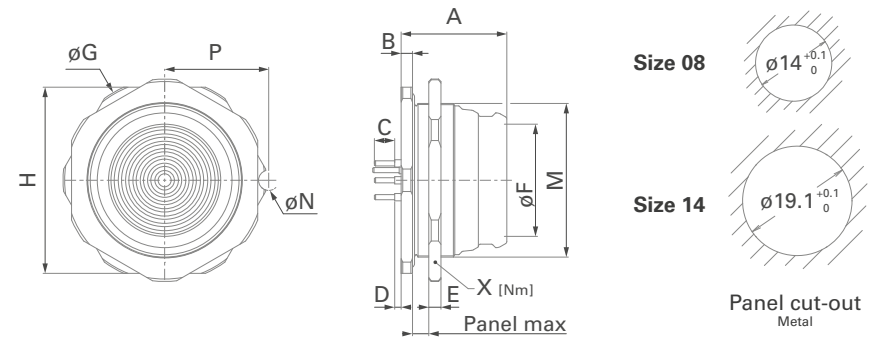
| Body style | | FLR01 | FLR01 | FLR50 | References to detailed information |
|------------------|--------------------|-------|-------|-------|--|
| Protection | Sealed to IP67 | | ● | | Sealing categories, pages K-17 & 18 |
| | Sealed up to IP68 | ● | | ● | |
| | Hermetic | | | | |
| Termination | Wires | | | ● | Electrical & contact configurations, page K-11 |
| | PCB contacts | ● | ● | | |
| Housing material | Stainless steel | ● | | | Page K-12 |
| | Aluminum | | | ● | |
| | Plastic | | ● | | |
| Housing color | Anthracite | ● | | ● | Page K-12 |
| | Black | | ● | | |
| Design | Front projecting | ● | ● | ● | Body styles, pages K-8 to 10 |
| Assembly | Front mounting | | | | |
| | Rear mounting | ● | ● | ● | |
| Accessories | Cable bend relief | | | ● | Page K-15 Page K-16 |
| | Protective sleeves | | | | |
| | Sealing caps | ● | ● | | |
| | Garment fixation | ● | ● | ● | |
| Size | 08 | ● | ● | ● | Technical dimensions, pages K-8 to 10 |
| | 14 | ● | | ● | |

All dimensions are in millimeters and images are for reference only.

RECEPTACLE FLR01

PANEL
REAR MOUNTED

METAL



| Size | A | B | C | D | Panel max | øF | øG | H | M | øN | P | X | Weight |
|--------------------|----|-----|-----|---|-----------|----|------|------|---------|-----|------|--------|--------|
| 08 Metal | 13 | 1.4 | 2.5 | 1 | 3 | 8 | 19.9 | 17.9 | M14x0.5 | 2.0 | 10.3 | 2-4 Nm | 7.5 g |
| 14 Metal | 13 | 1.4 | 2.5 | 1 | 3 | 14 | 24.9 | 22.9 | M19x0.5 | 2.5 | 12.8 | 2-4 Nm | 15.2 g |

NUT ACCESSORY

Nut to be ordered separately. Metal nut available in different sizes. Refer to Accessories section for garment fixation.

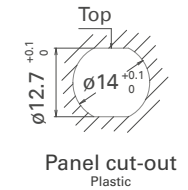
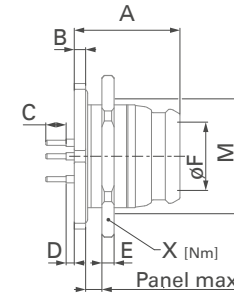
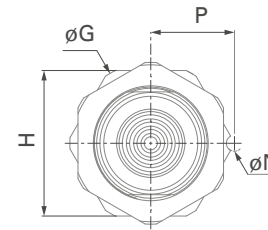


| Size | Part number | Inner thread size | Outer diameter | E | Flat open spanner | Material |
|--------------------|-------------|-------------------|----------------|-----|-------------------|----------|
| 08 Metal | 224101 | M14x0.5 | ø20 | 2.0 | 18 | Plastic |
| | 223787 | M14x0.5 | ø20 | 1.5 | 18 | Metal |
| 14 Metal | 222825 | M19x0.5 | ø25 | 1.5 | 23 | Metal |
| | 222826 | M19x0.5 | ø30 | 1.5 | 28 | Metal |

RECEPTACLE FLR01

PANEL
REAR MOUNTED

PLASTIC



| Size | A | B | C | D | Panel max | øF | øG | H | M | øN | P | X | Weight |
|----------------------|------|-----|-----|-----|-----------|----|------|------|---------|-----|------|------------|--------|
| 08 Plastic | 13.8 | 2.2 | 2.5 | 0.2 | 3 | 8 | 19.9 | 17.9 | M14x0.5 | 2.0 | 10.3 | 1.0-1.5 Nm | 3.3 g |

NUT ACCESSORY

Nut to be ordered separately.
Refer to Accessories section for garment fixation.



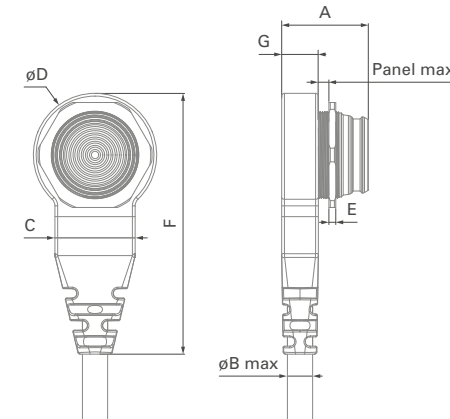
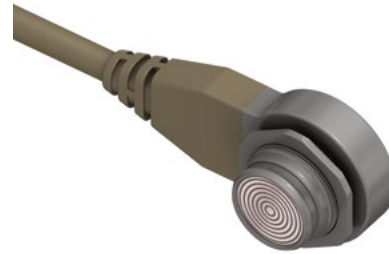
| Size | Part number | Inner thread size | Outer diameter | E | Flat open spanner | Material |
|----------------------|---------------|-------------------|----------------|-----|-------------------|----------|
| 08 Plastic | 224101 | M14x0.5 | ø20 | 2.0 | 18 | Plastic |
| | 223787 | M14x0.5 | ø20 | 1.5 | 18 | Metal |

All dimensions are in millimeters and images are for reference only.

RECEPTACLE FLR50

CABLE MOUNTED

METAL



| Size | A | øB max | C | øD | F | G | Panel max | Weight (without cable) |
|-----------------|------|--------|------|------|------|-----|-----------|------------------------|
| 08 Metal | 18.9 | 4.8 | 17.5 | 26.9 | 56.9 | 8.1 | 2.3 | 18 g |
| 14 Metal | 18.9 | 5.5 | 17.5 | 26.9 | 56.9 | 8.1 | 2.3 | 25 g |

Note: Receptacle is only available pre-cabled with a standard length (1.0 m). For customized solutions please contact sales.

NUT ACCESSORY

Nut to be ordered separately. Available in different sizes. Refer to Accessories section for garment fixation.



| Size | Part number | Inner thread size | Outer diameter | E | Flat open spanner | Material |
|-----------------|-------------|-------------------|----------------|-----|-------------------|----------|
| 08 Metal | 224101 | M14x0.5 | ø20 | 2.0 | 18 | Plastic |
| | 223787 | M14x0.5 | ø20 | 1.5 | 18 | Metal |
| 14 Metal | 222825 | M19x0.5 | ø25 | 1.5 | 23 | Metal |
| | 222826 | M19x0.5 | ø30 | 1.5 | 28 | Metal |

| Size | Pin layout | Number of contacts | | Receptacle | Pin number | Current [A] | Rated voltage r.m.s [V] ³⁾ | Test voltage [kV] in mated position | | | |
|-----------|------------|--------------------|---|-------------------|------------|--------------------------------|---------------------------------------|-------------------------------------|--------------------|-------------------|--------------------|
| | | | | PCB contacts | | | | IEC 60512-4-1 test 4a | | | |
| | | | | Pin diameter [mm] | | AC r.m.s. | | DC | | | |
| | | | | | | IEC 60512-5-2-5b ₁₎ | IEC 60664-1 ₂₎ | Contact to body | Contact to contact | Contact to body | Contact to contact |
| 08 | | 4 | 2 | 0.63 | 1, 2 | 1 | ≤160 | 0.7 ⁴⁾ | 0.7 | 1.2 ⁴⁾ | 1.2 |
| | | | 2 | 0.63 | 3, 4 | 5 | | | | | |
| 14 | | 7 | 4 | 0.63 | 1, 2, 6, 7 | 1 | ≤160 | 0.7 | 0.7 | 1.2 | 1.2 |
| | | | 3 | 0.63 | 3, 4, 5 | 5 | | | | | |

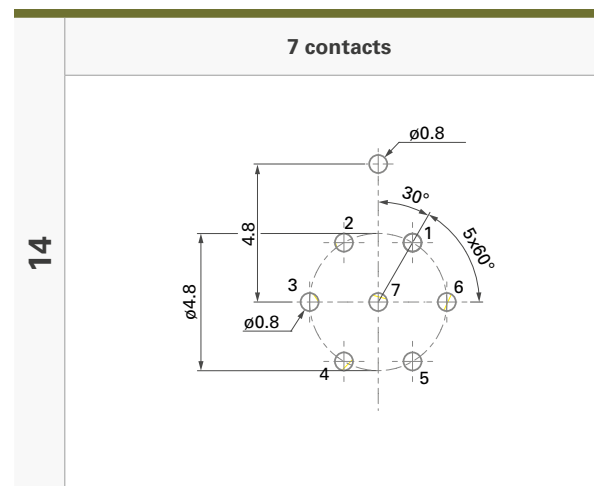
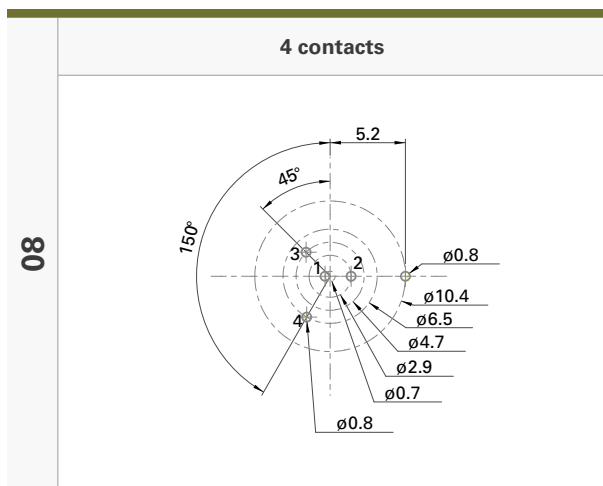
¹⁾ Current per contact at 40 °C temperature rise measured on the basic curve according to IEC 60512-5-2-5b. For the max. operating current, a reduction factor must be used and limitations due to the size of the wires and the permissible upper temperature limit of the materials employed must be taken into account.

²⁾ Recommended operating voltage at sea level. This rated voltage is a general-purpose guideline where no other electrical safety standard applies. In case where other standards rule a specific use of the connector, then the application-specific safety criteria shall be considered first. This must be evaluated in the frame of equipment engineering.

³⁾ Based on IEC 61984 safety requirements, Fischer Connectors recommends that, for operating voltage >50 V, power should not be used without integration of an active security system. Please contact us for further information.

⁴⁾ N/A for plastic version.

View from the front of the receptacle (grounding pin at 12 o'clock)



All dimensions are in millimeters and images are for reference only.

Example:

| Connector design | | | | Contact block | | | Housing | | Standard options | | | |
|------------------|---|----|----|---------------|-----|---|---------|-----|------------------|---|---|---|
| FLP01 | Z | QM | 14 | P | 007 | S | AN | 360 | V | 2 | Z | B |
| FLR01 | W | ZZ | 14 | T | 007 | P | AN | 360 | V | 3 | A | C |

Body style

- **F** = Freedom
 - **L** = Low profile
 - **P01** = Cable plug right angle
 - **P03** = Panel plug
 - **R01** = Rear mounted receptacle
 - **R50** = Cable mounted receptacle

Sealing level

- Plug**
- **Z** = Not applicable
- Receptacle**
- **W** = Water sealing

Locking system

- Plug**
- **QM** = Quick-release medium force
- Receptacle**
- **ZZ** = No locking

Connector size

- **08** = Size 08 (interface diameter)
- **14** = Size 14 (interface diameter)

Polarity of contacts

- **P** = Piston
- **T** = Track

Number of contacts

- **Size 08** = 004
- **Size 14** = 007

Contact type

- **A** = Flex print Solder
- **B** = Flex print ZIF ¹⁾
- **S** = Solder
- **P** = PCB

Housing material

- **B** = Brass (plug)
- **C** = Stainless steel (receptacle)
- **D** = Plastic

Grounding

- **A** = Grounding pin (receptacle)
- **Z** = Not applicable (plug)

Insulating material

- **2** = Plastic (plug)
- **3** = Epoxy (receptacle)

O-ring material

- Plug** = Interface O-ring
Receptacle = Panel O-ring
- **V** = Viton®
 - **Z** = Not applicable

Keying code

- **360** = No code

Housing color

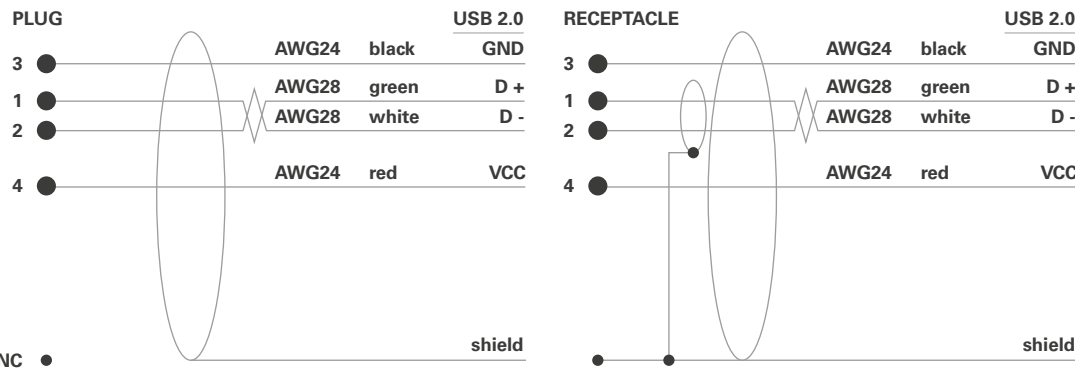
- **AN** = Anthracite
- **BK** = Black

¹⁾ZIF connectors have a current limitation of 1 A.

CABLE SPECIFICATION 4 PINS SIZE 08

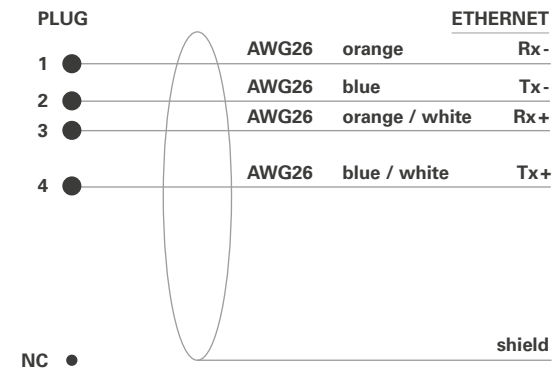
USB CABLE

- PUR halogen free, flame retardant outer sheath, black (RAL9005 matt) / Tan (RAL 7002 matt)
- Working voltage: ≤ 100 V
- Weight: 34 kg/km
- Overall diameter: nominal 4.8 mm / minimum 4.6 mm



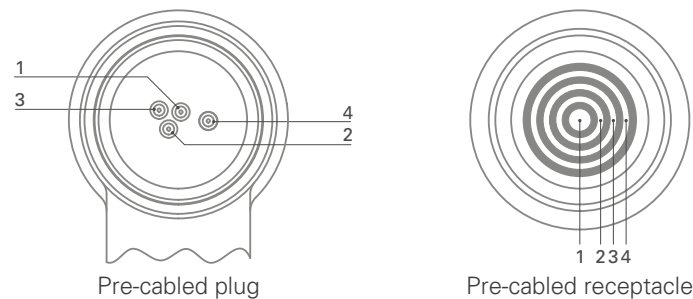
ETHERNET CABLE

- Breaking strength: ≤ 100 N
- Recommended bending radius: 20 mm static / 40 mm dynamic
- Working temperature: -30 °C to +80 °C
- Weight: 29 kg/km
- Overall diameter: nominal 4.7 mm / minimum 4.4 mm / maximum 5.0 mm



WIRING DIAGRAM AND PART NUMBER FOR PRE-CABLED PLUG / RECEPTACLE

Wiring diagram front view:



| Part Number | USB 2.0 PRECABLED SOLUTION 1 m, open end |
|-------------|---|
| 135121 | Plug assembly 1 m black cable & bend relief |
| 136299 | Receptacle assembly 1 m black cable & bend relief |
| 136386 | Receptacle assembly 1 m TAN cable & bend relief |

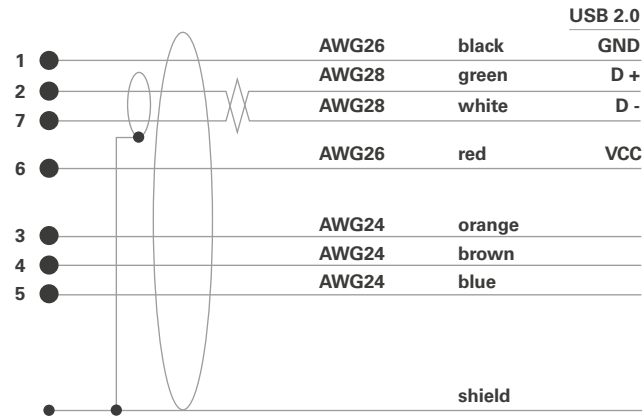
| Part Number | ETHERNET 100Mbit/s PRECABLED SOLUTION 1 m, open end |
|-------------|--|
| 135528 | Plug assembly 1 m black cable & bend relief |

All dimensions are in millimeters and images are for reference only.

CABLE SPECIFICATION 7 PINS SIZE 14

- PUR halogen free, flame retardant outer sheath, nominal thickness 0.55 mm, black (RAL9005 matt / TAN (RAL 7002 matt))
- Working voltage: 100 V
- Weight: 45 kg/km

- Breaking strength: 400 N (Vectran central strength member)
- Recommended bending radius: 40 mm static / 60 mm dynamic
- Working temperature: -40 °C to +90 °C
- Overall diameter: nominal 5.35 mm / maximal 5.50 mm



AWG28 (white/green twisted)

Tinned copper conductor 7x0.13 mm / polypropylene insulation / nominal thickness 0.28 mm / nominal diameter 0.95 mm / characteristic impedance 90 ±10 Ω Tinned copper drain wire 7x0.13 mm, aluminum / polyester tape

AWG26 (black/red)

Tinned copper conductor 7x0.16 mm / polypropylene insulation / nominal thickness 0.21 mm / nominal diameter 0.90 mm

AWG24 (blue/brown/orange)

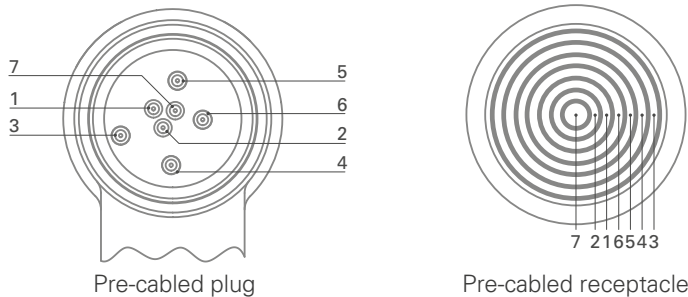
Bare copper conductor 7x0.20 mm / polypropylene insulation / nominal thickness 0.20 mm / nominal diameter 1.0 mm

Shield

Tinned copper braid / coverage 95% / wire diameter 0.13 mm

WIRING DIAGRAM FOR STANDARD PRE-CABLED PLUG / RECEPTACLE

Wiring diagram front view:



| Part Number | PRECABLED SOLUTION 1 m, open end |
|-------------|---|
| 134563 | Plug assembly 1 m black cable & bend relief |
| 134564 | Plug assembly 1 m TAN cable & bend relief |
| 135509 | Receptacle assembly 1 m black cable & bend relief |
| 135674 | Receptacle assembly 1 m TAN cable & bend relief |

CAPS

CABLE **MOUNTED**

PANEL **MOUNTED**

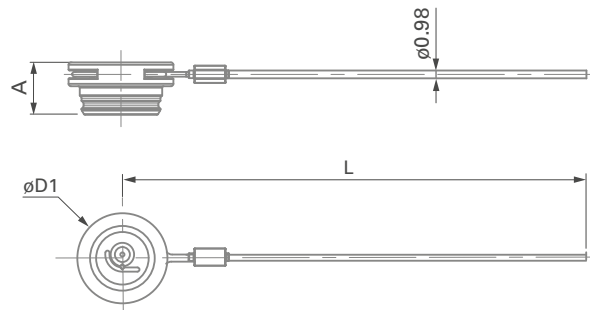


FIGURE 1

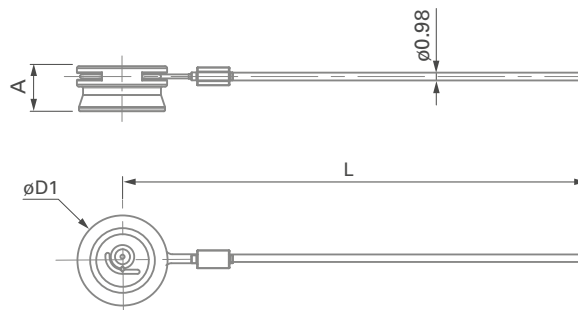


FIGURE 2

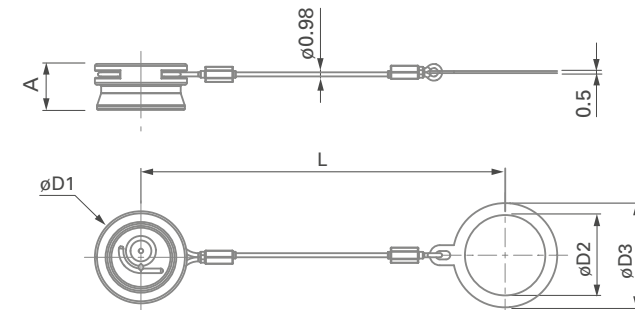
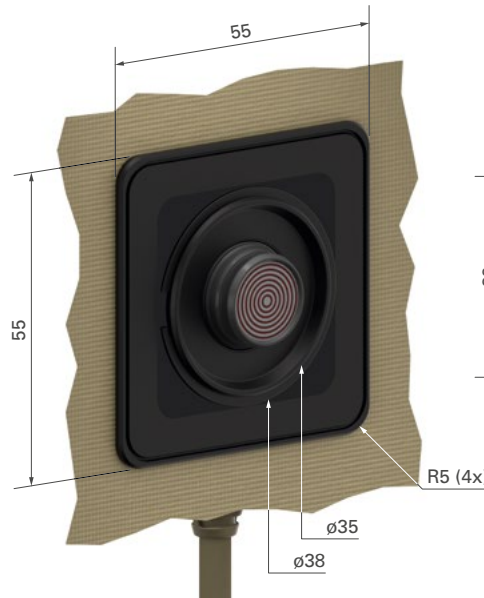
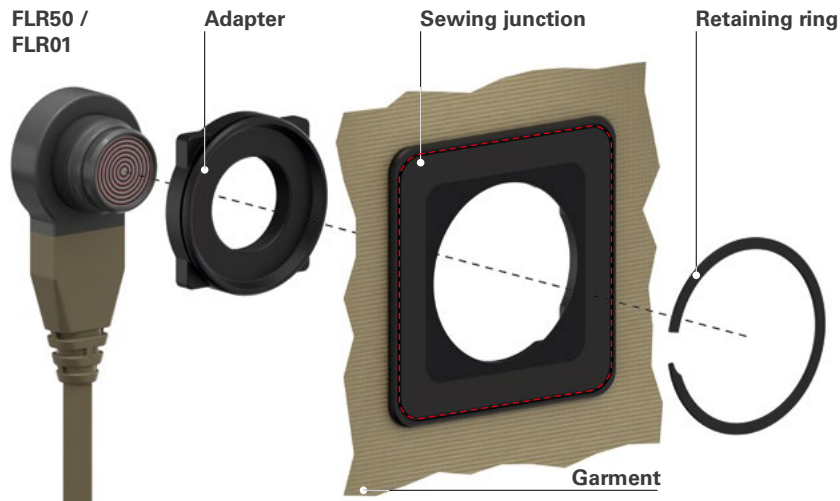


FIGURE 3

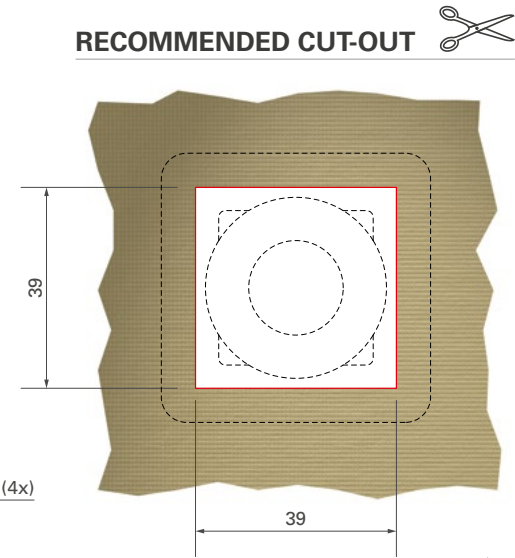
| Size | Caps for | | A | øD1 | L | øD2 | øD3 | Part number | Fig. |
|------|----------------|----------------|----|------|-----|------|------|--------------------|------|
| | FLP01 FLP03 | FLR01 FLR50 | | | | | | | |
| 08 | ● | | 11 | 23.0 | 200 | - | - | FCP08C 1B2 A200 BA | 1 |
| | | ● | 11 | 20.4 | 200 | - | - | FCR08C 1B2 A200 BA | 2 |
| | | ● | 11 | 20.4 | 95 | 14.0 | 18.0 | FCR08P 1B2 A095 BA | 3 |
| 14 | ● | | 11 | 28.0 | 200 | - | - | FCP14C 5B2 A200 BA | 1 |
| | | ● | 11 | 25.4 | 200 | - | - | FCR14C 1B2 A200 BA | 2 |
| | | ● | 11 | 25.4 | 95 | 19.2 | 24.9 | FCR14P 1B2 A095 BA | 3 |

All dimensions are in millimeters and images are for reference only.

QUICK DETACH SYSTEM

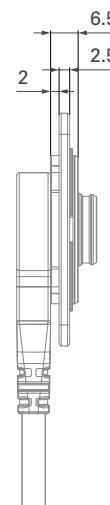


RECOMMENDED CUT-OUT

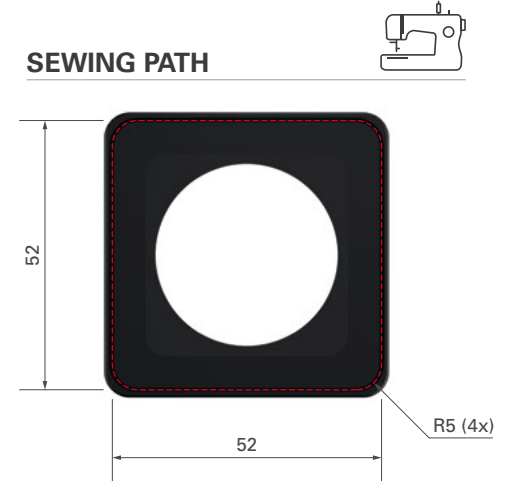


| Part | Size | Part number | Material |
|------|--------------|-------------|--|
| | 08 | 224464 | PPA |
| | 14 | 224452 | |
| | 08/14 | 224451 | Central area: PPA Soft edge for sewing: TPE |
| | | 224518 | Base material: stainless steel Surface finish: black zinc |

| Part | Size | Kit number | Kit designation |
|------|-----------|------------|-------------------|
| | 08 | 137502 | FREEDOM QDS 08 BK |
| | 14 | 137503 | FREEDOM QDS 14 BK |



SEWING PATH



Material thickness on path: 1.6 mm

METAL

ENVIRONMENTAL & MECHANICAL DATA

| Characteristic | Performance | Standard | |
|--|--|--|-------------------------------------|
| Sealing | Connectors in mated condition or with cap Plug without cap Receptacle without cap | IP68, 20 m / 24 h IP67, 0.2 m / 30 min IP68, 20 m / 24 h | IEC 60529, MIL-STD-810 Method 512.6 |
| Operating temperature range (connectors only) | -55 °C to +135 °C | MIL-STD-810 Method 501.6 and 502.6 | |
| Corrosion resistance mated | Salt mist 1,000 h ¹⁾ Connectors in mated condition. Cosmetic changes may appear over time without impacting mechanical or electrical functions. | MIL-STD-810 Method 509.6 | |
| Mechanical endurance | 10,000 mating cycles / 5,000 full rotations ²⁾ Preserved mechanical and electrical functionality. Normal wear will appear. | IEC 60512-9-1 | |
| Random vibration | 9.26 G rms | MIL-STD-202 Method 214 Condition I | |
| Unmating force | Typical 40 N | IEC 60512-13-1 | |
| Shock | 30 G | MIL-STD-202 Method 213 Condition J | |

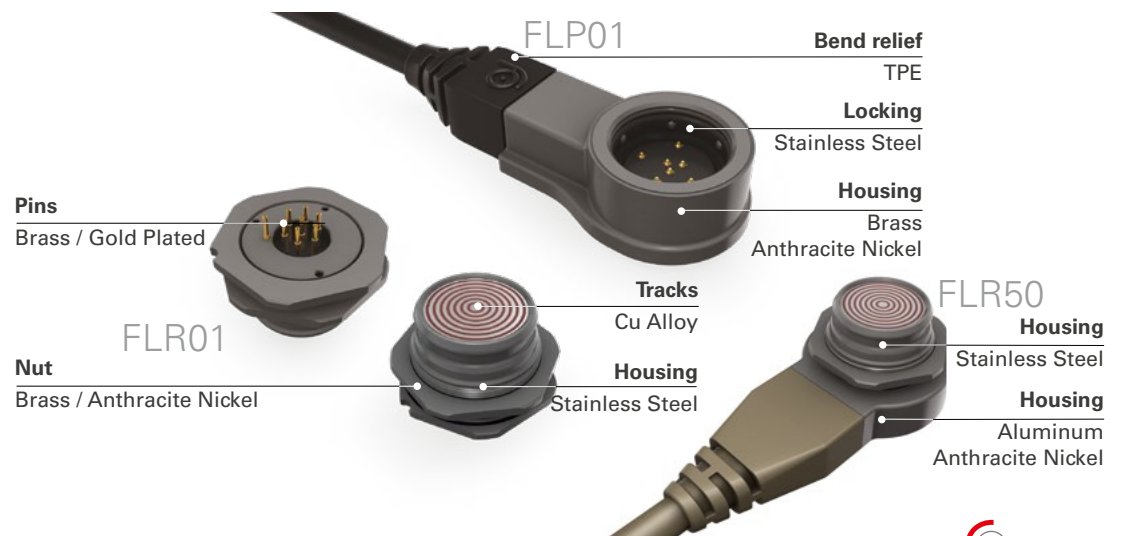
¹⁾ Exception for FLR50: 200 h mated and unmated.

²⁾ 180° rotation considered per mating within the mating cycle test.

ELECTRICAL DATA

| Characteristic | Performance | Standard |
|--------------------------------|----------------------------------|---------------------------------------|
| Contact resistance | <50 mOhm (typical value) | MIL-STD-202 Method 307 |
| Shell resistance | <50 mOhm (cabled; new condition) | MIL-STD-202 Method 307 |
| Insulation resistance | >10 ¹⁰ Ohm | MIL-STD-202 Method 302, IEC 60512-3-1 |
| Shielding effectiveness | 360° shielded | - |
| Data protocols | USB 2.0 and 100 Mbit/s Ethernet | |

MATERIAL & SURFACE FINISH



All dimensions are in millimeters and images are for reference only.

PLASTIC

ENVIRONMENTAL & MECHANICAL DATA

| Characteristic | Performance | Standard |
|--|--|--|
| Sealing | Connectors in mated condition or with cap Plug without cap Receptacle without cap | IP67, 0.2 m / 30 min IP67, 0.2 m / 30 min IP67, 0.2 m / 30 min |
| Operating temperature range (connectors only) | -40 °C to +85 °C | MIL-STD-810G Method 501.6 and 502.6 |
| Corrosion resistance mated | Salt mist 1,000 h Connectors in mated condition. Cosmetic changes may appear over time without impacting mechanical or electrical functions. | MIL-STD-810G Method 509.6 |
| Mechanical endurance | 5,000 cycles / 2,500 full rotations | IEC 60512-9-1 |
| Random vibration | 9.26 G rms | MIL-STD-202G Method 214A Condition I |
| Unmating force | Typical 24 N | IEC-60512-13-1 |
| Shock | 30 G | EIA-364-27B MIL-STD-202G Method 213B Condition J, K |

¹⁾ 180° rotation considered per mating within the mating cycle test.

ELECTRICAL DATA

| Characteristic | Performance | Standard |
|--------------------------------|---------------------------------|---|
| Contact resistance | <50 mOhm (typical value) | MIL-STD-202 Method 307 |
| Insulation resistance | >10 ¹⁰ Ohm | IEC 60512-3-1 MIL-STD-202 Method 302 |
| Shielding effectiveness | N/A | N/A |
| Data protocols | USB 2.0 and 100 Mbit/s Ethernet | |

MATERIAL & SURFACE FINISH



A GLOBAL PARTNER IN CONNECTIVITY



A pioneer in high-reliability and rugged connector technology, **Fischer Connectors** has kept the spirit of innovation alive for more than 60 years. Since 1954, it has been reimagining connectivity, turning its customers' challenges into success stories through breakthrough technologies, high-quality products and highly responsive customer service.

Fischer Connectors helps its customers around the world produce innovative and reliable applications by designing, manufacturing and distributing high-performance, rugged connectivity solutions that withstand the most demanding environments. Its high-quality solutions are particularly suited to applications requiring faultless precision, durability and resistance to extreme conditions, including defense and security, medical, industrial, instrumentation, audiovisual, transportation, and energy.

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Jonathan Brossard, Group CEO

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ISO 13485

ISO 14001

ISO 45001

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KTA 1401 - QN 100

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ROHS
compliant

SONY
green partner

UPDATES

| Date | Version | Page | Update |
|---------|---------|-------------|--|
| 06.2023 | 3.5 | H-38 | Current rating value change |
| 06.2023 | 3.5 | H-41 - H-42 | Values and diagram changes |
| 06.2023 | 3.5 | H-33 - H-37 | Addition of connectors configuration to ULTIMATE 80 series. |
| 06.2023 | 3.5 | H-43 | Addition of an accessory soft caps lanyard |
| 10.2023 | 3.6 | J-1 - J-27 | New Minimax configuration : UHD, Size 08, 19 contacts |
| 11.2023 | 3.7 | H-44 | Corrections under «Shielding effectiveness» |
| 02.2024 | 3.8 | H-45 | Changes in the table: materials |

TECHNICAL SPECIFICATIONS

VOLUME 1

- BRASS
- STAINLESS STEEL
- ALULITE
- PLASTIC
- DISPOSABLE



VOLUME 1

BRASS- STAINLESS STEEL- ALULITE
PLASTIC- DISPOSABLE

TECHNICAL SPECIFICATIONS

VOLUME 2

- ULTIMATE
- FIBEROPTIC
- MINIMAX
- FREEDOM



VOLUME 2

ULTIMATE- FIBEROPTIC- MINIMAX- FREEDOM



Technical & Downloads

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