



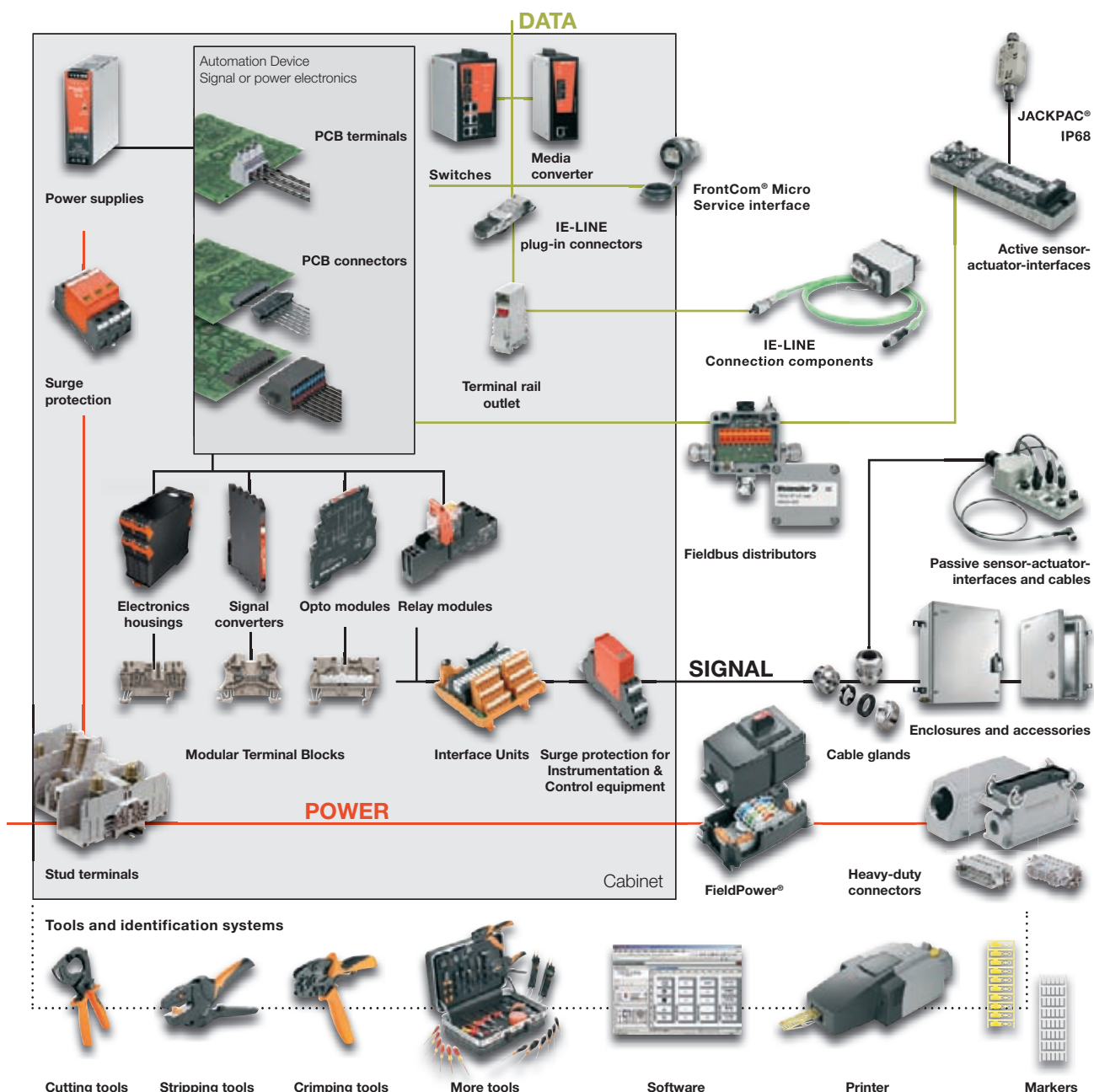
# Industrial Ethernet

Catalogue

# Product Portfolio

Weidmüller is a leading international provider of solutions for electrical connectivity, transmission and conditioning of power, signal and data in industrial environments. The company with headquarters in Detmold/Germany develops, produces and sells products in the field of electrical connectivity and electronics all over the world.

[www.power-signal-data.com](http://www.power-signal-data.com)



## All the catalogues at a glance

|             |                                                            | Order No.  |
|-------------|------------------------------------------------------------|------------|
| Catalog 1   | Modular Terminal Blocks                                    | 5661400000 |
| Catalog 2   | PCB Terminals, PCB Connectors and Housings for Electronics | 1250030000 |
| Catalog 3   | RockStar® – Heavy Duty Connectors                          | 5664240000 |
| Catalog 4.1 | Electronics – Analogue Signal Conditioning                 | 1203510000 |
| Catalog 4.2 | Electronics – Relays and Optos                             | 1282330000 |
| Catalog 4.3 | Electronics – Power Supplies                               | 1282390000 |
| Catalog 4.4 | Electronics – Surge protection                             | 1271290000 |

|                     |                                                 | Order No.  |
|---------------------|-------------------------------------------------|------------|
| Catalog 4.5         | Electronics – Interface units and PLC solutions | 1252080000 |
| Catalog 5           | Enclosures and Cable Glands                     | 1274520000 |
| Catalog 6           | Tools                                           | 1161520000 |
| Catalog 7           | Identification systems                          | 1125590000 |
| Catalog 8           | Sensor Actuator Interface                       | 1235620000 |
| Catalog 9           | Industrial Ethernet                             | 1274570000 |
| Product information | FieldPower® – decentralised power distribution  | 1229860000 |

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# Industrial Ethernet

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# Intended for use in Industrial Ethernet



The trend to network industrial plant components using Ethernet protocols was already apparent several years ago. Ethernet communication is now well established in all market segments; automotive, general machine construction, process industry, transportation as well in the energy branch. The requirements of the different branches differ in terms of the protocols,

environmental conditions, certifications and standardisations. As well as being a leading provider of industrial connection and network products, Weidmüller covers these differing requirements with a comprehensive and high-quality product range of active and passive components for Ethernet communications.



The basic requirements of most of these branches are high reliability, availability and safeguarding against failure. These are met by extremely high MTBF times of the active network components. Maximum reliability and simple operation is ensured through Weidmüller's high-quality **STEADYTEC®** connector system.

Together Weidmüller's network components create a complete communications infrastructure for industrial applications in machine construction, process and plant engineering and energy.

# Automotive



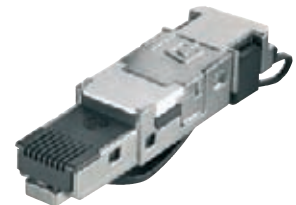
Car manufacturers in AIDA (the German car manufacturers' automation initiative) are the driver behind the use of Industrial Ethernet in the manufacturing sector, as they clearly prefer the use of PROFINET for communication between machines and equipment parts. To make the most savings in modern communications structures, Industrial Ethernet in the automotive industry is homogeneous from the corporate management level down to the field level.

New production plants in North American car production are also being exclusively automated using Industrial Ethernet. Here the Real-Time Ethernet protocol Ethernet/IP is used. This, in the same way as PROFINET and other protocols, means there are different requirements for the connector systems used and the active network devices.

Extremely harsh environmental conditions – such as may be found where industrial robotics are used, for example – place high requirements on the components used. Cabling needs to be torsion resistant and there are increased EMC demands placed on plug-in connectors and active devices. For these application fields, Weidmüller offers a complete product range consisting of copper and fibre-optic connectors and passive hand-tools that are specifically designed for the requirements of cabling robotic systems.

The use of active devices with powerful redundancy mechanisms is needed to prevent network failures. Weidmüller's managed switches meet these requirements with their particularly fast recovery time of under 20 ms when an error occurs.

# General machine construction



Important parts of communications in machinery and device construction are networking machine segments and device parts and connecting them to the higher-level office network. Many serial devices are connected to the Ethernet infrastructure to protect investments and because of the various different communication protocols in use. Weidmüller offers active components for this which convert the protocols. By simply integrating devices with serial interfaces, you get protection for your investments in existing automation components.

The volume of data in networks is steadily rising with the applications used, for example with camera-based quality control. Weidmüller easily meets these increased demands with its product range of high-performance Gigabit switches and plug-in connectors capable of 10 Gigabit transfer.

The extensive plug-in connector range also meets the higher demands in terms of EMC as well as shock, vibration and temperature resistance and facilitates easy on-site assembly.

Dragline cable compatible connection cables from Weidmüller are used on moving parts of complex machines. Hard to reach areas can be covered using the wireless modules that are available.

# Process



Weidmüller's network components for the process industry allow their use in explosion hazard areas with their certification - Class 1 Div. 2 and ATEX. The active components have high fault-tolerance and ensure high system availability with redundancy mechanisms like trunking and ring-redundancy as well as RSTP.

Long distances can be bridged using fibre-optic media in large process plants. There are requirements placed on the protection categories of the individual components as these are found in the field. The harsh environments in process plants are characterised by high temperature variations, vibrations, rain, dust as well as electromagnetic influences. Weidmüller's active and passive Ethernet components withstand these influences.

It is particularly important to make sure the communication between various parts of the plant is secure and structured in security relevant processing areas. Weidmüller's Ethernet switches support network management and security functions like IGMP Snooping, IEEE 802.1X, QoS and VLAN.

With this the devices form a secure and efficient bridge to the office communication and from there to the higher IT systems.

# Active components

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# Active components

Ethernet technology is an established standard in office communication and has existed for many years. Without it, effective communications between the different participants like PCs, printers, data servers etc. would no longer be possible.

In recent years this technology has been expanded under the term Industrial Ethernet and implemented in automation systems. The common goal of both manufacturer and user is to make networking automation system components easier and more effective. To make process data and diagnostic functions device-independent when exchanged between network participants, all equipment in a plant should be linked with just one bus technology.

Industrial applications, however, differ significantly from office applications. There are normally much higher demands placed on the communication devices in the industrial setting. These include, as examples:

- Installation conditions
- Environmental conditions
- Protocols
- Approvals

Weidmüller's Industrial Ethernet components meet all of these requirements as they have the properties listed below:

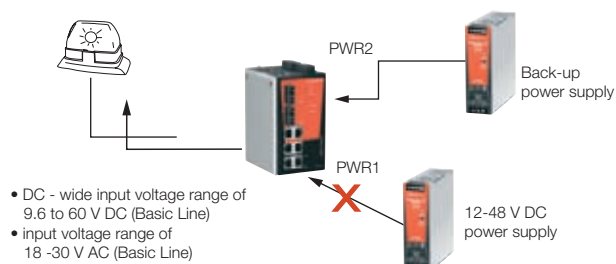
- Reliable (redundant) power supply for uninterrupted network operation
- Resistance to extreme temperatures
- Immune to electromagnetically caused malfunctions
- Insensitive to vibration, shock and corrosive environments
- Conformity with various certification standards
- Longevity

These rugged devices can therefore be used world-wide in different industries and applications.



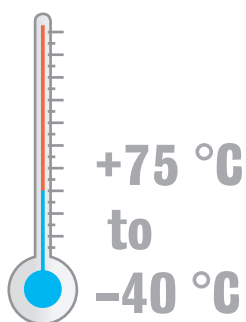
## Stable and versatile power supply inputs for industrial applications

The redundant voltage inputs provide reliable functionality of the whole system. If a power supply fails, the redundant power source takes over the energy supply. All of Weidmüller's Industrial Ethernet components have a wide input voltage range of at least 12 to 48 V DC (Basic Line switches 9.6 to 60 V DC). They can also work with large fluctuations in voltage. As examples, with a rated 48 V DC input, a fluctuation of +20 % is acceptable and in one of 12 V DC a voltage drop of up to 20 % present no problems for the attached devices.



### Suitable for use in extreme temperature environments

Industrial environments often present extreme temperature conditions. This means that devices are needed which can operate under extreme temperature fluctuations flawlessly. Therefore all Industrial Ethernet components undergo a burn-in test over several hours to ensure they function properly at the guaranteed temperature ranges (e.g. -40 °C to +75 °C).



### Outstanding immunity to electromagnetic interference

The sturdy design of Weidmüller's Industrial Ethernet components also includes excellent electromagnetic compatibility and fully complies with the requirements of the EN50121-4, DNV and IEC 61000 standards.

### Certified to industry standards

Extensive certifications confirm the reliability of Weidmüller's Industrial Ethernet components

- UL508 and UL60950-1
- Class I, Division 2 / ATEX Zone 2 for safe use in explosive hazard areas
- DNV/GL approval for use in maritime settings



### Durability and reliability

- Many of the Weidmüller Ethernet components have relay outputs. These can be used for alarm signal notification (e.g. power failures or port problems). This means that in emergencies it is possible to react quickly to any failures.
- Weidmüller's unmanaged switches are protected from receiving too many broadcast packets. The switches discard broadcast or multicast packets if they exceed a threshold level in a given time. They then receive further broadcast and multicast packets after a given time has past, until the threshold level is reached again.
- All Weidmüller active Industrial Ethernet components are designed for a long in-service life, this can be seen from the high MTBF value. Weidmüller also guarantees its Industrial Ethernet components for a period of five years.

# Active components

## Basic Line



Weidmüller's Basic Line series consists of unmanaged Plug & Play switches in a rugged IP30 rated aluminium housing. The devices are available with Fast Ethernet and Gigabit Ethernet and provide an economical solution for Industrial Ethernet ports networks. One model is equipped with Fast Ethernet and Power-over-Ethernet ports. All devices have been developed for applications in harsh industrial environments and have international approvals such as CE, cULus, Class I Div. 2 / Atex and DNV / GL and are thus international applicable for different applications.

- Plug & Play switches in a rugged aluminium housing (IP30)
- Compact design
- Cost efficient entry-level switches
- Fast Ethernet variants with 5 and 8 Ports
- Versions with copper or fibre-optic interface (multimode and single-mode)
- 5 port Full-Gigabit Plug & Play Switch
- Power-over-Ethernet switch with 6 Fast Ethernet ports, thereof 4 PoE+ ports
- Approvals: cULus, Class I Div. 2 / Atex, DNV / GL

## Value Line



Weidmüller's Value Line series consists of unmanaged and managed switches in a high quality IP30 rated metal housing. The devices are available with Fast Ethernet and Gigabit Ethernet ports. Managed switches of the Value Line support a variety of useful management functions, such as fast ring redundancy, VLAN, QoS, RMON, bandwidth management, port mirroring and warning by email message or relay. The ring redundancy can be set up easily using the web-based management interface, or with the DIP switches located on the top panel of the switches.

- Unmanaged Plug & Play switches in a high quality metal housing (IP30)
- Price-sensitive mid-range class
- Managed switches for entry into configurable network infrastructure
- Unmanaged 8 port Full-Gigabit switches
- Approvals: cULus, Class I Div. 2 / Atex, DNV / GL

## Premium Line

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Weidmüller's Premium Line series completes the switch range for the high-end sector and is particularly suitable for complex network solutions with high traffic levels. The devices are available in different versions - number of ports, transmission rate (Fast and Gigabit Ethernet) and the type of connection (copper and fibre-optic).

With their advanced ring redundancy technology (recovery time  $\leq 20$  ms), these devices increase the reliability and availability of your industrial network. The optional to use SFP transceivers offer a high degree of flexibility and the Gigabit variants allows the use in networks with high traffic loads also.

- Managed Fast Ethernet variants in a high quality metal housing (IP30)
- Managed Power-over-Ethernet switch with 6 Fast Ethernet ports, thereof 4 PoE+ ports
- Variants with 10 or 18 ports and Gigabit uplink ports
- Full-Gigabit switch with 9 ports
- Supports all standard protocols in TCP/IP-based industrial networks (e.g. Ethernet/IP, Modbus/TCP)
- Built-in redundancy mechanisms (recovery time  $\leq 20$  ms) for increased reliability in network ring structures
- Approvals: cULus, Class I Div. 2 / Atex, DNV / GL

## Switches – quick-finder

|                              |                         | Ports total | 2 | 5 |   | 6 | 8 |   |   |   |
|------------------------------|-------------------------|-------------|---|---|---|---|---|---|---|---|
| Ports copper                 |                         | 1           | 5 | 4 | 6 | 8 | 5 | 6 | 6 | 7 |
| Ports fibre                  |                         | 1           |   | 1 |   |   | 3 | 2 | 3 | 1 |
| Ports SFP                    |                         |             |   |   |   |   |   |   |   |   |
| Order No.                    | Type                    |             |   |   |   |   |   |   |   |   |
| Industrial Ethernet Switches |                         |             |   |   |   |   |   |   |   |   |
| 1240840000                   | IE-SW-BL05-5TX          |             |   |   |   |   |   |   |   |   |
| 1240850000                   | IE-SW-BL05T-5TX         |             |   |   |   |   |   |   |   |   |
| 1240870000                   | IE-SW-BL05-4TX-1SCS     |             |   |   |   |   |   |   |   |   |
| 1240880000                   | IE-SW-BL05-4TX-1ST      |             |   |   |   |   |   |   |   |   |
| 1240890000                   | IE-SW-BL05-4TX-1SC      |             |   |   |   |   |   |   |   |   |
| 1240900000                   | IE-SW-BL08-8TX          |             |   |   |   |   |   |   |   |   |
| 1240910000                   | IE-SW-BL08-6TX-2SC      |             |   |   |   |   |   |   |   |   |
| 1240920000                   | IE-SW-BL08T-6TX-2SC     |             |   |   |   |   |   |   |   |   |
| 1240930000                   | IE-SW-BL08-6TX-2ST      |             |   |   |   |   |   |   |   |   |
| 1240950000                   | IE-SW-BL08-7TX-1SCS     |             |   |   |   |   |   |   |   |   |
| 1241250000                   | IE-SW-BL05-5GT          |             |   |   |   |   |   |   |   |   |
| 1240980000                   | IE-SW-VL09T-6TX-3SC     |             |   |   |   |   |   |   |   |   |
| 1241000000                   | IE-SW-VL16-16TX         |             |   |   |   |   |   |   |   |   |
| 1241030000                   | IE-SW-VL16-14TX-2SC     |             |   |   |   |   |   |   |   |   |
| 1241050000                   | IE-SW-VL16-14TX-2ST     |             |   |   |   |   |   |   |   |   |
| 1240940000                   | IE-SW-VL08MT-8TX        |             |   |   |   |   |   |   |   |   |
| 1240970000                   | IE-SW-VL08MT-5TX-3SC    |             |   |   |   |   |   |   |   |   |
| 1240990000                   | IE-SW-VL08MT-6TX-2ST    |             |   |   |   |   |   |   |   |   |
| 1241020000                   | IE-SW-VL08MT-6TX-2SCS   |             |   |   |   |   |   |   |   |   |
| 1241270000                   | IE-SW-VL08-8GT          |             |   |   |   |   |   |   |   |   |
| 1241280000                   | IE-SW-VL08-6GT-2GS      |             |   |   |   |   |   |   |   |   |
| 1241040000                   | IE-SW-PL08M-8TX         |             |   |   |   |   |   |   |   |   |
| 1241070000                   | IE-SW-PL08M-6TX-2SC     |             |   |   |   |   |   |   |   |   |
| 1241080000                   | IE-SW-PL08M-6TX-2ST     |             |   |   |   |   |   |   |   |   |
| 1241090000                   | IE-SW-PL08M-6TX-2SCS    |             |   |   |   |   |   |   |   |   |
| 1241100000                   | IE-SW-PL16M-16TX        |             |   |   |   |   |   |   |   |   |
| 1241120000                   | IE-SW-PL16M-14TX-2SC    |             |   |   |   |   |   |   |   |   |
| 1241130000                   | IE-SW-PL16M-14TX-2ST    |             |   |   |   |   |   |   |   |   |
| 1241290000                   | IE-SW-PL10M-3GT-7TX     |             |   |   |   |   |   |   |   |   |
| 1241300000                   | IE-SW-PL10M-1GT-2GS-7TX |             |   |   |   |   |   |   |   |   |
| 1241320000                   | IE-SW-PL18M-2GC-16TX    |             |   |   |   |   |   |   |   |   |
| 1241330000                   | IE-SW-PL18M-2GC-14TX2SC |             |   |   |   |   |   |   |   |   |
| 1241340000                   | IE-SW-PL18M-2GC14TX2ST  |             |   |   |   |   |   |   |   |   |
| 1241350000                   | IE-SW-PL18M-2GC14TX2SCS |             |   |   |   |   |   |   |   |   |
| 1241370000                   | IE-SW-PL09M-5GC-4GT     |             |   |   |   |   |   |   |   |   |
| Power over Ethernet Switches |                         |             |   |   |   |   |   |   |   |   |
| 1241380000                   | IE-SW-BL06-2TX-4PoE     |             |   |   |   |   |   |   |   |   |
| 1241390000                   | IE-SW-PL06M-2TX-4PoE    |             |   |   |   |   |   |   |   |   |

FE = Fast Ethernet

GE = Gigabit Ethernet

GEC = Gigabit Ethernet Combo Ports

PoE+ = Power over Ethernet+

|  | 9             | 10           |                       | 16 |    | 18             |                | Unmanaged | Managed        |             |                         |      |
|--|---------------|--------------|-----------------------|----|----|----------------|----------------|-----------|----------------|-------------|-------------------------|------|
|  | 4             | 10           | 8                     | 16 | 14 | 16             | 14             |           |                |             |                         |      |
|  |               |              | 2                     |    | 2  |                | 2              |           |                |             |                         |      |
|  | 5             |              |                       |    |    | 2              | 2              |           |                |             |                         |      |
|  |               |              |                       |    |    |                |                |           |                | Temperature | Further characteristics | Page |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C | singlemode  |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C |             |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | -10 ... +60 °C | singlemode  |                         | B.9  |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.11 |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C |             |                         | B.10 |
|  |               |              |                       | ●  |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.10 |
|  |               |              |                       |    | ●  |                |                | ●         | 0 ... +60 °C   |             |                         | B.10 |
|  |               |              |                       |    | ●  |                |                | ●         | 0 ... +60 °C   |             |                         | B.10 |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C |             |                         | B.17 |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C |             |                         | B.17 |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C |             |                         | B.17 |
|  |               |              |                       |    |    |                |                | ●         | -40 ... +75 °C | singlemode  |                         | B.17 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.11 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.11 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.18 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.18 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.18 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   | singlemode  |                         | B.18 |
|  |               |              |                       | ●  |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.18 |
|  |               |              |                       |    | ●  |                |                | ●         | 0 ... +60 °C   |             |                         | B.18 |
|  |               |              |                       |    | ●  |                |                | ●         | 0 ... +60 °C   |             |                         | B.18 |
|  |               | 3 GE<br>7 FE |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.19 |
|  |               |              | 1 GE<br>2 GEC<br>7 FE |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.19 |
|  |               |              |                       |    |    | 2 GEC<br>16 FE |                | ●         | 0 ... +60 °C   |             |                         | B.20 |
|  |               |              |                       |    |    |                | 2 GEC<br>16 FE | ●         | 0 ... +60 °C   |             |                         | B.20 |
|  |               |              |                       |    |    |                | 2 GEC<br>16 FE | ●         | 0 ... +60 °C   |             |                         | B.20 |
|  |               |              |                       |    |    |                | 2 GEC<br>16 FE | ●         | 0 ... +60 °C   | singlemode  |                         | B.20 |
|  | 5 GEC<br>4 GE |              |                       |    |    |                |                | ●         | 0 ... +60 °C   |             |                         | B.21 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   | PoE+        |                         | B.23 |
|  |               |              |                       |    |    |                |                | ●         | 0 ... +60 °C   | PoE+        |                         | B.24 |

# Unmanaged Switches

## B

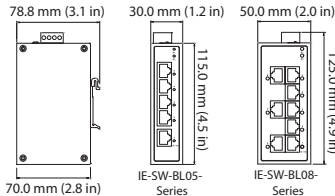
Switches are the basic coupling elements in Ethernet networks. They connect the Ethernet participants together. In an Ethernet network the communication basically originates from the participants. The switches connect the participants together and enable the communication. Unmanaged switches are the simplest active network component. They do not need to be configured and are therefore very flexible. They use the basic standard protocols like auto-negotiation, auto-crossing, and flow-control and can automatically adjust to the different transmission speeds or connector wiring.

Unmanaged switches are protocol transparent. Each port on the switch creates an individual collision domain. The use of twisted-pair cabling with an RJ45 interface or fibre-optic cable based on the IEEE 802.3 specification interfaces are supported by all Weidmüller switches.



## Unmanaged Fast Ethernet Switches

- 10/100BaseT(X) (RJ45 connector), 100BaseFX (multi/singlemode, SC or ST connector)
- Redundant dual 12/24/48 V DC, 18 to 30 V AC power inputs
- IP30 aluminum housing
- Rugged hardware design well suited for hazardous locations (Class I Div. 2 /ATEX) and maritime environments (DNV/GL)
- -40 to 75 °C operating temperature range (T models)



## Technical data

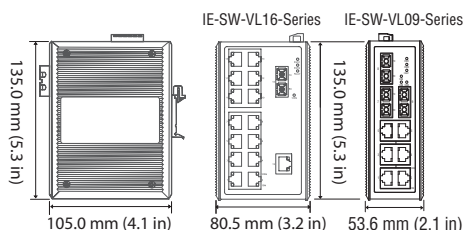
| Technology                  |                                                                                                                                                                            |                                   |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Standards                   | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for Flow Control                                                                        |                                   |
| Processing Type             | Store and Forward                                                                                                                                                          |                                   |
| Flow Control                | IEEE 802.3x flow control, back pressure flow control                                                                                                                       |                                   |
| Switch Properties           |                                                                                                                                                                            |                                   |
| MAC Table Size              | 1 K                                                                                                                                                                        |                                   |
| Packet Buffer Size          | 512 Kbit                                                                                                                                                                   |                                   |
| Interface                   |                                                                                                                                                                            |                                   |
| Fiber Ports                 | 100BaseFX ports<br>(SC/ST connector, multimode, singlemode)                                                                                                                |                                   |
| RJ45 Ports                  | 10/100BaseT(X) auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection                                                                                |                                   |
| DIP Switches                | Enable/Disable broadcast storm protection                                                                                                                                  |                                   |
| LED Indicators              | Power, 10/100M (TP port), 100M (fiber port)                                                                                                                                |                                   |
| Optical Fiber               |                                                                                                                                                                            |                                   |
|                             | 100BaseFX                                                                                                                                                                  |                                   |
|                             | multimode                                                                                                                                                                  | singlemode                        |
| Wavelength                  | 1300 nm                                                                                                                                                                    | 1310 nm                           |
| Max. TX                     | -10 dBm                                                                                                                                                                    | 0 dBm                             |
| Min. TX                     | -20 dBm                                                                                                                                                                    | -5 dBm                            |
| RX Sensitivity              | -32 dBm                                                                                                                                                                    | -34 dBm                           |
| Link Budget                 | 12 dB                                                                                                                                                                      | 29 dB                             |
| Typical Distance            | 5 km (50/125 µm multimode cable)<br>4 km (62.5/125 µm multimode cable)                                                                                                     | 40 km (9/125 µm singlemode cable) |
| Saturation                  | -6 dBm                                                                                                                                                                     | -3 dBm                            |
| Power Requirements          |                                                                                                                                                                            |                                   |
| Input Voltage               | 12/24/48 V DC (9.6 to 60 V DC),<br>18 to 30 V AC (47 to 63 Hz),<br>redundant dual inputs                                                                                   |                                   |
| Input Current               | IE SW BL05 5TX: 0.1 A @ 24 V<br>IE SW BL05 SC/ST/SCS: 0.11 A @ 24 V<br>IE SW BL08 8TX: 0.13 A @ 24 V<br>IE SW BL08 2SC/2ST: 0.22 A @ 24 V<br>IE SW BL08 SCS: 0.17 A @ 24 V |                                   |
| Overload Current Protection | 1.1 A                                                                                                                                                                      |                                   |
| Connection                  | 1 removable 4-contact terminal block                                                                                                                                       |                                   |
| Reverse Polarity Protection | Present                                                                                                                                                                    |                                   |
| Physical Characteristics    |                                                                                                                                                                            |                                   |
| Housing                     | Aluminum, IP30 protection                                                                                                                                                  |                                   |
| Dimensions                  | IIE-SW-BL05-Series:<br>30 x 115 x 70 mm (1.18 x 4.52 x 2.76 in)<br>IIE-SW-BL08-Series:<br>50 x 115 x 70 mm (1.96 x 4.52 x 2.76 in)                                         |                                   |
| Weight                      | IE-SW-BL05-5TX: 175 g<br>IE-SW-BL08-8TX: 275 g                                                                                                                             |                                   |
| Installation                | DIN-Rail mounting                                                                                                                                                          |                                   |
| Environmental Limits        |                                                                                                                                                                            |                                   |
| Operating Temperature       | Standard Models: -10 to 60 °C (14 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C (-40 to 167 °F)                                                                            |                                   |
| Storage Temperature         | -40 to 85 °C (-40 to 185 °F)                                                                                                                                               |                                   |

| Environmental Limits                                                             |                                                                                                                                                                                      |                       |            |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Ambient Relative Humidity                                                        | 5 to 95 % (non-condensing)                                                                                                                                                           |                       |            |
| Regulatory Approvals                                                             |                                                                                                                                                                                      |                       |            |
| Safety                                                                           | UL508                                                                                                                                                                                |                       |            |
| Hazardous Location                                                               | UL/cUL Class I, Division 2, Groups A, B, C and D;<br>ATEX Zone 2, Ex nC IIC                                                                                                          |                       |            |
| EMI                                                                              | FCC Part 15, CISPR (EN55022) class A                                                                                                                                                 |                       |            |
| EMS                                                                              | EN61000-4-2 (ESD), level 3;<br>EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3;<br>EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3;<br>EN61000-4-8; EN61000-4-11 |                       |            |
| Maritime                                                                         | DNV, GL (IE-SW-BL05-4TX-1SCS/SC/ST: pending)                                                                                                                                         |                       |            |
| Shock                                                                            | IEC 60068-2-27                                                                                                                                                                       |                       |            |
| Freefall                                                                         | IEC 60068-2-32                                                                                                                                                                       |                       |            |
| Vibration                                                                        | IEC 60068-2-6                                                                                                                                                                        |                       |            |
| MTBF (mean time between failures)                                                |                                                                                                                                                                                      |                       |            |
| Time                                                                             | 425,000 hrs                                                                                                                                                                          |                       |            |
| Database                                                                         | Telcordia (Bellcore), GB                                                                                                                                                             |                       |            |
| Warranty                                                                         |                                                                                                                                                                                      |                       |            |
| Warranty Period                                                                  | 5 years                                                                                                                                                                              |                       |            |
| Ordering Information                                                             |                                                                                                                                                                                      |                       |            |
| Port Variants                                                                    | Model Type                                                                                                                                                                           | Operating Temperature | Order No.  |
| 5 * RJ45                                                                         | IE-SW-BL05-5TX                                                                                                                                                                       | -10 to +60 °C         | 1240840000 |
|                                                                                  | IE-SW-BL05T-5TX                                                                                                                                                                      | -40 to +75 °C         | 1240850000 |
| 4 * RJ45, 1 * SC-Multimode                                                       | IE-SW-BL05-4TX-1SC <sup>1)</sup>                                                                                                                                                     | -10 to +60 °C         | 1240890000 |
| 4 * RJ45, 1 * ST-Multimode                                                       | IE-SW-BL05-4TX-1ST <sup>1)</sup>                                                                                                                                                     | -10 to +60 °C         | 1240880000 |
| 4 * RJ45, 1 * SC-Singlemode                                                      | IE-SW-BL05-4TX-1SCS <sup>1)</sup>                                                                                                                                                    | -10 to +60 °C         | 1240870000 |
| 8 * RJ45                                                                         | IE-SW-BL08-8TX <sup>1)</sup>                                                                                                                                                         | -10 to +60 °C         | 1240900000 |
| 6 * RJ45, 2 * SC-Multimode                                                       | IE-SW-BL08-6TX-2SC                                                                                                                                                                   | -10 to +60 °C         | 1240910000 |
|                                                                                  | IE-SW-BL08T-6TX-2SC                                                                                                                                                                  | -40 to +75 °C         | 1240920000 |
| 6 * RJ45, 2 * ST-Multimode                                                       | IE-SW-BL08-6TX-2ST <sup>1)</sup>                                                                                                                                                     | -10 to +60 °C         | 1240930000 |
| 7 * RJ45, 1 * SC-Singlemode                                                      | IE-SW-BL08-7TX-1SCS <sup>1)</sup>                                                                                                                                                    | -10 to +60 °C         | 1240950000 |
| <sup>1)</sup> Model with extended operating temperature -40 to +75 °C on request |                                                                                                                                                                                      |                       |            |
| Accessories                                                                      |                                                                                                                                                                                      |                       |            |
|                                                                                  | Model Type                                                                                                                                                                           |                       | Order No.  |
| 19" Rack Mounting Kit                                                            | RM-KIT                                                                                                                                                                               |                       | 1241440000 |

## Unmanaged Switches Fast Ethernet – Value Line

### Unmanaged Fast Ethernet Switches

- Redundant dual 24 V DC power inputs
- Relay output warning for power failure and port break alarm
- Broadcast storm protection
- Transparent transmission of VLAN tagged packets
- -40 to 75 °C operating temperature range (T models)



### Technical data

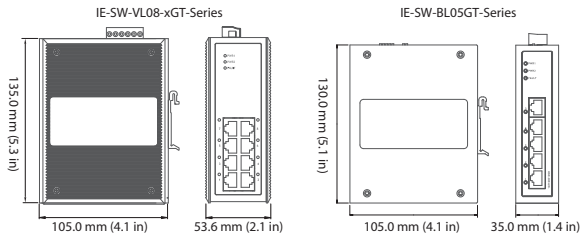
| Technology                  |                                                                                                                                                  |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                   | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for Flow Control                                              |
| Processing Type             | Store and Forward                                                                                                                                |
| Flow Control                | IEEE 802.3x flow control, back pressure flow control                                                                                             |
| Switch Properties           |                                                                                                                                                  |
| MAC Table Size              | 1 K (IE-SW-VL09...Series), 4 K (IE-SW-VL16...Series)                                                                                             |
| Packet Buffer Size          | 512 Kbit (IE-SW-VL09...Series),<br>1.5 Mbit (IE-SW-VL16...Series)                                                                                |
| Interface                   |                                                                                                                                                  |
| Fiber Ports                 | 100BaseFX ports (SC/ST connector)                                                                                                                |
| RJ45 Ports                  | 10/100BaseT(X) auto negotiation speed,<br>Full/Half duplex mode, and auto MDI/MDI-X connection                                                   |
| DIP Switches                | Port break alarm mask                                                                                                                            |
| LED Indicators              | PWR1, PWR2, FAULT, 10/100M (TP port),<br>100M (fiber port)                                                                                       |
| Alarm Contact               | 1 relay output with current carrying capacity<br>of 1 A @ 24 V DC                                                                                |
| Optical Fiber               |                                                                                                                                                  |
|                             | 100BaseFX<br>multimode                                                                                                                           |
| Wavelength                  | 1300 nm                                                                                                                                          |
| Max. TX                     | -10 dBm                                                                                                                                          |
| Min. TX                     | -20 dBm                                                                                                                                          |
| RX Sensitivity              | -32 dBm                                                                                                                                          |
| Link Budget                 | 12 dB                                                                                                                                            |
| Typical Distance            | 5 km (50/125 µm multimode cable)<br>4 km (62,5/125 µm multimode cable)                                                                           |
| Saturation                  | -6 dBm                                                                                                                                           |
| Power Requirements          |                                                                                                                                                  |
| Input Voltage               | IE-SW-VL09...16-Ports: 24 V DC<br>(12 to 45 V DC), redundant dual inputs                                                                         |
| Input Current               | IE-SW-VL09T-6TX-3SC: 0.31 A @ 24 V<br>IE-SW-VL16-16TX: 0.27 A @ 24 V<br>IE-SW-VL16 SC/ST: 0.44 A @ 24 V                                          |
| Power Requirements          |                                                                                                                                                  |
| Overload Current Protection | IE-SW-VL09/16...Series: 1.6 A                                                                                                                    |
| Connection                  | 1 removable 6-pin terminal blocks                                                                                                                |
| Reverse Polarity Protection | Present                                                                                                                                          |
| Physical Characteristics    |                                                                                                                                                  |
| Housing                     | Metal, IP30 protection                                                                                                                           |
| Dimensions                  | IE-SW-VL09...Series:<br>53.6 x 135 x 105 mm<br>(2.11 x 5.31 x 4.13 in)<br>IE-SW-VL16...Series:<br>80.5 x 135 x 105 mm<br>(3.16 x 5.31 x 4.13 in) |
| Weight                      | IE-SW-VL09: 630 g<br>IE-SW-VL16: 1140g                                                                                                           |



| Physical Characteristics                                                         |                                                                                                                                                         |                       |            |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Installation                                                                     | DIN-Rail mounting                                                                                                                                       |                       |            |
| Environmental Limits                                                             |                                                                                                                                                         |                       |            |
| Operating Temperature                                                            | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C<br>(-40 to 167 °F)                                                        |                       |            |
| Storage Temperature                                                              | -40 to 85 °C (-40 to 185 °F)                                                                                                                            |                       |            |
| Ambient Relative Humidity                                                        | 5 to 95 % (non-condensing)                                                                                                                              |                       |            |
| Regulatory Approvals                                                             |                                                                                                                                                         |                       |            |
| Safety                                                                           | IE-SW-VL09...Series: UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1<br>IE-SW-VL16...Series: UL508, UL60950-1, EN60950-1                             |                       |            |
| Hazardous Location                                                               | UL/cUL Class I, Division 2, Groups A, B, C and D; ATEX Zone 2, Ex nC IIC                                                                                |                       |            |
| EMI                                                                              | FCC Part 15, CISPR (EN55022) class A                                                                                                                    |                       |            |
| EMS                                                                              | EN61000-4-2 (ESD), level 3;<br>EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3;<br>EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3; |                       |            |
| Maritime                                                                         | DNV, GL                                                                                                                                                 |                       |            |
| Shock                                                                            | IEC 60068-2-27                                                                                                                                          |                       |            |
| Freefall                                                                         | IEC 60068-2-32                                                                                                                                          |                       |            |
| Vibration                                                                        | IEC 60068-2-6                                                                                                                                           |                       |            |
| MTBF (mean time between failures)                                                |                                                                                                                                                         |                       |            |
| Time                                                                             | IE-SW-VL09...Series: 396,000 hrs<br>IE-SW-VL16...Series: 257,000 hrs                                                                                    |                       |            |
| Database                                                                         | MIL-HDBK-217F, GB 25 °C                                                                                                                                 |                       |            |
| Warranty                                                                         |                                                                                                                                                         |                       |            |
| Warranty Period                                                                  | 5 years                                                                                                                                                 |                       |            |
| Ordering Information                                                             |                                                                                                                                                         |                       |            |
| Port Variants                                                                    | Model Type                                                                                                                                              | Operating Temperature | Order No.  |
| 16 * RJ45                                                                        | IE-SW-VL16-16TX <sup>1)</sup>                                                                                                                           | 0 to 60 °C            | 1241000000 |
| 6 * RJ45, 3 * SC-Multimode                                                       | IE-SW-VL09T-6TX-3SC                                                                                                                                     | -40 to +75 °C         | 1240980000 |
| 14 * RJ45, 2 * SC-Multimode                                                      | IE-SW-VL16-14TX-2SC <sup>1)</sup>                                                                                                                       | 0 to 60 °C            | 1241030000 |
| 14 * RJ45, 2 * ST-Multimode                                                      | IE-SW-VL16-14TX-2ST <sup>1)</sup>                                                                                                                       | 0 to 60 °C            | 1241050000 |
| <sup>1)</sup> Model with extended operating temperature -40 to +75 °C on request |                                                                                                                                                         |                       |            |
| Accessories                                                                      |                                                                                                                                                         |                       |            |
|                                                                                  | Model Type                                                                                                                                              |                       | Order No.  |
| 19" Rack Mounting Kit                                                            | RM-KIT                                                                                                                                                  |                       | 1241440000 |

## Unmanaged Gigabit Ethernet Switches

- Fibre-optic options for extending distance and electrical noise immunity
- Redundant dual 12/24/48 V DC power inputs
- Relay output warning for power failure and port break alarm
- Broadcast storm protection
- Supports jumbo frame transmission (up to 9.6 KB)



## Technical data

| Technology                  |                                                                                                                                                                   |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                   | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.3x for Flow Control |
| Processing Type             | Store and Forward                                                                                                                                                 |
| Flow Control                | IEEE 802.3x flow control, back pressure flow control                                                                                                              |
| Switch Properties           |                                                                                                                                                                   |
| MAC Table Size              | 8 K                                                                                                                                                               |
| Packet Buffer Size          | 1088 Kbit (IE-SW-BL05-5GT),<br>1408 Kbit (IE-SW-VL08-xGT)                                                                                                         |
| Interface                   |                                                                                                                                                                   |
| Fiber Ports                 | 100/1000BaseSFP slot (IE-SW-VL08-6GT-2GS)                                                                                                                         |
| RJ45 Ports                  | 10/100/1000BaseT(X) auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection                                                                  |
| DIP Switches                | One for port break alarm, one for Enable/Disable broadcast storm protection                                                                                       |
| LED Indicators              | PWR1, PWR2, FAULT, 10/100/1000M                                                                                                                                   |
| Alarm Contact               | 1 relay output with current carrying capacity of 1 A @ 24 V DC                                                                                                    |
| Power Requirements          |                                                                                                                                                                   |
| Input Voltage               | 12/24/48 V DC (9.6 to 60 V DC), redundant dual inputs                                                                                                             |
| Input Current               | IE-SW-BL05-5GT: 0.20 A @ 24 V<br>IE-SW-VL08-8GT: 0.32 A @ 24 V<br>IE-SW-VL08-6GT-2GS: 0.34 A @ 24 V                                                               |
| Connection                  | 1 removable 6-contact terminal block                                                                                                                              |
| Reverse Polarity Protection | Present                                                                                                                                                           |
| Physical Characteristics    |                                                                                                                                                                   |
| Housing                     | Metal, IP30 protection                                                                                                                                            |
| Dimensions                  | IE-SW-BL05-5GT:<br>35 x 130 x 105 mm (1.37 x 5.12 x 4.13 in)<br>IE-SW-VL08-xGT:<br>53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                    |
| Weight                      | IE-SW-BL05-5GT: 290 g<br>IE-SW-VL08-xGT: 630 g                                                                                                                    |
| Installation                | DIN-Rail mounting                                                                                                                                                 |
| Environmental Limits        |                                                                                                                                                                   |
| Operating Temperature       | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C (-40 to 167 °F) (on request)                                                        |
| Storage Temperature         | -40 to 85 °C (-40 to 185 °F)                                                                                                                                      |
| Ambient Relative Humidity   | 5 to 95 % (non-condensing)                                                                                                                                        |
| Regulatory Approvals        |                                                                                                                                                                   |
| Safety                      | UL508                                                                                                                                                             |
| Hazardous Location          | UL/cUL Class I, Division 2, Groups A, B, C, and D; ATEX Zone 2, Ex nC IIC                                                                                         |
| EMI                         | FCC Part 15, CISPR (EN55022) class A                                                                                                                              |

| Regulatory Approvals                                                                        |                                                                                                                                                  |                       |            |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| EMS                                                                                         | EN61000-4-2 (ESD), level 3; EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3; EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3 |                       |            |
| Maritime                                                                                    | DNV, GL                                                                                                                                          |                       |            |
| Shock                                                                                       | IEC 60068-2-27                                                                                                                                   |                       |            |
| Freefall                                                                                    | IEC 60068-2-32                                                                                                                                   |                       |            |
| Vibration                                                                                   | IEC 60068-2-6                                                                                                                                    |                       |            |
| MTBF (mean time between failures)                                                           |                                                                                                                                                  |                       |            |
| Time                                                                                        | 325,000 hrs (IE-SW-VL08-xGT series)                                                                                                              |                       |            |
| Database                                                                                    | Telcordia (Bellcore), GB (IE-SW-VL08-xGT series)                                                                                                 |                       |            |
| Warranty                                                                                    |                                                                                                                                                  |                       |            |
| Warranty Period                                                                             | 5 years                                                                                                                                          |                       |            |
| Ordering Information                                                                        |                                                                                                                                                  |                       |            |
| Port Variants                                                                               | Model Type                                                                                                                                       | Operating Temperature | Order No.  |
| 5 * RJ45 10/100/1000BaseT(X)                                                                | IE-SW-BL05-5GT                                                                                                                                   | 0 to 60 °C            | 1241250000 |
| 8 * RJ45 10/100/1000BaseT(X)                                                                | IE-SW-VL08-8GT                                                                                                                                   | 0 to 60 °C            | 1241270000 |
| 6 * RJ45 10/100/1000BaseT(X),<br>2 Combo Ports (10/100/1000<br>BaseT(X) or 100/1000BaseSFP) | IE-SW-VL08-6GT-2GS                                                                                                                               | 0 to 60 °C            | 1241280000 |
| Models with extended operating temperature -40 to +75 °C on request                         |                                                                                                                                                  |                       |            |
| Accessories                                                                                 |                                                                                                                                                  |                       |            |
|                                                                                             | Model Type                                                                                                                                       |                       | Order No.  |
| 19" Rack Mounting Kit                                                                       | RM-KIT                                                                                                                                           |                       | 1241440000 |

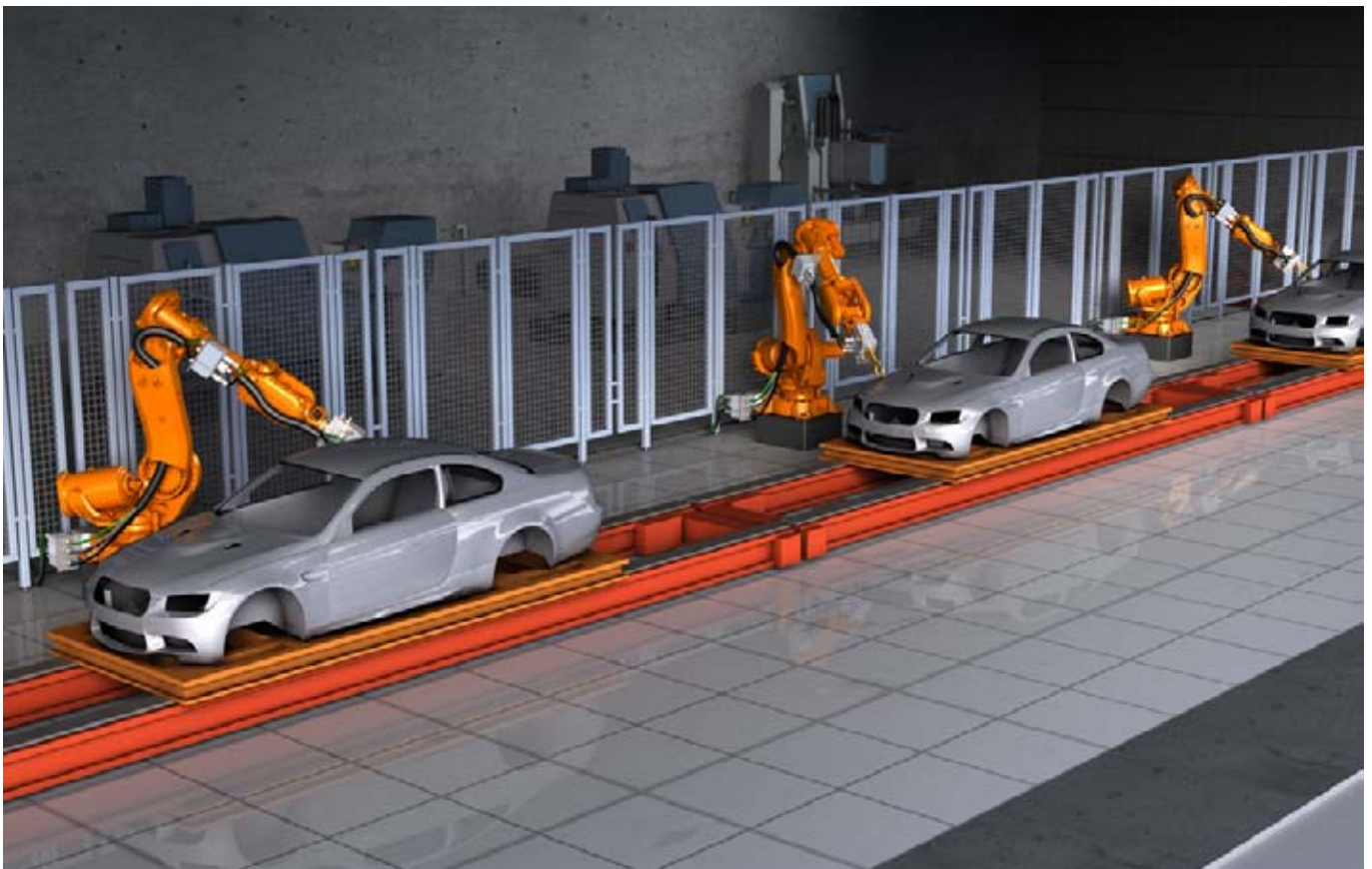
# Managed Switches

**B**

Managed switches offer extensive control mechanisms for data distribution and bandwidth management to coordinate and cope with the different requirements of communication participants in an industrial network. Configuration is either web-based using a simple and intuitive user interface, or using convenient management software in large networks with multiple switches, this could be Weidmüller's Net-Manager software for example.

**Powerful and reliable network redundancy**

It is particularly important to have network redundancy to ensure system availability in today's industrial Ethernet infrastructures. This is because in a highly integrated system a connection error can lead to machine stoppage and thus to production losses. To minimise such risks in a managed Ethernet network Weidmüller has integrated high-performance redundancy mechanisms into its managed switches, this is in addition to the RSTP/STP standard and port-trunking.



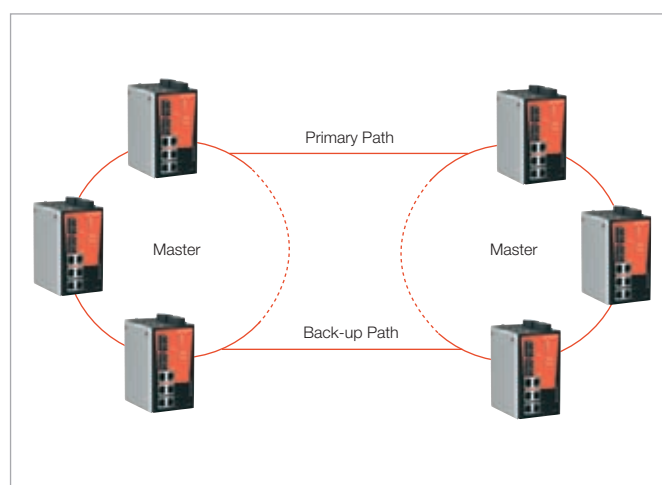
### Ring redundancy

The Turbo-Ring technology integrated into Weidmüller's switches allows you to restore a network connection in case of failure in under 20 ms, and this with up to 250 switches in a ring. Turbo-Ring offers three different topology options (Ring-Coupling, Dual-Ring and Dual-Homing) for different application requirements to ensure the maximum possible availability of industrial network applications.



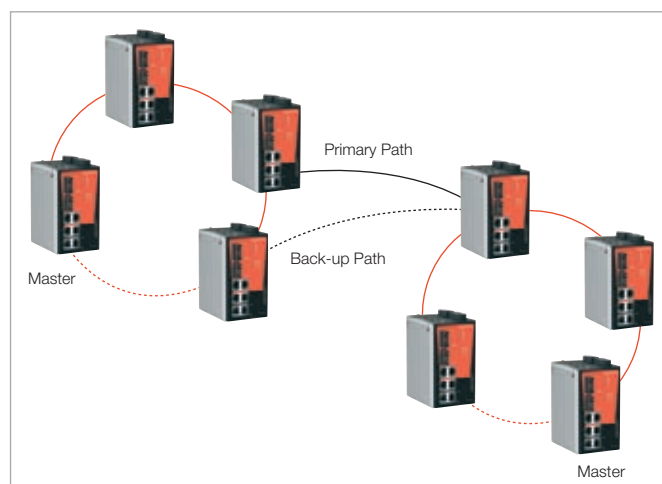
### Ring-Coupling

In some applications it is not sensible to have all equipment and devices in a single large redundant ring networked together as some of the devices may be located in remote parts of the plant. For such structures Ring-Coupling is ideal. It connects devices in multiple, smaller rings that are connected redundantly and directly with one another.



### Dual-Homing

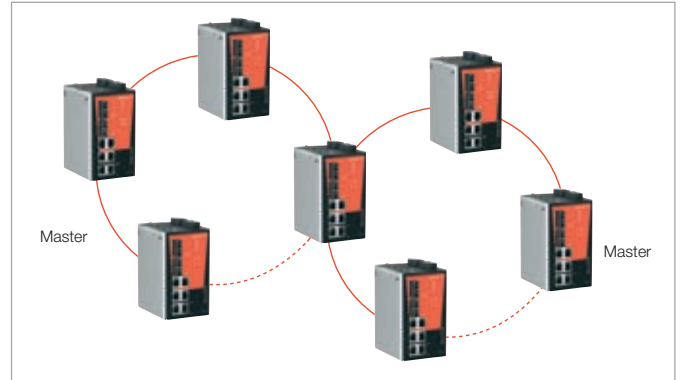
Two separate rings are connected through one managed switch via two independent connection points. The back-up connection is activated if the primary connection fails.



## Managed Switches

### Dual-Ring

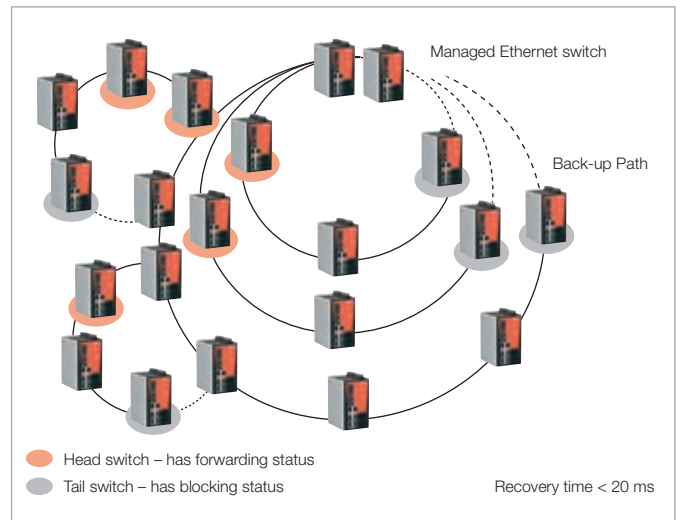
In Dual-Ring two neighbouring rings are connected with one switch without the need for additional ports or cabling. This configuration reduces the total number of ports and saves cabling costs as an additional primary and back-up line is not needed.



### Turbo-Chain

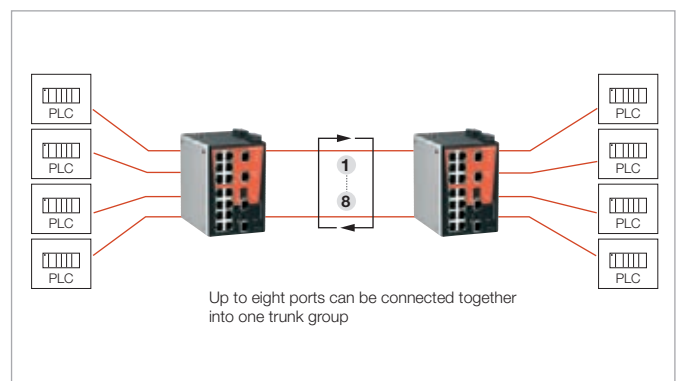
Turbo-Chain offers the possibility of creating multiple redundant networks without the limitations of the ring technology. Turbo-Chain can be simply configured by defining two end-points in a segment. This means you can connect or extend existing redundant networks. When compared with traditional ring coupling or a network re-design, Turbo-Chain is more flexible as well as being more cost efficient and it has significant savings potential when compared to the effort for network restructuring and re-cabling. It also supports the Turbo-Chain standard IEEE 802.1w / D RSTP and STP protocols.

- Flexible network topology
- Unlimited and simple network expansion
- Quick troubleshooting (recovery time < 20 ms)
- Cost-effective configurations



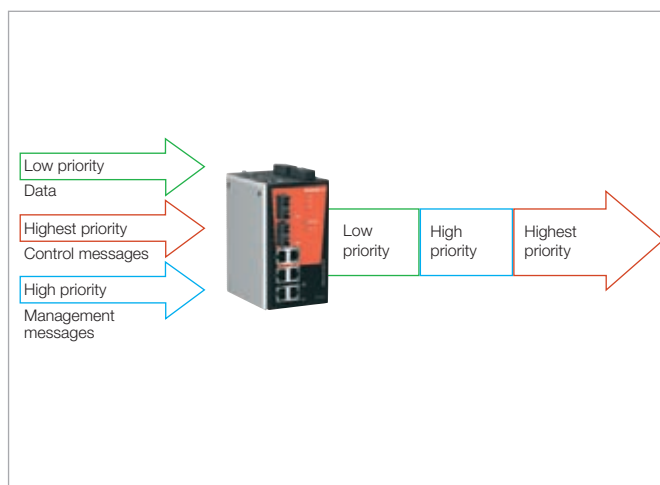
### Port trunking for flexible connections

IEEE 802.3ad (LACP, Link Aggregation Control Protocol) permits flexible network connections and a redundant path for critical applications. It provides the possibility to give the user a link with higher bandwidth over the PremiumLine managed switches by combining more ports into a trunk group.



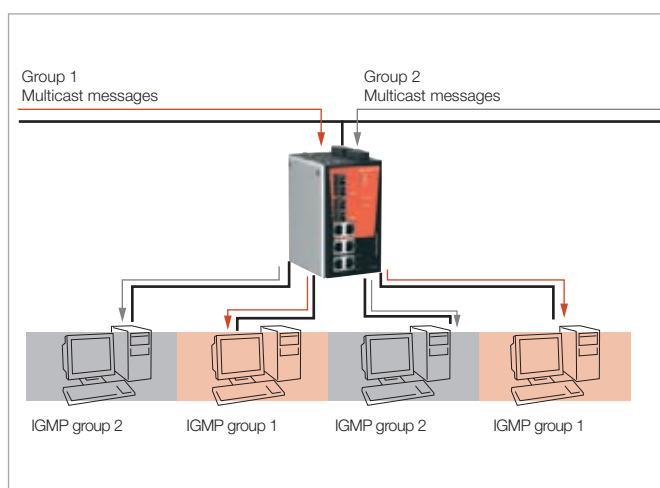
### QoS supports real-time capability

Quality of Service (QoS) offers the possibility of prioritising data traffic in a network and ensures that important data are consistently and predictably available. Weidmüller managed switches can deal with IEEE 802.1p/1Q layer 2 CoS tags and also layer 3 TOS information. The QoS functionality of Weidmüller's managed switches improves network performance and ensures that time-critical applications are given priority communications.



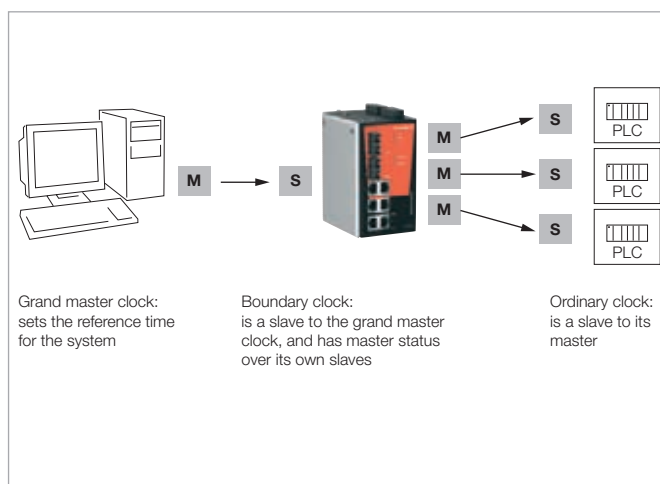
### IGMP snooping and GMRP for filtering multicast data traffic

Weidmüller managed switches support GMRP (Generic Multicast Registration Protocol) and IGMP snooping. These protocols limit multicast data traffic so that it is only forwarded to the devices that actually require it. This reduces unnecessary network data traffic.



### IEEE 1588 PTP - improves time synchronisation of automation devices

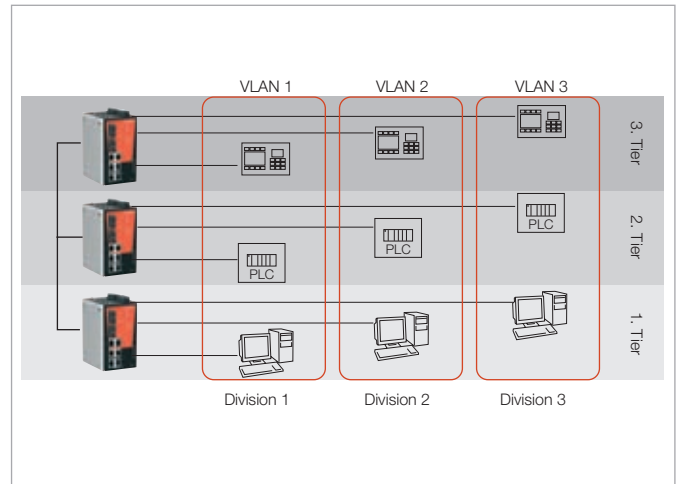
IEEE 1588 PTP, also known as Precision Time Protocol (PTP), was developed to synchronise real-time clocks which are located at specific nodes of a distributed system. Weidmüller managed switches with IEEE 1588 PTP are particularly suited for motion control applications where distributed clocks must be synchronised with high levels of accuracy.



## Managed Switches

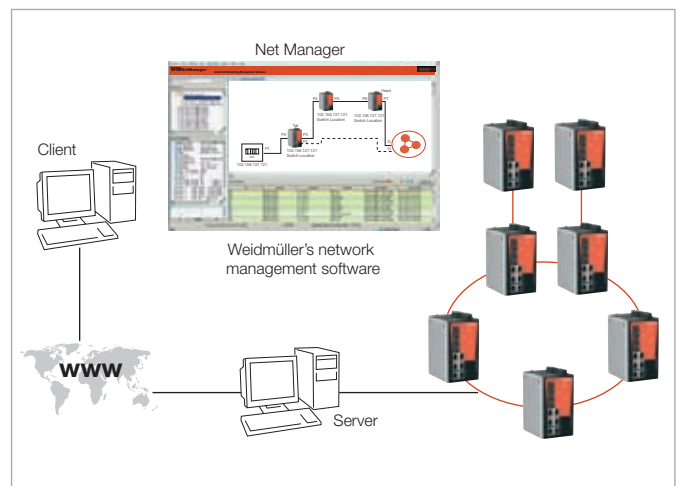
### VLAN – simplifies network planning

VLAN stands for virtual LAN. It is a network structure with all the characteristics of a normal LAN, but not geographically constrained. A network can be divided into different sections using the VLAN function. It is possible, for example, to group servers or workstations together based on their function. Data will only then be sent to Ethernet devices of a specific VLAN group. The possibility to isolate VLANs completely from one another serves to increase the security of data transfer and offers additional protection from unauthorised access or unauthorised data traffic.



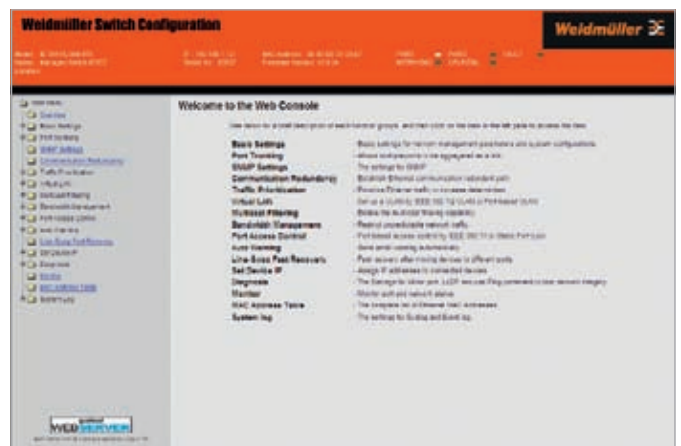
### Automatic topology detection using LLDP

The Link Layer Discovery Protocol (LLDP - IEEE 802.1AB) is a data link layer protocol which publishes information about a device containing its IP address, description and functional information to its neighbouring devices over the network. All of Weidmüller's managed switches fully support LLDP. Using Weidmüller's Net-Manager network management software LLDP capable devices are detected and managed. The information is used by the system to automatically generate accurate network topologies and to provide information about the connected devices.



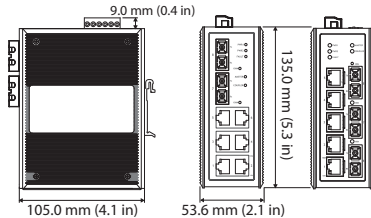
### Simple browser based configuration

Weidmüller's managed switches can be easily configured using a web browser, telnet console or the Weidmüller switch configuration utility. Further switch configurations can be saved or the firmware updated using this user-friendly tool.



## Managed Entry-level Ethernet Switches

- Turbo Ring and Turbo Chain with fast recovery time (under 20 ms)
- QoS, port-based VLAN, SNMPv1/v2c/v3, RMON supported
- Automatic warning by exception through e-mail, relay output
- User-friendly web-based configuration and management
- External Backup and Restoring Module for easy system reconfiguration (optional accessory)



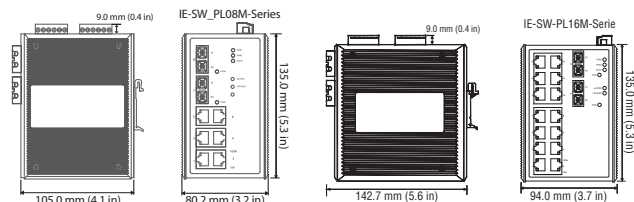
## Technical data

| Technology                                             |                                                                                                                                                                                                                                                |                    |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Standards                                              | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for Flow Control<br>IEEE 802.1D for Spanning Tree Protocol<br>IEEE 802.1w for Rapid STP<br>IEEE 802.1p for Class of Service<br>IEEE 802.1Q for VLAN Tagging |                    |
| Protocols                                              | IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, TFTP, SNMP, SMTP, RARP, RMON, HTTP, Telnet, Syslog, DHCP Option 66/67/82, BootP, LLDP, Modbus/TCP, IPv6                                                                              |                    |
| MIB                                                    | MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9                                                                                                                                                       |                    |
| Flow Control                                           | IEEE 802.3x flow control, back pressure flow control                                                                                                                                                                                           |                    |
| Switch Properties                                      |                                                                                                                                                                                                                                                |                    |
| MAC Table Size                                         | 8 K                                                                                                                                                                                                                                            |                    |
| Packet Buffer Size                                     | 1 Mbit                                                                                                                                                                                                                                         |                    |
| Interface                                              |                                                                                                                                                                                                                                                |                    |
| Fiber Ports                                            | 100BaseFX ports (SC/ST connector)                                                                                                                                                                                                              |                    |
| RJ45 Ports                                             | 10/100BaseT(X) auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection                                                                                                                                                    |                    |
| Console Port                                           | RS-232 (RJ45 connector)                                                                                                                                                                                                                        |                    |
| DIP Switches                                           | Turbo Ring, Master, Coupler, Reserve                                                                                                                                                                                                           |                    |
| LED Indicators                                         | PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/ TAIL, 10/100M                                                                                                                                                                                              |                    |
| Alarm Contact                                          | 1 relay output with current carrying capacity of 1 A @ 24 V DC                                                                                                                                                                                 |                    |
| Optical Fiber                                          |                                                                                                                                                                                                                                                |                    |
|                                                        | 100BaseFX                                                                                                                                                                                                                                      |                    |
|                                                        | multimode                                                                                                                                                                                                                                      | singlemode         |
| Wavelength                                             | 1300 nm                                                                                                                                                                                                                                        | 1310 nm            |
| Max. TX                                                | -10 dBm                                                                                                                                                                                                                                        | 0 dBm              |
| Min. TX                                                | -20 dBm                                                                                                                                                                                                                                        | -5 dBm             |
| RX Sensitivity                                         | -32 dBm                                                                                                                                                                                                                                        | -34 dBm            |
| Link Budget                                            | 12 dB                                                                                                                                                                                                                                          | 29 dB              |
| Typical Distance                                       | 5 km <sup>a</sup>                                                                                                                                                                                                                              | 40 km <sup>c</sup> |
|                                                        | 4 km <sup>b</sup>                                                                                                                                                                                                                              |                    |
| Saturation                                             | -6 dBm                                                                                                                                                                                                                                         | -3 dBm             |
| <sup>a</sup> 50/125 µm, 800 MHz*km fiber optic cable   |                                                                                                                                                                                                                                                |                    |
| <sup>b</sup> 62.5/125 µm, 500 MHz*km fiber optic cable |                                                                                                                                                                                                                                                |                    |
| <sup>c</sup> 9/125 µm singlemode fiber optic cable     |                                                                                                                                                                                                                                                |                    |
| Power Requirements                                     |                                                                                                                                                                                                                                                |                    |
| Input Voltage                                          | 24 V DC (12 to 45 V DC), redundant dual inputs                                                                                                                                                                                                 |                    |
| Input Current                                          | IE-SW-VL08M-8TX: 0.26 A @ 24 V<br>IE-SW-VL08M-6TX-2ST/SC: 0.35 A @ 24 V<br>IE-SW-VL08M-5TX-3SC: 0.32 A @ 24 V                                                                                                                                  |                    |

| Power Requirements                 |                                                                                                                                                                        |                       |            |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Overload Current Protection        | Present                                                                                                                                                                |                       |            |
| Connection                         | 1 removable 6-contact terminal block                                                                                                                                   |                       |            |
| Reverse Polarity Protection        | Present                                                                                                                                                                |                       |            |
| Physical Characteristics           |                                                                                                                                                                        |                       |            |
| Housing                            | Metal, IP30 protection                                                                                                                                                 |                       |            |
| Dimensions                         | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                                                                                                            |                       |            |
| Weight                             | IE-SW-VL08M-...8TX/6TX-2SC/6TX-2ST: 650 g<br>IE-SW-VL08M-5TX-3SC: 890 g                                                                                                |                       |            |
| Installation                       | DIN-Rail mounting                                                                                                                                                      |                       |            |
| Environmental Limits               |                                                                                                                                                                        |                       |            |
| Operating Temperature              | -40 to 75 °C (-40 to 167 °F)                                                                                                                                           |                       |            |
| Storage Temperature                | -40 to 85 °C (-40 to 185 °F)                                                                                                                                           |                       |            |
| Ambient Relative Humidity          | 5 to 95 % (non-condensing)                                                                                                                                             |                       |            |
| Regulatory Approvals               |                                                                                                                                                                        |                       |            |
| Safety                             | UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1                                                                                                                     |                       |            |
| Hazardous Location                 | UL/cUL Class I, Division 2, Groups A, B, C, and D (IE-SW-VL08M-5TX-3SC Pending); ATEX Zone 2, Ex nC IIC (IE-SW-VL08M-5TX-3SC Pending)                                  |                       |            |
| EMI                                | FCC Part 15, CISPR (EN55022) class A                                                                                                                                   |                       |            |
| EMS                                | EN61000-4-2 (ESD), level 3;<br>EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3;<br>EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3;<br>EN61000-4-8 |                       |            |
| Maritime                           | DNV, GL                                                                                                                                                                |                       |            |
| Shock                              | IEC 60068-2-27                                                                                                                                                         |                       |            |
| Freefall                           | IEC 60068-2-32                                                                                                                                                         |                       |            |
| Vibration                          | IEC 60068-2-6                                                                                                                                                          |                       |            |
| MTBF (mean time between failures)  |                                                                                                                                                                        |                       |            |
| Time                               | IE-SW-VL08M-...Series:<br>363,000 hrs                                                                                                                                  |                       |            |
| Database                           | Telcordia (Bellcore), GB                                                                                                                                               |                       |            |
| Warranty                           |                                                                                                                                                                        |                       |            |
| Warranty Period                    | 5 years                                                                                                                                                                |                       |            |
| Ordering Information               |                                                                                                                                                                        |                       |            |
| Port Variants                      | Model Type                                                                                                                                                             | Operating Temperature | Order No.  |
| 8 * RJ45                           | IE-SW-VL08MT-8TX                                                                                                                                                       | -40 to +75 °C         | 1240940000 |
| 5 * RJ45, 3 * SC-Multimode         | IE-SW-VL08MT-5TX-3SC                                                                                                                                                   | -40 to +75 °C         | 1240970000 |
| 6 * RJ45, 2 * ST-Multimode         | IE-SW-VL08MT-6TX-2ST                                                                                                                                                   | -40 to +75 °C         | 1240990000 |
| 6 * RJ45, 2 * SC-Singlemode        | IE-SW-VL08MT-6TX-2SCS                                                                                                                                                  | -40 to +75 °C         | 1241020000 |
| Accessories                        |                                                                                                                                                                        |                       |            |
|                                    | Model Type                                                                                                                                                             | Order No.             |            |
| External Backup and Restore Module | EBR-Module RS232                                                                                                                                                       | 1241430000            |            |
| Networkmanagement Software         | IE-NM-WMNETMANAGER                                                                                                                                                     | 1242120000            |            |
| 19" Rack Mounting Kit              | RM-KIT                                                                                                                                                                 | 1241440000            |            |

## Managed Fast Ethernet Switches

- Plug-n-play Turbo Ring and Turbo Chain (recovery time < 20 ms), RSTP/STP (IEEE 802.1w/D) for Ethernet redundancy
- IEEE 1588 PTP, Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
- EBR-Module (External Backup and Restore Module) for system configuration backup (optional accessory)



## Technical data

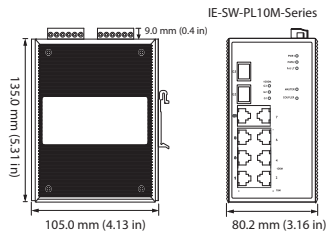
| Technology                     |                                                                                                                                                                                                                                                                                                                           |                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Standards                      | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for Flow Control<br>IEEE 802.1D for Spanning Tree Protocol<br>IEEE 802.1w for Rapid STP<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.3ad for Port Trunk with LACP |                                   |
| Protocols                      | IGMPv1/v2, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNMP, SMTP, RARP, GMRP, LACP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH, SNMP Inform, Modbus/TCP, LLDP, IEEE 1588 PTP, IPv6                                                                                                           |                                   |
| MIB                            | MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9                                                                                                                                                                                                                    |                                   |
| Flow Control                   | IEEE 802.3x flow control, back pressure flow control                                                                                                                                                                                                                                                                      |                                   |
| Switch Properties              |                                                                                                                                                                                                                                                                                                                           |                                   |
| Priority Queues                | 4                                                                                                                                                                                                                                                                                                                         |                                   |
| Max. Number of Available VLANs | 64                                                                                                                                                                                                                                                                                                                        |                                   |
| VLAN ID Range                  | VID 1 to 4094                                                                                                                                                                                                                                                                                                             |                                   |
| IGMP Groups                    | 256                                                                                                                                                                                                                                                                                                                       |                                   |
| MAC Table Size                 | 8 K                                                                                                                                                                                                                                                                                                                       |                                   |
| Packet Buffer Size             | 1 Mbit (E-SW-PL08M)<br>2 Mbit (E-SW-PL16M)                                                                                                                                                                                                                                                                                |                                   |
| Interface                      |                                                                                                                                                                                                                                                                                                                           |                                   |
| Fiber Ports                    | 100BaseFX ports (SC/ST connector)                                                                                                                                                                                                                                                                                         |                                   |
| RJ45 Ports                     | 10/100BaseT(X) auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection                                                                                                                                                                                                                               |                                   |
| Console Port                   | RS-232 (RJ45 connector)                                                                                                                                                                                                                                                                                                   |                                   |
| DIP Switches                   | Turbo Ring, Master, Coupler, Reserve                                                                                                                                                                                                                                                                                      |                                   |
| LED Indicators                 | PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL, 10/100M                                                                                                                                                                                                                                                                          |                                   |
| Alarm Contact                  | 2 relay outputs with current carrying capacity of 1 A @ 24 V DC                                                                                                                                                                                                                                                           |                                   |
| Digital Inputs                 | 2 inputs with the same ground, electrically isolated <ul style="list-style-type: none"><li>• +13 to +30 V for state "1"</li><li>• -30 to +3 V for state "0"</li><li>• Max. input current: 8 mA</li></ul>                                                                                                                  |                                   |
| Optical Fiber                  |                                                                                                                                                                                                                                                                                                                           |                                   |
|                                | 100BaseFX                                                                                                                                                                                                                                                                                                                 |                                   |
|                                | multimode                                                                                                                                                                                                                                                                                                                 | singlemode                        |
| Wavelength                     | 1300 nm                                                                                                                                                                                                                                                                                                                   | 1310 nm                           |
| Max. TX                        | -10 dBm                                                                                                                                                                                                                                                                                                                   | 0 dBm                             |
| Min. TX                        | -20 dBm                                                                                                                                                                                                                                                                                                                   | -5 dBm                            |
| RX Sensitivity                 | -32 dBm                                                                                                                                                                                                                                                                                                                   | -34 dBm                           |
| Link Budget                    | 12 dB                                                                                                                                                                                                                                                                                                                     | 29 dB                             |
| Typical Distance               | 5 km (50/125 µm multimode cable)<br>4 km (62.5/125 µm multimode cable)                                                                                                                                                                                                                                                    | 40 km (9/125 µm singlemode cable) |
| Saturation                     | -6 dBm                                                                                                                                                                                                                                                                                                                    | -3 dBm                            |



| Power Requirements                                                        |                                                                                                                                                                                                                     |                       |            |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Input Voltage                                                             | 24 V DC (12 to 45 V DC), redundant dual inputs                                                                                                                                                                      |                       |            |
| Input Current                                                             | IE-SW-PL08M-8TX: 0.26 A @ 24 V<br>IE-SW-PL08M-6TX-2SC/ST/2SCS: 0.36 A @ 24 V<br>IE-SW-PL16M-16TX: 0.41 A @ 24 V<br>IE-SW-PL16M-14TX-2SC/ST: 0.51 A @ 24 V                                                           |                       |            |
| Overload Current Protection                                               | Present                                                                                                                                                                                                             |                       |            |
| Connection                                                                | 2 removable 6-contact terminal blocks                                                                                                                                                                               |                       |            |
| Reverse Polarity Protection                                               | Present                                                                                                                                                                                                             |                       |            |
| Physical Characteristics                                                  |                                                                                                                                                                                                                     |                       |            |
| Housing                                                                   | Metal, IP30 protection                                                                                                                                                                                              |                       |            |
| Dimensions                                                                | IE-SW-PL08M: 80.2 x 135 x 105 mm (3.16 x 5.31 x 4.13 in)<br>IE-SW-PL16M: 94 x 135 x 142.7 mm (3.7 x 5.31 x 5.62 in)                                                                                                 |                       |            |
| Weight                                                                    | IE-SW-PL08M: 1040 g<br>IE-SW-PL16M: 1586 g                                                                                                                                                                          |                       |            |
| Installation                                                              | DIN-Rail mounting                                                                                                                                                                                                   |                       |            |
| Environmental Limits                                                      |                                                                                                                                                                                                                     |                       |            |
| Operating Temperature                                                     | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C (-40 to 167 °F) (on request)                                                                                                          |                       |            |
| Storage Temperature                                                       | -40 to 85 °C (-40 to 185 °F)                                                                                                                                                                                        |                       |            |
| Ambient Relative Humidity                                                 | 5 to 95 % (non-condensing)                                                                                                                                                                                          |                       |            |
| Regulatory Approvals                                                      |                                                                                                                                                                                                                     |                       |            |
| Safety                                                                    | UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1                                                                                                                                                                  |                       |            |
| Hazardous Location                                                        | UL/cUL Class I, Division 2, Groups A, B, C, and D; ATEX Zone 2, Ex nC IIC                                                                                                                                           |                       |            |
| EMI                                                                       | FCC Part 15, CISPR (EN55022) class A                                                                                                                                                                                |                       |            |
| EMS                                                                       | EN61000-4-2 (ESD): IE-SW-PL08M...Series: level 3<br>IE-SW-PL16M...Series: level 2;<br>EN61000-4-3 (RS) level 3; EN61000-4-4 (EFT) level 2;<br>EN61000-4-5 (Surge) level 3;<br>EN61000-4-6 (CS) level 3; EN61000-4-8 |                       |            |
| Maritime                                                                  | DNV, GL                                                                                                                                                                                                             |                       |            |
| Shock                                                                     | IEC 60068-2-27                                                                                                                                                                                                      |                       |            |
| Freefall                                                                  | IEC 60068-2-32                                                                                                                                                                                                      |                       |            |
| Vibration                                                                 | IEC 60068-2-6                                                                                                                                                                                                       |                       |            |
| MTBF (mean time between failures)                                         |                                                                                                                                                                                                                     |                       |            |
| Time                                                                      | IE-SW-PL08M...Series: 339,000 hrs<br>IE-SW-PL16M...Series: 247,000 hrs                                                                                                                                              |                       |            |
| Database                                                                  | Telcordia (Bellcore), GB                                                                                                                                                                                            |                       |            |
| Warranty                                                                  |                                                                                                                                                                                                                     |                       |            |
| Warranty Period                                                           | 5 years                                                                                                                                                                                                             |                       |            |
| Ordering Information                                                      |                                                                                                                                                                                                                     |                       |            |
| Port Variants                                                             | Model Type                                                                                                                                                                                                          | Operating Temperature | Order No.  |
| 8 * RJ45                                                                  | IE-SW-PL08M-8TX                                                                                                                                                                                                     | 0 to 60 °C            | 1241040000 |
| 6 * RJ45, 2 * SC-Multimode                                                | IE-SW-PL08M-6TX-2SC                                                                                                                                                                                                 | 0 to 60 °C            | 1241070000 |
| 6 * RJ45, 2 * ST-Multimode                                                | IE-SW-PL08M-6TX-2ST                                                                                                                                                                                                 | 0 to 60 °C            | 1241080000 |
| 6 * RJ45, 2 * SC-Singlemode                                               | IE-SW-PL08M-6TX-2SCS                                                                                                                                                                                                | 0 to 60 °C            | 1241090000 |
| 16 * RJ45                                                                 | IE-SW-PL16M-16TX                                                                                                                                                                                                    | 0 to 60 °C            | 1241100000 |
| 14 * RJ45, 2 * SC-Multimode                                               | IE-SW-PL16M-14TX-2SC                                                                                                                                                                                                | 0 to 60 °C            | 1241120000 |
| 14 * RJ45, 2 * ST-Multimode                                               | IE-SW-PL16M-14TX-2ST                                                                                                                                                                                                | 0 to 60 °C            | 1241130000 |
| Note: Models with extended operating temperature -40 to +75 °C on request |                                                                                                                                                                                                                     |                       |            |

## Managed Gigabit Ethernet Switches

- 2 Gigabit Ethernet ports for redundant ring and 1 Gigabit Ethernet port for uplink solution
- Turbo Ring, Turbo Chain, and RSTP/STP for network redundancy
- IEEE 1588 PTP, Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
- EBR-Module - External Backup and Restoring Module for easy system reconfiguration (optional accessory)



## Technical data

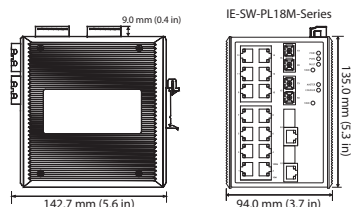
| Technology                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                                                                                                                                                                                                     | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.3x for Flow Control<br>IEEE 802.1D for Spanning Tree Protocol<br>IEEE 802.1w for Rapid STP<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.3ad for Port Trunk with LACP |
| Protocols                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                         |
| IGMPv1/v2 • GMRP • GVRP • SNMPv1/v2c/v3 • DHCP Server/Client • BootP • TFTP • STP • SMTP • RARP • RMON • HTTP • HTTPS • Telnet • Syslog • DHCP Option 66/67/82 • SSH • SNMP Inform • Modbus/TCP • LLDP • IEEE 1588 PTP • IPv6 |                                                                                                                                                                                                                                                                                                                                                                                         |
| MIB                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                         |
| MIB-II • Ethernet-Like MIB • P-BRIDGE MIB • Q-BRIDGE MIB • Bridge MIB • RSTP MIB • RMON MIB Group 1, 2, 3, 9                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                         |
| Flow Control                                                                                                                                                                                                                  | IEEE 802.3x flow control, back pressure flow control                                                                                                                                                                                                                                                                                                                                    |
| Switch Properties                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                         |
| Priority Queues                                                                                                                                                                                                               | 4                                                                                                                                                                                                                                                                                                                                                                                       |
| Max. Number of Available VLANs                                                                                                                                                                                                | 64                                                                                                                                                                                                                                                                                                                                                                                      |
| VLAN ID Range                                                                                                                                                                                                                 | VID 1 to 4094                                                                                                                                                                                                                                                                                                                                                                           |
| IGMP Groups                                                                                                                                                                                                                   | 256                                                                                                                                                                                                                                                                                                                                                                                     |
| MAC Table Size                                                                                                                                                                                                                | 8 K                                                                                                                                                                                                                                                                                                                                                                                     |
| Packet Buffer Size                                                                                                                                                                                                            | 1 Mbit                                                                                                                                                                                                                                                                                                                                                                                  |
| Interface                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                         |
| Fiber Ports                                                                                                                                                                                                                   | 1000BaseSFP slot                                                                                                                                                                                                                                                                                                                                                                        |
| RJ45 Ports                                                                                                                                                                                                                    | 10/100BaseT(X) or 10/100/1000BaseT(X) auto negotiation speed                                                                                                                                                                                                                                                                                                                            |
| Console Port                                                                                                                                                                                                                  | RS-232 (RJ45 connector)                                                                                                                                                                                                                                                                                                                                                                 |
| DIP Switches                                                                                                                                                                                                                  | Turbo Ring, Master, Coupler, Reserve                                                                                                                                                                                                                                                                                                                                                    |
| LED Indicators                                                                                                                                                                                                                | PWR1, PWR2, FAULT, 10/100M (TP port), 1000M (Gigabit port), MSTR/HEAD, CPLR/TAIL                                                                                                                                                                                                                                                                                                        |
| Alarm Contact                                                                                                                                                                                                                 | 2 relay outputs with current carrying capacity of 1 A @ 24 V DC                                                                                                                                                                                                                                                                                                                         |
| Digital Inputs                                                                                                                                                                                                                | 2 inputs with the same ground, but electrically isolated from the electronics.<br>• +13 to +30 V for state "1"<br>• -30 to +3 V for state "0"<br>• Max. input current: 8 mA                                                                                                                                                                                                             |
| Power Requirements                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                         |
| Input Voltage                                                                                                                                                                                                                 | 24 V DC (12 to 45 V DC), redundant dual inputs                                                                                                                                                                                                                                                                                                                                          |
| Input Current                                                                                                                                                                                                                 | IE-SW-PL10M-3GT-7TX: 0.65 A @ 24 V<br>IE-SW-PL10M-1GT-2GS-7TX: 0.44 A @ 24 V                                                                                                                                                                                                                                                                                                            |
| Overload Current Protection                                                                                                                                                                                                   | Present                                                                                                                                                                                                                                                                                                                                                                                 |
| Connection                                                                                                                                                                                                                    | 2 removable 6-contact terminal blocks                                                                                                                                                                                                                                                                                                                                                   |
| Reverse Polarity Protection                                                                                                                                                                                                   | Present                                                                                                                                                                                                                                                                                                                                                                                 |

| Physical Characteristics                                                           |                                                                                                                                                               |                         |                       |            |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|------------|
| Housing                                                                            | Metal, IP30 protection                                                                                                                                        |                         |                       |            |
| Dimensions                                                                         | 80.2 x 135 x 105 mm (3.16 x 5.31 x 4.13 in)                                                                                                                   |                         |                       |            |
| Weight                                                                             | 1170 g                                                                                                                                                        |                         |                       |            |
| Installation                                                                       | DIN-Rail mounting                                                                                                                                             |                         |                       |            |
| Environmental Limits                                                               |                                                                                                                                                               |                         |                       |            |
| Operating Temperature                                                              | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C<br>(-40 to 167 °F) on request                                                   |                         |                       |            |
| Storage Temperature                                                                | -40 to 85 °C (-40 to 185 °F)                                                                                                                                  |                         |                       |            |
| Ambient Relative Humidity                                                          | 5 to 95 % (non-condensing)                                                                                                                                    |                         |                       |            |
| Regulatory Approvals                                                               |                                                                                                                                                               |                         |                       |            |
| Safety                                                                             | UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1                                                                                                            |                         |                       |            |
| Hazardous Location                                                                 | UL/cUL Class I, Division 2, Groups A, B, C, and D; ATEX Zone 2, Ex nC IIC                                                                                     |                         |                       |            |
| EMI                                                                                | FCC Part 15, CISPR (EN55022) class A                                                                                                                          |                         |                       |            |
| EMS                                                                                | EN61000-4-2 (ESD), level 3; EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3; EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3; EN61000-4-8 |                         |                       |            |
| Maritime                                                                           | DNV, GL                                                                                                                                                       |                         |                       |            |
| Shock                                                                              | IEC 60068-2-27                                                                                                                                                |                         |                       |            |
| Freefall                                                                           | IEC 60068-2-32                                                                                                                                                |                         |                       |            |
| Vibration                                                                          | IEC 60068-2-6                                                                                                                                                 |                         |                       |            |
| MTBF (meantime between failures)                                                   |                                                                                                                                                               |                         |                       |            |
| Time                                                                               | 204,000 hrs                                                                                                                                                   |                         |                       |            |
| Database                                                                           | MIL-HDBK-217J, GB 25 °C                                                                                                                                       |                         |                       |            |
| Warranty                                                                           |                                                                                                                                                               |                         |                       |            |
| Warranty Period                                                                    | 5 years                                                                                                                                                       |                         |                       |            |
| Ordering Information                                                               |                                                                                                                                                               |                         |                       |            |
| Port Variants                                                                      |                                                                                                                                                               | Model Type              | Operating Temperature | Order No.  |
| 3 * RJ45 10/100/1000BaseT(X),<br>7 * RJ45 10/100BaseT(X)                           |                                                                                                                                                               | IE-SW-PL10M-3GT-7TX     | 0 to 60 °C            | 1241290000 |
| 1 * RJ45 10/100/1000BaseT(X),<br>2 * Slots 1000BaseSFP,<br>7 * RJ45 10/100BaseT(X) |                                                                                                                                                               | IE-SW-PL10M-1GT-2GS-7TX | 0 to 60 °C            | 1241300000 |
| Note: Models with extended operating temperature -40 to +75 °C on request          |                                                                                                                                                               |                         |                       |            |
| Accessories                                                                        |                                                                                                                                                               |                         |                       |            |
|                                                                                    |                                                                                                                                                               |                         | Model Type            | Order No.  |
| External Backup and Restore Module                                                 |                                                                                                                                                               |                         | EBR-Module RS232      | 1241430000 |
| Networkmanagement Software                                                         |                                                                                                                                                               |                         | IE-NM-WMNETMANAGER    | 1242120000 |
| 19" Rack Mounting Kit                                                              |                                                                                                                                                               |                         | RM-KIT                | 1241440000 |

## Managed Switches Gigabit Ethernet – Premium Line

### Managed Gigabit Ethernet Switches

- 2 Gigabit Ethernet ports plus 16 Fast Ethernet ports for copper and fibre
- Turbo Ring, Turbo Chain, and RSTP/STP for network redundancy
- IEEE 1588 PTP, Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
- EBR-Module - External Backup and Restoring Module for easy system reconfiguration (optional accessory)



### Technical data

| Technology Standards                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                             |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| IEEE 802.3 for 10BaseT ■ IEEE 802.3u for 100BaseT(X) and 100BaseFX ■ IEEE 802.3ab for 1000BaseT(X) ■ IEEE 802.3z for 1000BaseX IEEE 802.3x for Flow Control ■ IEEE 802.1D for Spanning Tree Protocol ■ IEEE 802.1w for Rapid STP ■ IEEE 802.1Q for VLAN Tagging ■ IEEE 802.1p for Class of Service ■ IEEE 802.1X for Authentication ■ IEEE 802.3ad for Port Trunk with LACP |                                                                                                                                                                             |                                   |
| Protocols                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                             |                                   |
| IGMPv1/v2 ■ GMRP, GVRP ■ SNMPv1/v2c/v3 ■ DHCP Server/Client ■ BootP ■ TFTP ■ SNMP ■ SMTP ■ RARP ■ RMON ■ HTTP ■ HTTPS ■ Telnet ■ Syslog ■ DHCP Option 66/67/82 ■ SSH ■ SNMP Inform ■ Modbus/TCP ■ LLDP ■ IEEE 1588 PTP ■ IPv6                                                                                                                                               |                                                                                                                                                                             |                                   |
| MIB                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                             |                                   |
| MIB-II ■ Ethernet-Like MIB ■ P-BRIDGE MIB ■ Q-BRIDGE MIB ■ Bridge MIB ■ RSTP MIB ■ RMON MIB Group 1, 2, 3, 9                                                                                                                                                                                                                                                                |                                                                                                                                                                             |                                   |
| Flow Control                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                             |                                   |
| IEEE 802.3x flow control, back pressure flow control                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                             |                                   |
| Switch Properties                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                             |                                   |
| Priority Queues                                                                                                                                                                                                                                                                                                                                                             | 4                                                                                                                                                                           |                                   |
| Max. Number of Available VLANs                                                                                                                                                                                                                                                                                                                                              | 64                                                                                                                                                                          |                                   |
| VLAN ID Range                                                                                                                                                                                                                                                                                                                                                               | VID 1 to 4094                                                                                                                                                               |                                   |
| IGMP Groups                                                                                                                                                                                                                                                                                                                                                                 | 256                                                                                                                                                                         |                                   |
| MAC Table Size                                                                                                                                                                                                                                                                                                                                                              | 8 K                                                                                                                                                                         |                                   |
| Packet Buffer Size                                                                                                                                                                                                                                                                                                                                                          | 2 Mbit                                                                                                                                                                      |                                   |
| Interface                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                             |                                   |
| Fiber Ports                                                                                                                                                                                                                                                                                                                                                                 | 100BaseFX (SC/ST connector) and 1000BaseSFP slot                                                                                                                            |                                   |
| RJ45 Ports                                                                                                                                                                                                                                                                                                                                                                  | 10/100BaseT(X) or 10/100/1000BaseT(X) auto negotiation speed                                                                                                                |                                   |
| Console Port                                                                                                                                                                                                                                                                                                                                                                | RS-232 (RJ45 connector)                                                                                                                                                     |                                   |
| LED Indicators                                                                                                                                                                                                                                                                                                                                                              | PWR1, PWR2, FAULT, 10/100M (TP port), 100M (fiber port), MSTR/HEAD, CPLR/TAIL                                                                                               |                                   |
| Alarm Contact                                                                                                                                                                                                                                                                                                                                                               | 2 relay outputs with current carrying capacity of 1 A @ 24 V DC                                                                                                             |                                   |
| Digital Inputs                                                                                                                                                                                                                                                                                                                                                              | 2 inputs with the same ground, but electrically isolated from the electronics.<br>• +13 to +30 V for state "1"<br>• -30 to +3 V for state "0"<br>• Max. input current: 8 mA |                                   |
| Optical Fiber                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                             |                                   |
|                                                                                                                                                                                                                                                                                                                                                                             | 100BaseFX                                                                                                                                                                   |                                   |
|                                                                                                                                                                                                                                                                                                                                                                             | multimode                                                                                                                                                                   | singlemode                        |
| Wavelength                                                                                                                                                                                                                                                                                                                                                                  | 1300 nm                                                                                                                                                                     | 1310 nm                           |
| Max. TX                                                                                                                                                                                                                                                                                                                                                                     | -10 dBm                                                                                                                                                                     | 0 dBm                             |
| Min. TX                                                                                                                                                                                                                                                                                                                                                                     | -20 dBm                                                                                                                                                                     | -5 dBm                            |
| RX Sensitivity                                                                                                                                                                                                                                                                                                                                                              | -32 dBm                                                                                                                                                                     | -34 dBm                           |
| Link Budget                                                                                                                                                                                                                                                                                                                                                                 | 12 dB                                                                                                                                                                       | 29 dB                             |
| Typical Distance                                                                                                                                                                                                                                                                                                                                                            | 5 km (50/125 µm multimode cable)<br>4 km (62,5/125 µm multimode cable)                                                                                                      | 40 km (9/125 µm singlemode cable) |
| Saturation                                                                                                                                                                                                                                                                                                                                                                  | -6 dBm                                                                                                                                                                      | -3 dBm                            |

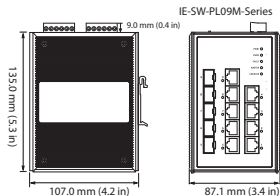
| Power Requirements                                                                    |                                                                                                                                                                       |                         |                       |            |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------|------------|
| Input Voltage                                                                         | 24 V DC (12 to 45 V DC), redundant dual inputs                                                                                                                        |                         |                       |            |
| Input Current                                                                         | IE-SW-PL18M-2GC-16TX: 0.51 A @ 24 V<br>IE-SW-PL18M-SC/ST/SCS: 0.61 A @ 24 V                                                                                           |                         |                       |            |
| Overload Current Protection                                                           | Present                                                                                                                                                               |                         |                       |            |
| Connection                                                                            | 2 removable 6-contact terminal blocks                                                                                                                                 |                         |                       |            |
| Reverse Polarity Protection                                                           | Present                                                                                                                                                               |                         |                       |            |
| Physical Characteristics                                                              |                                                                                                                                                                       |                         |                       |            |
| Housing                                                                               | Metal, IP30 protection                                                                                                                                                |                         |                       |            |
| Dimensions                                                                            | 94 x 135 x 142.7 mm (3.7 x 5.31 x 5.62 in)                                                                                                                            |                         |                       |            |
| Weight                                                                                | 1630 g                                                                                                                                                                |                         |                       |            |
| Installation                                                                          | DIN-Rail mounting                                                                                                                                                     |                         |                       |            |
| Environmental Limits                                                                  |                                                                                                                                                                       |                         |                       |            |
| Operating Temperature                                                                 | Standard Models: 0 to 60 °C (32 to 140 °F) Wide Temp. Models: -40 to 75 °C (-40 to 167 °F) on request                                                                 |                         |                       |            |
| Storage Temperature                                                                   | -40 to 85 °C (-40 to 185 °F)                                                                                                                                          |                         |                       |            |
| Ambient Relative Humidity                                                             | 5 to 95 % (non-condensing)                                                                                                                                            |                         |                       |            |
| Regulatory Approvals                                                                  |                                                                                                                                                                       |                         |                       |            |
| Safety                                                                                | UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1                                                                                                                    |                         |                       |            |
| Hazardous Location                                                                    | UL/cUL Class I, Division 2, Groups A, B, C, and D; ATEX Zone 2, Ex nC IIC                                                                                             |                         |                       |            |
| EMI                                                                                   | FCC Part 15, CISPR (EN55022) class A                                                                                                                                  |                         |                       |            |
| EMS                                                                                   | EN61000-4-2 (ESD), level 2; EN61000-4-3 (RS), level 3; EN61000-4-4 (EFT), level 2; EN61000-4-5 (Surge), level 3; EN61000-4-6 (CS), level 3; EN61000-4-8; EN61000-4-12 |                         |                       |            |
| Maritime                                                                              | DNV, GL                                                                                                                                                               |                         |                       |            |
| Shock                                                                                 | IEC 60068-2-27                                                                                                                                                        |                         |                       |            |
| Freefall                                                                              | IEC 60068-2-32                                                                                                                                                        |                         |                       |            |
| Vibration                                                                             | IEC 60068-2-6                                                                                                                                                         |                         |                       |            |
| MTBF (mean time between failures)                                                     |                                                                                                                                                                       |                         |                       |            |
| Time                                                                                  | 240,000 hrs                                                                                                                                                           |                         |                       |            |
| Database                                                                              | Telcordia (Bellcore), GB                                                                                                                                              |                         |                       |            |
| Warranty                                                                              |                                                                                                                                                                       |                         |                       |            |
| Warranty Period                                                                       | 5 years                                                                                                                                                               |                         |                       |            |
| Ordering Information                                                                  |                                                                                                                                                                       |                         |                       |            |
| Port Variants                                                                         |                                                                                                                                                                       | Model Type              | Operating Temperature | Order No.  |
| 16 * RJ45 10/100BaseT(X),<br>2 * Combo Ports <sup>1</sup>                             |                                                                                                                                                                       | IE-SW-PL18M-2GC-16TX    | 0 to +60 °C           | 1241320000 |
| 14 * RJ45 10/100BaseT(X),<br>2 * SC-Multimode 100FX,<br>2 * Combo Ports <sup>1</sup>  |                                                                                                                                                                       | IE-SW-PL18M-2GC14TX2SC  | 0 to +60 °C           | 1241330000 |
| 14 * RJ45 10/100BaseT(X),<br>2 * ST-Multimode 100FX,<br>2 * Combo Ports <sup>1</sup>  |                                                                                                                                                                       | IE-SW-PL18M-2GC14TX2ST  | 0 to +60 °C           | 1241340000 |
| 14 * RJ45 10/100BaseT(X),<br>2 * SC-Singlemode 100FX,<br>2 * Combo Ports <sup>1</sup> |                                                                                                                                                                       | IE-SW-PL18M-2GC14TX2SCS | 0 to +60 °C           | 1241350000 |
| Models with extended operating temperature -40 to +75 °C on request                   |                                                                                                                                                                       |                         |                       |            |

Models with extended operating temperature -40 to +75 °C on request

<sup>1</sup> (10/100/1000BaseT(X) or 100/1000BaseSFP)

## Managed Full Gigabit Ethernet Switch

- 4 10/100/1000BaseT(X) ports plus 5 combo (10/100/1000BaseT(X) or 100/1000BaseSFP slot) Gigabit ports
- Turbo Ring, Turbo Chain, and RSTP/STP for network redundancy
- IEEE 1588 PTP, Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
- EBR-Module - External Backup and Restoring Module for easy system reconfiguration (optional accessory)



## Technical data

| Technology                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                                                                                                                                                                                 | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.3x for Flow Control<br>IEEE 802.1D for Spanning Tree Protocol<br>IEEE 802.1w for Rapid STP<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.3ad for Port Trunk with LACP |
| Protocols                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                         |
| IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, Modbus/TCP, SNMP Inform, LLDP, IEEE 1588 PTP, IPv6 |                                                                                                                                                                                                                                                                                                                                                                                         |
| MIB                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                         |
| MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                         |
| Flow Control                                                                                                                                                                                              | IEEE 802.3x flow control, back pressure flow control                                                                                                                                                                                                                                                                                                                                    |
| Switch Properties                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                         |
| Priority Queues                                                                                                                                                                                           | 4                                                                                                                                                                                                                                                                                                                                                                                       |
| Max. Number of Available VLANs                                                                                                                                                                            | 64                                                                                                                                                                                                                                                                                                                                                                                      |
| VLAN ID Range                                                                                                                                                                                             | ID 1 to 4094                                                                                                                                                                                                                                                                                                                                                                            |
| IGMP Groups                                                                                                                                                                                               | 256                                                                                                                                                                                                                                                                                                                                                                                     |
| MAC Table Size                                                                                                                                                                                            | 8 K                                                                                                                                                                                                                                                                                                                                                                                     |
| Packet Buffer Size                                                                                                                                                                                        | 1 Mbit                                                                                                                                                                                                                                                                                                                                                                                  |
| Interface                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                         |
| Fiber Ports                                                                                                                                                                                               | 100/1000Base SFP slot                                                                                                                                                                                                                                                                                                                                                                   |
| RJ45 Ports                                                                                                                                                                                                | 10/100/1000BaseT(X) auto negotiation speed                                                                                                                                                                                                                                                                                                                                              |
| Console Port                                                                                                                                                                                              | RS-232 (RJ45 connector)                                                                                                                                                                                                                                                                                                                                                                 |
| DIP Switches                                                                                                                                                                                              | Turbo Ring, Master, Coupler, Reserve                                                                                                                                                                                                                                                                                                                                                    |
| LED Indicators                                                                                                                                                                                            | PWR1, PWR2, FAULT, 10/100/1000M, MSTR/HEAD, CPLR/TAIL                                                                                                                                                                                                                                                                                                                                   |
| Alarm Contact                                                                                                                                                                                             | 2 relay outputs with current carrying capacity of 1 A @ 24 V DC                                                                                                                                                                                                                                                                                                                         |
| Digital Inputs                                                                                                                                                                                            | 2 inputs with the same ground, but electrically isolated from the electronics.<br>• +13 to +30 V for state "1"<br>• -30 to +3 V for state "0"<br>• Max. input current: 8 mA                                                                                                                                                                                                             |
| Power Requirements                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                         |
| Input Voltage                                                                                                                                                                                             | 12/24/48 V DC, redundant dual inputs                                                                                                                                                                                                                                                                                                                                                    |
| Input Current                                                                                                                                                                                             | 0.81 A @ 24 V                                                                                                                                                                                                                                                                                                                                                                           |
| Overload Current Protection                                                                                                                                                                               | Present                                                                                                                                                                                                                                                                                                                                                                                 |
| Connection                                                                                                                                                                                                | 2 removable 6-contact terminal blocks                                                                                                                                                                                                                                                                                                                                                   |
| Reverse Polarity Protection                                                                                                                                                                               | Present                                                                                                                                                                                                                                                                                                                                                                                 |
| Physical Characteristics                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                         |
| Housing                                                                                                                                                                                                   | Metal, IP30 protection                                                                                                                                                                                                                                                                                                                                                                  |
| Dimensions                                                                                                                                                                                                | 87.1 × 135 × 107 mm (3.43 × 5.31 × 4.21 in)                                                                                                                                                                                                                                                                                                                                             |

| Physical Characteristics                                                                      |                                                                                                                                                                        |                       |            |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Weight                                                                                        | 1510 g                                                                                                                                                                 |                       |            |
| Installation                                                                                  | DIN-Rail mounting                                                                                                                                                      |                       |            |
| Environmental Limits                                                                          |                                                                                                                                                                        |                       |            |
| Operating Temperature                                                                         | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C (-40 to 167 °F)<br>for T models on request                                               |                       |            |
| Storage Temperature                                                                           | -40 to 85 °C (-40 to 185 °F)                                                                                                                                           |                       |            |
| Ambient Relative Humidity                                                                     | 5 to 95 % (non-condensing)                                                                                                                                             |                       |            |
| Regulatory Approvals                                                                          |                                                                                                                                                                        |                       |            |
| Safety                                                                                        | UL508, EN60950-1                                                                                                                                                       |                       |            |
| Hazardous Location                                                                            | UL/cUL Class I, Division 2, Groups A, B, C, and D (Pending); ATEX Zone 2, Ex nC IIC (Pending)                                                                          |                       |            |
| EMI                                                                                           | FCC Part 15, CISPR (EN55022) class A                                                                                                                                   |                       |            |
| EMS                                                                                           | EN61000-4-2 (ESD), level 3;<br>EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3;<br>EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3;<br>EN61000-4-8 |                       |            |
| Maritime                                                                                      | DNV                                                                                                                                                                    |                       |            |
| Shock                                                                                         | IEC 60068-2-27                                                                                                                                                         |                       |            |
| Freefall                                                                                      | IEC 60068-2-32                                                                                                                                                         |                       |            |
| Vibration                                                                                     | IEC 60068-2-6                                                                                                                                                          |                       |            |
| MTBF (meantime between failures)                                                              |                                                                                                                                                                        |                       |            |
| Time                                                                                          | 330,000 hrs                                                                                                                                                            |                       |            |
| Database                                                                                      | Telcordia (Bellcore), GB                                                                                                                                               |                       |            |
| Warranty                                                                                      |                                                                                                                                                                        |                       |            |
| Warranty Period                                                                               | 5 years                                                                                                                                                                |                       |            |
| Ordering Information                                                                          |                                                                                                                                                                        |                       |            |
| Port Variants                                                                                 | Model Type                                                                                                                                                             | Operating Temperature | Order No.  |
| 4 * RJ45 10/100/1000BaseT(X),<br>5 * Combo Ports<br>10/100/1000BaseT(X) or<br>100/1000BaseSFP | IE-SW-PL09M-5GC-4GT                                                                                                                                                    | 0 to 60 °C            | 1241370000 |
| Model with extended operating temperature -40 to +75 °C on request                            |                                                                                                                                                                        |                       |            |
| Accessories                                                                                   |                                                                                                                                                                        |                       |            |
|                                                                                               | Model Type                                                                                                                                                             |                       | Order No.  |
| External Backup and Restore Module                                                            | EBR-Module RS232                                                                                                                                                       |                       | 1241430000 |
| Networkmanagement Software                                                                    | IE-NM-WMNETMANAGER                                                                                                                                                     |                       | 1242120000 |
| 19" Rack Mounting Kit                                                                         | RM-KIT                                                                                                                                                                 |                       | 1241440000 |

# PoE Switches

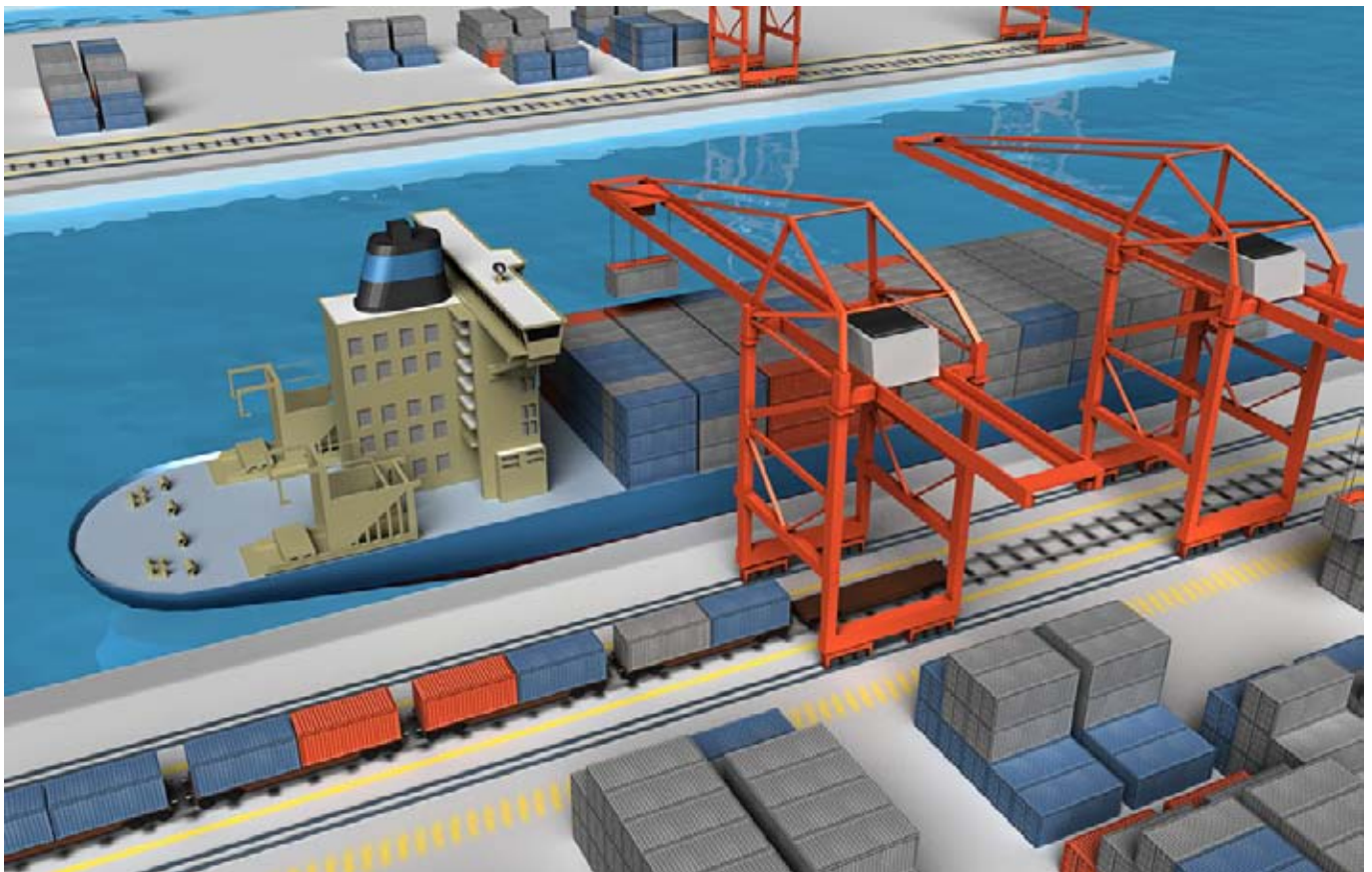
Power over Ethernet (PoE) describes a process where power can be supplied to a network compatible device over the 8-wire Ethernet cable. In a narrower sense PoE today means the IEEE 802.3af (DTE Power over MDI) standard which was adopted in June 2003 in its final form.

The main advantage of Power over Ethernet is that you do not require a separate power supply cable and so can install Ethernet devices in hard to reach places or in areas where there is not sufficient room for many cables. This means that you can save some significant installation costs, and that you can also integrate the power supply into a central uninterruptible power supply (UPS) to improve the reliability of the connected devices.

PoE is used by network devices that need small amounts of power. It is typically used for IP telephones, network cameras, operating panel or wireless communications devices like WLAN access points.

Weidmüller PoE switches support the IEEE 802.3at standard (also known as PoE+) and can therefore supply end devices with up to 30 W per PoE port.

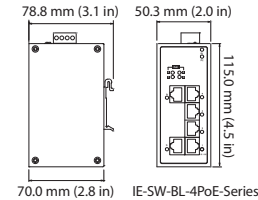
Weidmüller PoE switches also offer further advantages by the simple power supply. They do not require an additional 48 V supply in addition to the standard 24 V supply.





6-port IEEE 802.3af/at PoE+ unmanaged Ethernet Switch

- 4 IEEE 802.3af/at compliant PoE and Ethernet combo ports
- Up to 30 watts per PoE port
- 24/48 V DC wide range redundant power inputs
- Intelligent power consumption detection and classification
- Redundant dual V DC power inputs
- Broadcast Storm Protection



Technical data

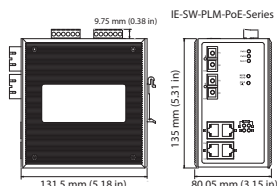
| Technology                  |                                                                                                                                                                        |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                   | IEEE 802.3at for Power-over-Ethernet<br>IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3x for Flow Control                                          |
| Processing Type             | Store and Forward                                                                                                                                                      |
| Flow Control                | IEEE 802.3x flow control,<br>back pressure flow control                                                                                                                |
| Interface                   |                                                                                                                                                                        |
| RJ45 Ports                  | 10/100BaseT(X) auto negotiation speed,<br>Full/Half duplex mode and<br>auto MDI/MDI-X connection                                                                       |
| LED Indicators              | PWR1, PWR2, 10/100M, PoE                                                                                                                                               |
| Power Requirements          |                                                                                                                                                                        |
| Input Voltage               | 24/48 V DC                                                                                                                                                             |
| Input Current               | Max 7.5 A @ 24 V DC (supports up to 4 ports<br>at 30 watts per PoE port)                                                                                               |
| Overload Current Protection | Present                                                                                                                                                                |
| Connection                  | 1 removable 4-contact terminal block                                                                                                                                   |
| Reverse Polarity Protection | Present                                                                                                                                                                |
| Physical Characteristics    |                                                                                                                                                                        |
| Housing                     | Metal, IP30 protection                                                                                                                                                 |
| Dimensions                  | 50 x 115 x 70 mm (1.96 x 4.52 x 2.76 in)                                                                                                                               |
| Weight                      | 375 g                                                                                                                                                                  |
| Installation                | DIN-Rail mounting, wall mounting<br>(with optional kit)                                                                                                                |
| Environmental Limits        |                                                                                                                                                                        |
| Operating Temperature       | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C<br>(-40 to 167 °F) on request                                                            |
| Storage Temperature         | -40 to 85 °C (-40 to 185 °F)                                                                                                                                           |
| Ambient Relative Humidity   | 5 to 95 % (non-condensing)                                                                                                                                             |
| Regulatory Approvals        |                                                                                                                                                                        |
| Safety                      | UL508 (Pending)                                                                                                                                                        |
| EMI                         | FCC Part 15, CISPR (EN55022) class A                                                                                                                                   |
| EMS                         | EN61000-4-2 (ESD), level 3;<br>EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 4;<br>EN61000-4-5 (Surge), level 4;<br>EN61000-4-6 (CS), level 3;<br>EN61000-4-8 |
| Shock                       | IEC 60068-2-27                                                                                                                                                         |
| Freefall                    | IEC 60068-2-32                                                                                                                                                         |
| Vibration                   | IEC 60068-2-6                                                                                                                                                          |
| Warranty                    |                                                                                                                                                                        |
| Warranty Period             | 5 years                                                                                                                                                                |

| Ordering Information                                                       |                     |                       |            |
|----------------------------------------------------------------------------|---------------------|-----------------------|------------|
| Port Variants                                                              | Model Type          | Operating Temperature | Order No.  |
| 2 * RJ45 10/100 BaseT(X), 4 * RJ45 10/100 BaseT(X) PoE+                    | IE-SW-BL06-2TX-4POE | 0 to 60 °C            | 1241380000 |
| Note 1: Model with extended operating temperature -40 to +75 °C on request |                     |                       |            |
| Note 2: Models with Fiber optic ports on request                           |                     |                       |            |
| Accessories                                                                |                     |                       |            |
|                                                                            | Model Type          |                       | Order No.  |
| 19" Rack Mounting Kit                                                      | RM-KIT              |                       | 1241440000 |

## Power-over-Ethernet Switches – Premium Line

## 6 Port IEEE 802.3af/at PoE + Managed Ethernet Switch

- 4 IEEE 802.3af/at compliant PoE and Ethernet combo ports
- Up to 30 watts per PoE port
- 24/48 V DC wide range redundant power inputs
- Advanced PoE management functions, including PD failure check and PoE scheduling



## Technical data

| Technology                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                                                                                                                                                                                 | IEEE 802.3at/af for Power-over-Ethernet<br>IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3x for Flow Control<br>IEEE 802.1D for Spanning Tree Protocol<br>IEEE 802.1w for Rapid STP<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1p for Class of Service<br>IEEE 802.1X for Authentication<br>IEEE 802.3ad for Port Trunk with LACP |
| Protocols                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                      |
| IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNMP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, Modbus/TCP, SNMP Inform, LLDP, IEEE 1588 PTP, IPv6 |                                                                                                                                                                                                                                                                                                                                                                      |
| MIB                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                      |
| MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                      |
| Flow Control                                                                                                                                                                                              | IEEE 802.3x flow control,<br>back pressure flow control                                                                                                                                                                                                                                                                                                              |
| Switch Properties                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                      |
| Priority Queues                                                                                                                                                                                           | 4                                                                                                                                                                                                                                                                                                                                                                    |
| Max. Number of Available VLANs                                                                                                                                                                            | 64                                                                                                                                                                                                                                                                                                                                                                   |
| VLAN ID Range                                                                                                                                                                                             | VID 1 to 4094                                                                                                                                                                                                                                                                                                                                                        |
| IGMP Groups                                                                                                                                                                                               | 256                                                                                                                                                                                                                                                                                                                                                                  |
| MAC Table Size                                                                                                                                                                                            | 8 K                                                                                                                                                                                                                                                                                                                                                                  |
| Packet Buffer Size                                                                                                                                                                                        | 1 Mbit                                                                                                                                                                                                                                                                                                                                                               |
| Interface                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                      |
| RJ45 Ports                                                                                                                                                                                                | 10/100BaseT(X) auto negotiation speed, Full/Half duplex mode, and auto MDI/MDI-X connection                                                                                                                                                                                                                                                                          |
| Console Port                                                                                                                                                                                              | RS-232 (RJ45 connector)                                                                                                                                                                                                                                                                                                                                              |
| DIP Switches                                                                                                                                                                                              | Turbo Ring, Master, Coupler, Reserve                                                                                                                                                                                                                                                                                                                                 |
| LED Indicators                                                                                                                                                                                            | PWR1, PWR2, FAULT, 10/100M, MSTR/HEAD, CPLR/TAILO, PoE                                                                                                                                                                                                                                                                                                               |
| Alarm Contact                                                                                                                                                                                             | 2 relay outputs with current carrying capacity of 1 A @ 24 V DC                                                                                                                                                                                                                                                                                                      |
| Digital Inputs                                                                                                                                                                                            | 2 inputs with the same ground, electrically isolated <ul style="list-style-type: none"> <li>• +13 to +30 V for state "1"</li> <li>• -30 to +3 V for state "0"</li> <li>• Max. input current: 8 mA</li> </ul>                                                                                                                                                         |
| Power Requirements                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                      |
| Input Voltage                                                                                                                                                                                             | 24/48 V DC                                                                                                                                                                                                                                                                                                                                                           |
| Input Current                                                                                                                                                                                             | Max. 7.8 A @ 24 V DC (supports up to 4 ports at 30 watts per PoE port)                                                                                                                                                                                                                                                                                               |
| Overload Current Protection                                                                                                                                                                               | Present                                                                                                                                                                                                                                                                                                                                                              |
| Connection                                                                                                                                                                                                | 2 removable 6-contact terminal blocks                                                                                                                                                                                                                                                                                                                                |
| Reverse Polarity Protection                                                                                                                                                                               | Present                                                                                                                                                                                                                                                                                                                                                              |
| Physical Characteristics                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                      |
| Housing                                                                                                                                                                                                   | Metal, IP30 protection                                                                                                                                                                                                                                                                                                                                               |
| Dimensions                                                                                                                                                                                                | 80 x 135 x 131.5 mm (3.15 x 5.31 x 5.18 in)                                                                                                                                                                                                                                                                                                                          |

| Physical Characteristics                                                                                                       |  |                                                                                                                                                                        |                       |            |
|--------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Weight                                                                                                                         |  | 1270 g                                                                                                                                                                 |                       |            |
| Installation                                                                                                                   |  | DIN-Rail mounting                                                                                                                                                      |                       |            |
| Environmental Limits                                                                                                           |  |                                                                                                                                                                        |                       |            |
| Operating Temperature                                                                                                          |  | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Operating Temp. Models: -40 to 75 °C (-40 to 167 °F) on request                                                     |                       |            |
| Storage Temperature                                                                                                            |  | -40 to 85 °C (-40 to 185 °F)                                                                                                                                           |                       |            |
| Ambient Relative Humidity                                                                                                      |  | 5 to 95 % (non-condensing)                                                                                                                                             |                       |            |
| Regulatory Approvals                                                                                                           |  |                                                                                                                                                                        |                       |            |
| Safety                                                                                                                         |  | UL508 (Pending)                                                                                                                                                        |                       |            |
| EMI                                                                                                                            |  | FCC Part 15, CISPR (EN55022) class A                                                                                                                                   |                       |            |
| EMS                                                                                                                            |  | EN61000-4-2 (ESD), level 3;<br>EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 3;<br>EN61000-4-5 (Surge), level 3;<br>EN61000-4-6 (CS), level 3;<br>EN61000-4-8 |                       |            |
| Shock                                                                                                                          |  | IEC 60068-2-27                                                                                                                                                         |                       |            |
| Freefall                                                                                                                       |  | IEC 60068-2-32                                                                                                                                                         |                       |            |
| Vibration                                                                                                                      |  | IEC 60068-2-6                                                                                                                                                          |                       |            |
| Warranty                                                                                                                       |  |                                                                                                                                                                        |                       |            |
| Warranty Period                                                                                                                |  | 5 years                                                                                                                                                                |                       |            |
| Ordering Information                                                                                                           |  |                                                                                                                                                                        |                       |            |
| Port Variants                                                                                                                  |  | Model Type                                                                                                                                                             | Operating Temperature | Order No.  |
| 2 * RJ45 10/100 BaseT(X), 4 * RJ45 10/100 BaseT(X) PoE+                                                                        |  | IE-SW-PL06M-2TX-4PoE                                                                                                                                                   | 0 to 60 °C            | 1241390000 |
| Note 1: Model with extended operating temperature -40 to +75 °C on request<br>Note 2: Models with Fiber optic ports on request |  |                                                                                                                                                                        |                       |            |
| Accessories                                                                                                                    |  |                                                                                                                                                                        |                       |            |
|                                                                                                                                |  | Model Type                                                                                                                                                             |                       | Order No.  |
| External Backup and Restore Module                                                                                             |  | EBR-Module RS232                                                                                                                                                       |                       | 1241430000 |
| Networkmanagement Software                                                                                                     |  | IE-NM-WMNETMANAGER                                                                                                                                                     |                       | 1242120000 |
| 19" Rack Mounting Kit                                                                                                          |  | RM-KIT                                                                                                                                                                 |                       | 1241440000 |



# Media converter

If high interference immunity is needed or long transmission distances are involved, then fibre-optic cables are advisable. Another advantage of using fibre-optic cabling is the insensitivity to lightning or voltage surges. They are also not absorbed. The use of fibre-optic based systems is already established in the process industry, plant engineering, energy distribution and the wind energy branches.

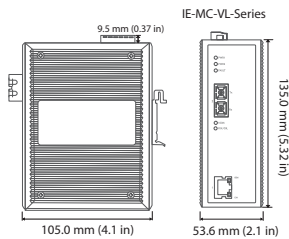
One simple and inexpensive solution is offered by the media converter. This connects the Ethernet via an RJ45 port to an optical fibre-optic cable port with SC or ST glass fibre connections. This retains the collision domain between the two Ethernet participants and means that there is status transparency exchanged between the two Ethernet interfaces and the port status.

Multimode glass fibres allow distances of up to 5,000 m to be bridged without intermediate repeaters. Singlemode fibres can be used over distances of up to 40 km.



## Industrial Fast Ethernet Media Converter

- 10/100BaseT(X) auto-negotiation and auto-MDI/MDI-X
- Link Fault Pass-Through (LFP)
- Power failure, port break alarm by relay output
- Redundant power inputs
- Designed for hazardous locations (Class 1 Div. 2/Zone 2)



## Technical data

| Technology                                                                                                                                                                |                                                                                                          |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------|
| Standards                                                                                                                                                                 | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX                                      |                    |
| Interface                                                                                                                                                                 |                                                                                                          |                    |
| Fiber Ports                                                                                                                                                               | 100BaseFX (SC/ST connectors)                                                                             |                    |
| RJ45 Ports                                                                                                                                                                | 10/100BaseT(X)                                                                                           |                    |
| DIP Switches                                                                                                                                                              | 100BaseFX Full/Half duplex selection, port break alarm mask                                              |                    |
| LED Indicators                                                                                                                                                            | PWR1, PWR2, FAULT, 10/100M (TP port), 100M (Fiber port), FDX/COL (Fiber port)                            |                    |
| Alarm Contact                                                                                                                                                             | One relay output with current carrying capacity of 1 A @ 24 V DC                                         |                    |
| Optical Fiber                                                                                                                                                             |                                                                                                          |                    |
|                                                                                                                                                                           | 100BaseFX                                                                                                |                    |
|                                                                                                                                                                           | multimode                                                                                                | singlemode         |
| Wavelength                                                                                                                                                                | 1300 nm                                                                                                  | 1310 nm            |
| Max. TX                                                                                                                                                                   | -10 dBm                                                                                                  | 0 dBm              |
| Min. TX                                                                                                                                                                   | -20 dBm                                                                                                  | -5 dBm             |
| RX Sensitivity                                                                                                                                                            | -32 dBm                                                                                                  | -34 dBm            |
| Link Budget                                                                                                                                                               | 12 dB                                                                                                    | 29 dB              |
| Typical Distance                                                                                                                                                          | 5 km <sup>a</sup><br>4 km <sup>b</sup>                                                                   | 40 km <sup>c</sup> |
| Saturation                                                                                                                                                                | -6 dBm                                                                                                   | -3 dBm             |
| <sup>a</sup> 50/125 µm, 800 MHz*km fiber optic cable<br><sup>b</sup> 62.5/125 µm, 500 MHz*km fiber optic cable<br><sup>c</sup> 9/125 µm, 3.5 PS/(nm*km) fiber optic cable |                                                                                                          |                    |
| Power Requirements                                                                                                                                                        |                                                                                                          |                    |
| Input Voltage                                                                                                                                                             | 24 V DC (12 to 48 V DC), redundant inputs                                                                |                    |
| Input Current                                                                                                                                                             | 0.16 A (@ 24 V)                                                                                          |                    |
| Connection                                                                                                                                                                | Removable terminal block                                                                                 |                    |
| Overload Current Protection                                                                                                                                               | 1.1 A                                                                                                    |                    |
| Reverse Polarity Protection                                                                                                                                               | Present                                                                                                  |                    |
| Physical Characteristics                                                                                                                                                  |                                                                                                          |                    |
| Housing                                                                                                                                                                   | Metal, IP30 protection                                                                                   |                    |
| Dimensions                                                                                                                                                                | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                                              |                    |
| Weight                                                                                                                                                                    | 630 g                                                                                                    |                    |
| Installation                                                                                                                                                              | DIN-Rail mounting, wall mounting (with optional kit)                                                     |                    |
| Environmental Limits                                                                                                                                                      |                                                                                                          |                    |
| Operating Temperature                                                                                                                                                     | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C on request (-40 to 167 °F) |                    |
| Operating Humidity                                                                                                                                                        | 5 to 95 % RH                                                                                             |                    |
| Storage Temperature                                                                                                                                                       | -40 to 85 °C (-40 to 185 °F)                                                                             |                    |

| Regulatory Approvals                                                      |                                                                                                                                                                                   |                       |            |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
| Safety                                                                    | UL508, UL60950-1, CSA C22.2 No. 60950-1, EN60950-1                                                                                                                                |                       |            |
| EMI                                                                       | FCC Part 15, CISPR (EN55022) class A                                                                                                                                              |                       |            |
| EMS                                                                       | EN61000-4-2 (ESD), level 3<br>EN61000-4-3 (RS), level 3<br>EN61000-4-4 (EFT), level 3<br>EN61000-4-5 (Surge), level 2<br>EN61000-4-6 (CS), level 3<br>EN61000-4-8<br>EN61000-4-11 |                       |            |
| Hazardous Location                                                        | UL/cUL Class1, Division 2, Groups A, B, C, and D, ATEX Class1, Zone 2, Ex nC IIC                                                                                                  |                       |            |
| Freefall                                                                  | IEC60068-2-32                                                                                                                                                                     |                       |            |
| Shock                                                                     | IEC60068-2-27                                                                                                                                                                     |                       |            |
| Vibration                                                                 | IEC60068-2-6                                                                                                                                                                      |                       |            |
| Maritime                                                                  | DNV, GL                                                                                                                                                                           |                       |            |
| MTBF                                                                      | 401,000 hrs; Database: MIL-HDBK-217F: GB 25 °C                                                                                                                                    |                       |            |
| Warranty                                                                  |                                                                                                                                                                                   |                       |            |
| Warranty Period                                                           | 5 years                                                                                                                                                                           |                       |            |
| Ordering Information                                                      |                                                                                                                                                                                   |                       |            |
| Port Variants                                                             | Model Type                                                                                                                                                                        | Operating Temperature | Order No.  |
| 1 * RJ45, 1 * SC-Multimode                                                | IE-MC-VL-1TX-1SC                                                                                                                                                                  | 0 to +60 °C           | 1241400000 |
| 1 * RJ45, 1 * ST-Multimode                                                | IE-MC-VL-1TX-1ST                                                                                                                                                                  | 0 to +60 °C           | 1241410000 |
| 1 * RJ45, 1 * SC-Singlemode                                               | IE-MC-VL-1TX-1SCS                                                                                                                                                                 | 0 to +60 °C           | 1241420000 |
| Note: Models with extended operating temperature -40 to +75 °C on request |                                                                                                                                                                                   |                       |            |
| Accessories                                                               |                                                                                                                                                                                   |                       |            |
|                                                                           | Model Type                                                                                                                                                                        | Order No.             |            |
| 19" Rack Mounting Kit                                                     | RM-KIT                                                                                                                                                                            | 1241440000            |            |

## Serial / Ethernet converter

Serial interfaces such as RS 232, RS 422 or RS 485 are widespread today in automation systems. To integrate these devices into modern Industrial Ethernet, Serial / Ethernet converters are used which offer investment protection for existing automation components. These devices include control systems, sensors, meters, drives, bar code readers and operator displays.

Weidmüller's Serial / Ethernet converters connect these devices simply and easily to existing Ethernet network structures. The configuration of the serial port and Ethernet port parameters is done using an internet browser. On the Ethernet side, these devices support several operating modes: including TCP server, TCP client, UDP, Real COM, RFC 2217, Reverse Telnet,

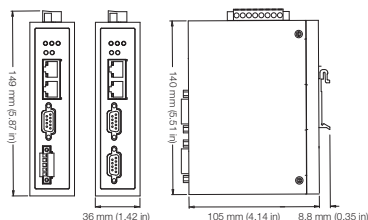
Pair Connection and Ethernet modem. These modes ensure compatibility for the network software.

There are two Ethernet ports on the device which can be used as Ethernet switch ports. This helps to reduce your cabling costs since you no longer need to connect each device with a separate Ethernet switch.



## 1 and 2- port Serial/Ethernet Converter for industrial automation

- Enhanced surge protection for serial, LAN, and power
- Rugged screw-type terminal blocks for power and serial connectors
- Cascading Ethernet ports for easy wiring
- Redundant DC power inputs
- Warning by relay output and email
- Low power consumption



### Technical data

| Ethernet Interface              |                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of Ports                 | 2                                                                                                                                                  |
| Speed                           | 10/100 Mbps, auto MDI/MDIX                                                                                                                         |
| Connector                       | 8-pin RJ45                                                                                                                                         |
| Magnetic Isolation Protection   | 1.5 KV built-in                                                                                                                                    |
| Ethernet Line Protection        | 1 KV (level 2) surge protection                                                                                                                    |
| Serial Interface                |                                                                                                                                                    |
| Number of Ports                 | IE-CS-2TX-1RS232/485: 1<br>IE-CS-2TX-2RS232/485: 2                                                                                                 |
| Serial Standards                | RS-232/422/485                                                                                                                                     |
| Connector                       | IE-CS-2TX-1RS232/485: DB9 for RS-232, terminal block for RS-422/485<br>IE-CS-2TX-2RS232/485: DB9 for RS-232/422/485                                |
| Serial Line Protection          | <ul style="list-style-type: none"> <li>• 15 KV ESD protection for all signals</li> <li>• 1 KV (level 2) surge protection</li> </ul>                |
| RS-485 Data Direction Control   | ADDC® (automatic data direction control)                                                                                                           |
| Serial Communication Parameters |                                                                                                                                                    |
| Data Bits                       | 5, 6, 7, 8                                                                                                                                         |
| Stop Bits                       | 1, 1.5, 2                                                                                                                                          |
| Parity                          | None, Even, Odd, Space, Mark                                                                                                                       |
| Flow Control                    | RTS/CTS and DTR/DSR (RS-232 only), XON/XOFF                                                                                                        |
| Baud rate                       | 50 to 921.6 Kbps                                                                                                                                   |
| Serial Signals                  |                                                                                                                                                    |
| RS-232                          | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND                                                                                                             |
| RS-422                          | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                            |
| RS-485-4w                       | Tx+, Tx-, Rx+, Rx-, GND                                                                                                                            |
| RS-485-2w                       | Data+, Data-, GND                                                                                                                                  |
| Software                        |                                                                                                                                                    |
| Network Protocols               | ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, IGMP                                                                |
| Configuration Options           | Web Console, Serial Console, Telnet Console, Windows Utility                                                                                       |
| Windows Real COM Drivers        | Windows 95/98/ME/NT/2000, Windows XP/2003/Vista/2008/7 x86/x64                                                                                     |
| Fixed TTY Drivers               | SCO Unix, SCO OpenServer, UnixWare 7, UnixWare 2.1, SVR 4.2, QNX 4.25, QNX 6, Solaris 10, FreeBSD, AIX 5.x, HP-UX 11i                              |
| Linux Real TTY Drivers          | Linux kernel 2.4.x, 2.6.x                                                                                                                          |
| Physical Characteristics        |                                                                                                                                                    |
| Housing                         | Metal, IP30 protection                                                                                                                             |
| Weight                          | IE-CS-2TX-1RS232/485: 475 g<br>IE-CS-2TX-2RS232/485: 485 g                                                                                         |
| Dimensions                      | 36 x 105 x 140 mm (1.42 x 4.13 x 5.51 in)                                                                                                          |
| Environmental Limits            |                                                                                                                                                    |
| Operating Temperature           | 0 to 60 °C (32 to 140 °F)                                                                                                                          |
| Operating Humidity              | 5 to 95% RH                                                                                                                                        |
| Storage Temperature             | -40 to 85 °C (-40 to 185 °F)                                                                                                                       |
| Power Requirements              |                                                                                                                                                    |
| Input Voltage                   | 12 to 48 V DC                                                                                                                                      |
| Power Consumption               | IE-CS-2TX-1RS232/485: 12 to 48 V DC; 220 mA @ 12 V DC, 110 mA @ 24 V DC<br>IE-CS-2TX-2RS232/485: 12 to 48 V DC; 250 mA @ 12 V DC, 125 mA @ 24 V DC |



| Regulatory Approvals     |                                                                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMC                      | CE (EN55022 Class A, EN55024), FCC Part 15 Subpart B Class A                                                                                                                      |
| Safety                   | UL508 (Pending)                                                                                                                                                                   |
| Hazardous Location       | UL/cUL Class 1 Division 2 Groups A, B, C and D (Pending)                                                                                                                          |
| ATEX                     | Class I, Zone 2 (Pending)                                                                                                                                                         |
| EMS                      | EN61000-4-2 (ESD), Level 3<br>EN61000-4-3 (RS), Level 3<br>EN61000-4-4 (EFT), Level 4<br>EN61000-4-5 (Surge), Level 3<br>EN61000-4-6 (CS), Level 3<br>EN61000-4-8<br>EN61000-4-11 |
| Shock                    | IEC60068-2-27                                                                                                                                                                     |
| Freefall                 | IEC60068-2-32                                                                                                                                                                     |
| Vibration                | IEC60068-2-6                                                                                                                                                                      |
| Reliability              |                                                                                                                                                                                   |
| Alert Tools              | Built-in buzzer and RTC (real-time clock)                                                                                                                                         |
| Automatic Reboot Trigger | Built-in WDT (watchdog timer)                                                                                                                                                     |
| Warranty                 |                                                                                                                                                                                   |
| Warranty Period          | 5 years                                                                                                                                                                           |
| Pin Assignment           |                                                                                                                                                                                   |

| RS-232/422/485 DB9 male port | PIN | RS-232  | RS-422/RS-485-4w | RS-485-2W |
|------------------------------|-----|---------|------------------|-----------|
| 1                            | DCD | TxD-(A) | -                | -         |
| 2                            | RxD | TxD+(B) | -                | -         |
| 3                            | TXD | RxD+(B) | Data+(B)         | -         |
| 4                            | DTR | RxD-(A) | Data-(A)         | -         |
| 5                            | GND | GND     | GND              | -         |
| 6                            | DSR | -       | -                | -         |
| 7                            | RTS | -       | -                | -         |
| 8                            | CTS | -       | -                | -         |

| Pin Assignment                   |         |
|----------------------------------|---------|
| RS-422/485 Terminal Block Wiring |         |
| 1                                | TxD+(B) |
| 2                                | TxD-(A) |
| 3                                | RxD+(B) |
| 4                                | RxD-(A) |
| 5                                | GND     |

| Ordering Information              |                      |                       |            |
|-----------------------------------|----------------------|-----------------------|------------|
| Models                            | Model Type           | Operating Temperature | Order No.  |
| 2x RJ45; 1x RS-232; 1x RS-422/485 | IE-CS-2TX-1RS232/485 | 0 to +60 °C           | 1242080000 |
| 2x RJ45; 2x RS-232/422/485        | IE-CS-2TX-2RS232/485 | 0 to +60 °C           | 1242090000 |

| Accessories           |            |            |
|-----------------------|------------|------------|
|                       | Model Type | Order No.  |
| 19" Rack Mounting Kit | RM-KIT     | 1241440000 |

# Industrial wireless

**B**

Wireless communications are preferred when working with moveable applications or difficult-to-reach areas. Currently, wireless LAN can be used for industrial manufacturing plants or facilities; it is ideal for use anywhere where traditional cabling is not suitable or where a mobile network connection is required. For example in logistics AGB (automatic guide vehicles) are connected over WLAN. Here it is important that roaming between different radio cells is possible, thereby creating an individually configurable radio coverage.

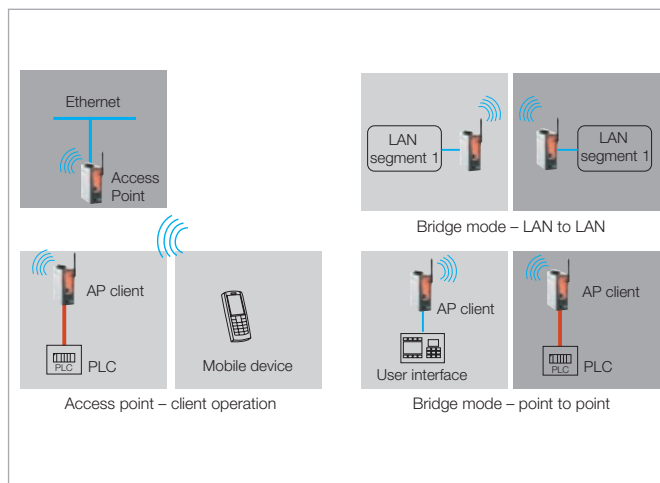
Weidmüller's versatile WLAN module can be used as an access point, bridge or client. It is quite simple to integrate into existing infrastructures because it has an alternative Power over Ethernet supply (using the data cable for the power supply).

Support for RADIUS services and WPA2 secure encryption guarantees that your data is fully protected. Multiple wireless zones can be set up so that clients can move with versatility by quickly roaming between the different radio/wireless cells. Multiple zones can be specified (multiple SSIDs) and different VLANs can be assigned for each wireless cell. This allows you to implement a one-to-one forwarding of the cable-based infrastructure to the wireless zone.



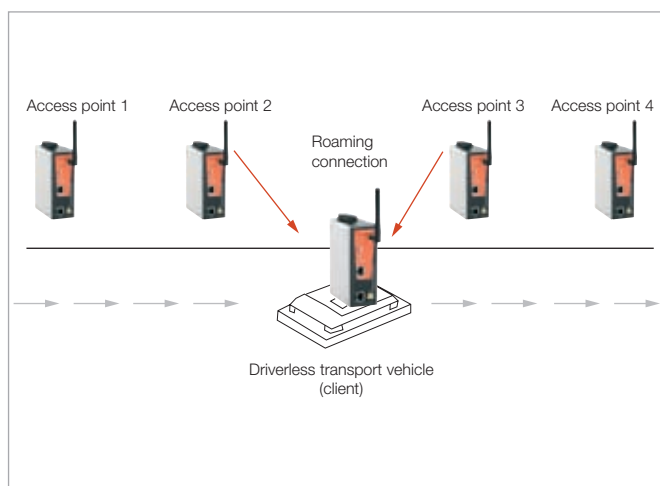
## Wireless operating modes

The most common operating mode for wireless networks are AP client mode (Access Point) and bridge mode. A WLAN access point is needed and set up to create a Basic Service Set (BSS) for a wireless connection in AP client mode. The AP can be used to create a wireless LAN, or to connect an existing WLAN with a wired network. Bridge mode offers a simple way to connect two Ethernet devices over a point-to-point connection wirelessly with one another.



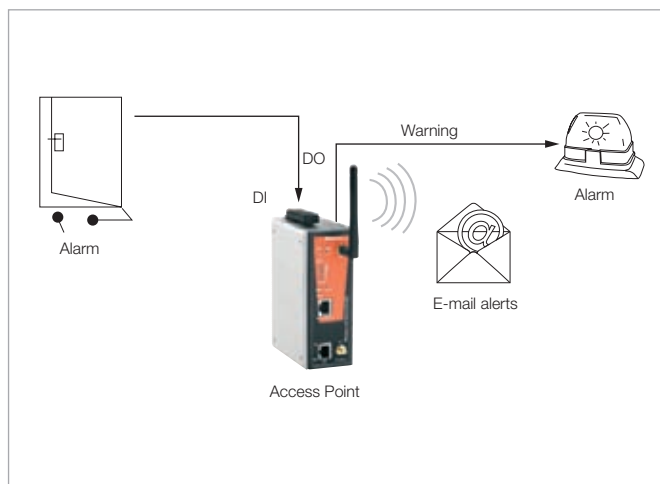
## Turbo roaming for uninterrupted connections

A WLAN radio cell has a limited range depending on the antenna used. To maintain communications between devices which move over a long distance requires the connection to be passed from one access point to another. Performance can be affected where there are many moving devices and a large number of transfer points without powerful roaming technology. The roaming technology offers a seamless wireless connection and permits a swift change between different wireless access points without the risk of an interruption to the data communication.



## Integrated digital inputs / outputs

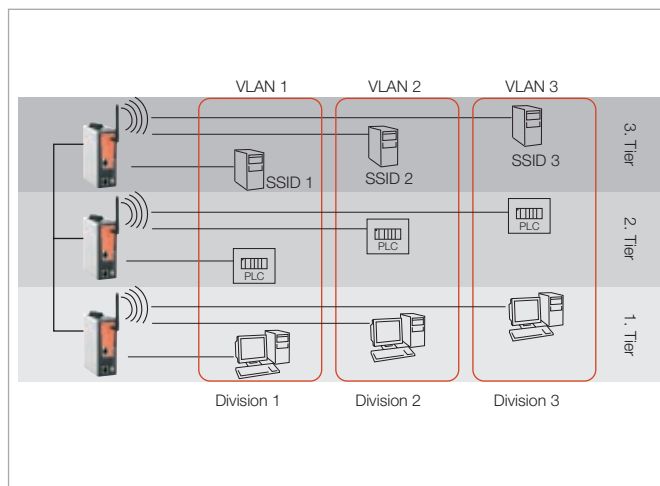
Wireless access points are often located in distant or inaccessible places in an industrial plant. This makes monitoring the status of a device or its environment by the system administrators a difficult task. Weidmüller's WLAN access points therefore have an integrated digital input/output which sends alarm messages over the network in real time to the responsible maintenance personnel when errors, like power supply failure or link breaks occur.



### Wireless VLAN (Multi-SSID)

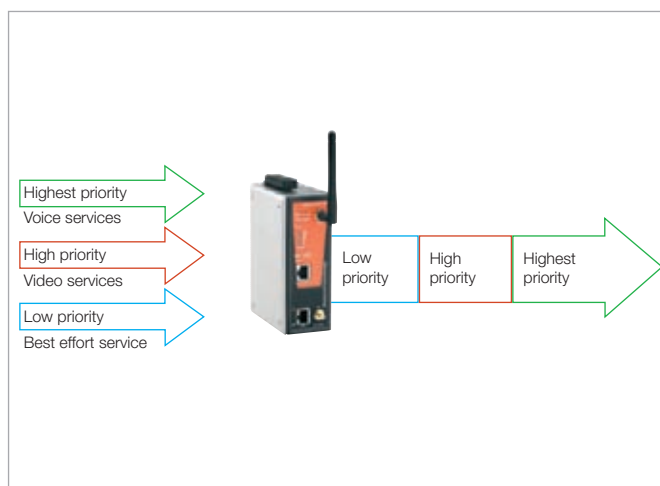
VLAN stands for virtual LAN. It is a network structure with all the characteristics of a normal LAN, but not geographically constrained.

Based on the SSID two or more clients can be added into a VLAN and integrated into a LAN independently of their geographical location. Without the use of routers, a level 2 switch in conjunction with Weidmüller WLAN access points can distinguish broadcast domains from each other. In this way VLANs offer administrators flexibility regarding network security, network management and scalability.



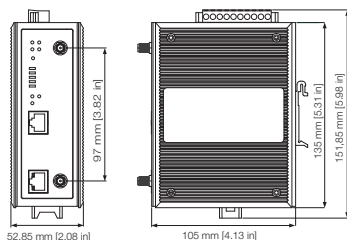
### WMM for prioritising communications

Quality of Service (QoS) is a network term for controlling and measuring data transmission rates, throughput and error rates. It is an essential part of wireless communication when transmitting multimedia data like audio and video. Important data, for example, require a high priority with respect to the data throughput and low error rates. WMM (Wi-Fi multimedia) is based on the IEEE 802.11e protocol which was designed to integrate QoS functionality into a WLAN. The advantages lie in the prioritising of important data and the associated improvement of the communication quality.



## Industrial Wireless - AP/bridge/client

- IEEE 802.11a/b/g compliant
- Power input by redundant 24 V DC power inputs or Power-over-Ethernet
- Multi-SSID and VLAN support
- Turbo Roaming for seamless wireless connections
- Integrated DI/DO for on-site monitoring and warning
- QoS (WMM) support



## Technical data

| WLAN Interface                           |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                | IEEE 802.11a/b/g/h for Wireless LAN<br>IEEE 802.11i for Wireless Security<br>IEEE 802.3u for 10/100BaseT(X)<br>IEEE 802.3af for Power-over-Ethernet<br>IEEE 802.1D for Spanning Tree Protocol<br>IEEE 802.1w for Rapid STP<br>IEEE 802.1Q VLAN                                                                                                                                                                       |
| Spread Spectrum and Modulation (typical) | <ul style="list-style-type: none"> <li>• DSSS with DBPSK, DQPSK, CCK</li> <li>• OFDM with BPSK, QPSK, 16QAM, 64QAM</li> <li>• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 11 Mbps</li> <li>• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps</li> </ul>                                                                                                                |
| Operating Channels (central frequency)   | US: 2.412 to 2.462 GHz (11 channels)<br>5.18 to 5.24 GHz (4 channels)<br>EU: 2.412 to 2.472 GHz (13 channels)<br>5.18 to 5.24 GHz (4 channels)                                                                                                                                                                                                                                                                       |
| Security                                 | <ul style="list-style-type: none"> <li>• SSID broadcast enable/disable</li> <li>• Firewall for MAC/IP/Protocol/Port-based filtering</li> <li>• 64-bit and 128-bit WEP encryption, WPA /WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP and AES)</li> </ul>                                                                                                                                                    |
| Transmission Rates                       | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps                                                                                                                                                                                                                                                                                                                                          |
| TX Transmit Power                        | 802.11b: Typ. 23±1.5 dBm @ 1 to 11 Mbps<br>802.11g: Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps, Typ. 18±1.5 dBm @ 48 Mbps, Typ. 17±1.5 dBm @ 54 Mbps<br>802.11a: Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 to 48 Mbps, Typ. 15±1.5 dBm @ 54 Mbps                                                                                                                                           |
| RX Sensitivity                           | 802.11b: -97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps<br>802.11g: -93 dBm @ 6 Mbps, -91 dBm @ 9 Mbps, -90 dBm @ 12 Mbps, -88 dBm @ 18 Mbps, -84 dBm @ 24 Mbps, -80 dBm @ 36 Mbps, -76 dBm @ 48 Mbps, -74 dBm @ 54 Mbps<br>802.11a: -90 dBm @ 6 Mbps, -89 dBm @ 9 Mbps, -89 dBm @ 12 Mbps, -85 dBm @ 18 Mbps, -83 dBm @ 24 Mbps, -79 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -74 dBm @ 54 Mbps |
| Protocol Support                         |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| General Protocols:                       | Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNMP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP                                                                                                                                                                                                                                                                                                                                     |
| AP-only Protocols:                       | ARP, BOOTP, DHCP, dynamic VLAN-Tags for 802.1X-Clients, STP/RSTP (IEEE 802.1D/w)                                                                                                                                                                                                                                                                                                                                     |



| Interface                       |                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Default Antenna                 | 2 dBi dual-band omni-directional antenna, RP-SMA (male)                                                                     |
| Connector for External Antennas | RP-SMA (female)                                                                                                             |
| LAN Port                        | 10/100BaseT(X), auto negotiation speed (RJ45-type)                                                                          |
| Console Port                    | RS-232 (RJ45-type)                                                                                                          |
| LED Indicators                  | PWR1, PWR2, PoE, FAULT, STATE, signal strength, CLIENT MODE, BRIDGE MODE, WLAN, 10M, 100M                                   |
| Alarm Contact                   | 1 relay output with current carrying capacity of 1 A @ 24 V DC                                                              |
| Digital Inputs                  | 2 electrically isolated inputs<br>• +13 to +30 V for state "1"<br>• +3 to -30 V for state "0"<br>• Max. input current: 8 mA |
| Physical Characteristics        |                                                                                                                             |
| Housing                         | Metal, IP30 protection                                                                                                      |
| Weight                          | 850 g                                                                                                                       |
| Dimensions                      | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)                                                                                 |
| Installation                    | DIN-Rail mounting                                                                                                           |
| Environmental Limits            |                                                                                                                             |
| Operating Temperature           | 0 to 60 °C (32 to 140 °F)                                                                                                   |
| Storage Temperature             | -40 to 85 °C (-40 to 185 °F)                                                                                                |
| Ambient Relative Humidity       | 5% to 95% (non-condensing)                                                                                                  |
| Power Requirements              |                                                                                                                             |
| Input Voltage                   | 12 to 48 V DC, redundant dual DC power inputs or 48 V DC Power-over-Ethernet (IEEE 802.3af compliant)                       |
| Connector                       | 10-pin removable terminal block                                                                                             |
| Power Consumption               | • 0.121 to 0.494 A @ 12 to 48 V DC<br>• 0.3 A @ 24 V DC                                                                     |
| Reverse Polarity Protection     | Present                                                                                                                     |
| Regulatory Approvals            |                                                                                                                             |
| Safety                          | EN60950-1, UL60950-1                                                                                                        |
| Radio                           | EN300 328, EN301 893,                                                                                                       |
| EMC                             | EN301 489-1/-17, FCC Part 15 Subpart B Class B, EN55022/55024                                                               |
| Hazardous Location              | UL/cUL Class I, Div. 2; ATEX Class I, Zone 2                                                                                |
| MTBF                            | 392.209 hrs                                                                                                                 |
| Warranty                        |                                                                                                                             |
| Warranty Period                 | 5 years                                                                                                                     |

## Ordering Information

| Models                                                          | Model Type            | Operating Temperature | Order No.  |
|-----------------------------------------------------------------|-----------------------|-----------------------|------------|
| IEEE 802.11a/b/g wireless AP/ Bridge/Client for european market | IE-WL-AP-BR-CL-ABG-EU | 0 to +60 °C           | 1242100000 |
| IEEE 802.11a/b/g wireless AP/ Bridge/Client for american market | IE-WL-AP-BR-CL-ABG-US | 0 to +60 °C           | 1242110000 |

## Accessories

|                       | Model Type | Order No.  |
|-----------------------|------------|------------|
| 19" Rack Mounting Kit | RM-KIT     | 1241440000 |

## SFP modules

### 1-port Gigabit Ethernet SFP modules

- Compliant with IEEE 802.3z
- Differential LVPECL inputs and outputs
- TTL signal detect indicator
- Hot pluggable LC duplex connector
- Class 1 laser product; complies with EN60825-1



n

### Technical data

| Interface        |                                   |                    |                     |                     |                                 |                                 |                                  |                                 |
|------------------|-----------------------------------|--------------------|---------------------|---------------------|---------------------------------|---------------------------------|----------------------------------|---------------------------------|
| Ethernet Ports   | 1                                 |                    |                     |                     |                                 |                                 |                                  |                                 |
| Connectors       | Duplex LC Connector or Simplex LC |                    |                     |                     |                                 |                                 |                                  |                                 |
| Optical Fiber    |                                   |                    |                     |                     |                                 |                                 |                                  |                                 |
|                  | Gigabit Ethernet                  |                    |                     |                     |                                 |                                 |                                  |                                 |
|                  | SFP-SX                            | SFP-LSX            | SFP-LX              | SFP-LHX             | SFP-10A                         | SFP-10B                         | SFP-20A                          | SFP-20B                         |
| Wavelength       | 850 nm                            | 1310 nm            | 1310 nm             | 1310 nm             | TX<br>1310 nm,<br>RX<br>1550 nm | TX<br>1550 nm,<br>RX<br>1310 nm | TX 1<br>310 nm,<br>RX<br>1550 nm | TX<br>1550 nm,<br>RX<br>1310 nm |
| Max. TX          | -4 dBm                            | -1 dBm             | -3 dBm              | 1 dBm               | -3 dBm                          |                                 | -2 dBm                           |                                 |
| Min. TX          | -9.5 dBm                          | - 9 dBm            | -9.5 dBm            | -4 dBm              | -9 dBm                          |                                 | -8 dBm                           |                                 |
| RX Sensitivity   | -18 dBm                           | -19 dBm            | -20 dBm             | -24 dBm             | -21 dBm                         |                                 | -23 dBm                          |                                 |
| Link Budget      | 8.5 dB                            | 10 dB              | 10.5 dB             | 20 dB               | 12 dB                           |                                 | 15 dB                            |                                 |
| Typical Distance | 550 m <sup>a)</sup>               | 2 km <sup>b)</sup> | 10 km <sup>c)</sup> | 40 km <sup>c)</sup> | 10 km <sup>c)</sup>             |                                 | 20 km <sup>c)</sup>              |                                 |
| Saturation       | 0 dBm                             | -3 dBm             | -3 dBm              | -3 dBm              | -1 dBm                          |                                 | -1 dBm                           |                                 |

<sup>a)</sup> 50/125 µm, 400 MHz \* km or 62.5/125 µm, 500 MHz \* km @ 850 nm multimode fiber optic cable

<sup>b)</sup> 62.5/125 µm, 750 MHz \* km @ 1310 nm multimode fiber optic cable

<sup>c)</sup> 9/125 µm singlemode fiber optic cable

Note: The actual communication distance depends on many factors, including connector loss, cable deployment, and the age of the cabling system. We recommend doing a link budget analysis and reserving a 3 dB margin for such factors.

| Environmental Limits      |                              |
|---------------------------|------------------------------|
| Operating Temperature     | 0 to 60 °C (32 to 140 °F)    |
| Storage Temperature       | -40 to 85 °C (-40 to 185 °F) |
| Ambient Relative Humidity | 5 to 95 % (non-condensing)   |
| Regulatory Approvals      |                              |
| Safety                    | UL, TÜV                      |
| Warranty                  |                              |
| Warranty Period           | 3 years                      |

| Ordering Information                                                                                        |                |                       |                   |
|-------------------------------------------------------------------------------------------------------------|----------------|-----------------------|-------------------|
| SFP Variants                                                                                                | Model Type     | Operating Temperature | Order No.         |
| Gigabit Ethernet, Multimode, LC Connector, 500 m                                                            | IE-SFP-1GSXLC  | 0 to +60 °C           | <b>1241490000</b> |
| Gigabit Ethernet, Multimode, LC Connector, 2 km                                                             | IE-SFP-1GLSXLC | 0 to +60 °C           | <b>1241500000</b> |
| Gigabit Ethernet, Singlemode, LC Connector, 10 km                                                           | IE-SFP-1GLXLC  | 0 to +60 °C           | <b>1241510000</b> |
| Gigabit Ethernet, Singlemode, LC Connector, 40 km                                                           | IE-SFP-1GLHLC  | 0 to +60 °C           | <b>1241520000</b> |
| WDM-Type, Gigabit Ethernet, LC Connector, 10 km, Tx 1310 nm, Rx 1550 nm, must be paired with IE-SFP-1G10BLC | IE-SFP-1G10ALC | 0 to +60 °C           | <b>1241530000</b> |
| WDM-Type, Gigabit Ethernet, LC Connector, 10 km, Tx 1550 nm, Rx 1310 nm, must be paired with IE-SFP-1G10ALC | IE-SFP-1G10BLC | 0 to +60 °C           | <b>1241540000</b> |
| WDM-Type, Gigabit Ethernet, LC Connector, 20 km, Tx 1310 nm, Rx 1550 nm, must be paired with IE-SFP-1G20BLC | IE-SFP-1G20ALC | 0 to +60 °C           | <b>1241550000</b> |
| WDM-Type, Gigabit Ethernet, LC Connector, 20 km, Tx 1550 nm, Rx 1310 nm, must be paired with IE-SFP-1G20ALC | IE-SFP-1G20BLC | 0 to +60 °C           | <b>1241570000</b> |

Note: WDM-type SFP modules must be used in pairs (e.g. SFP-1GXXALC and SFP-1GXXBLC)

### 1-port Fast Ethernet SFP modules

- Compliant with IEEE 802.3u
- Differential PECL inputs and outputs
- TTL signal detect indicator
- Hot pluggable LC duplex connector
- Class 1 laser product; complies with EN60825-1



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### Technical data

| Interface        |                     |                     |                     |
|------------------|---------------------|---------------------|---------------------|
| Ethernet Ports   | 1                   |                     |                     |
| Connectors       | Duplex LC Connector |                     |                     |
| Optical Fiber    |                     |                     |                     |
|                  | Fast Ethernet       |                     |                     |
|                  | SFP-M               | SFP-S               | SFP-L               |
| Wavelength       | 1300 nm             | 1310 nm             | 1550 nm             |
| Max. TX          | -18 dBm             | 0 dBm               | 0 dBm               |
| Min. TX          | -8 dBm              | -5 dBm              | -5 dBm              |
| RX Sensitivity   | -34 dBm             | -34 dBm             | -34 dBm             |
| Link Budget      | 26 dB               | 29 dB               | 29 dB               |
| Typical Distance | 4 km <sup>a)</sup>  | 40 km <sup>b)</sup> | 80 km <sup>b)</sup> |
| Saturation       | 0 dBm               | -3 dBm              | -3 dBm              |

<sup>a)</sup> 50/125 µm or 62.5/125 µm, 800 MHz \* km @ 1300 nm multimode fiber optic cable

<sup>b)</sup> 9/125 µm singlemode fiber optic cable

| Environmental Limits      |                              |
|---------------------------|------------------------------|
| Operating Temperature     | -40 to 85 °C (-40 to 185 °F) |
| Storage Temperature       | -40 to 85 °C (-40 to 185 °F) |
| Ambient Relative Humidity | 5 to 95 % (non-condensing)   |
| Regulatory Approvals      |                              |
| Safety                    | UL, TÜV                      |
| Warranty                  |                              |
| Warranty Period           | 3 years                      |

| Ordering Information                           |                 |                       |                   |
|------------------------------------------------|-----------------|-----------------------|-------------------|
| Port Variants                                  | Model Type      | Operating Temperature | Order No.         |
| Fast Ethernet, Multimode, LC Connector, 4 km   | IE-SFP-1FEMLC-T | -40 to +85 °C         | <b>1241450000</b> |
| Fast Ethernet, Singlemode, LC Connector, 40 km | IE-SFP-1FESLC-T | -40 to +85 °C         | <b>1241470000</b> |
| Fast Ethernet, Singlemode, LC Connector, 80 km | IE-SFP-1FELLC-T | -40 to +85 °C         | <b>1241480000</b> |

## External Backup and Restore Module for System Configuration

- Reduce system downtime by simple reconfiguration in case of replacing devices
- Plug-n-Play system backup and restoration
- Compact, rugged, reliable design
- Supports all managed Ethernet switches



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### Technical data

| Basic Operation                    |                                                                                                                                            |            |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Connector                          | RS-232 RJ45 port                                                                                                                           |            |
| Configuration                      | Use the WEB-Console of managed Switches                                                                                                    |            |
| Power Requirements                 |                                                                                                                                            |            |
| Input Voltage                      | 3 to 5 V DC (through the RS-232 port's RTS signal)                                                                                         |            |
| Physical Characteristics           |                                                                                                                                            |            |
| Housing                            | PVC molding, IP40 protection                                                                                                               |            |
| Dimensions                         | 32.5 x 97 x 12 mm (8.07 x 3.82 x 0.47 in)                                                                                                  |            |
| Weight                             | 50 g                                                                                                                                       |            |
| Mounting possibility               | M4 screw (< 4 mm)                                                                                                                          |            |
| Cable Length                       | 35 cm (including connector)                                                                                                                |            |
| Environmental Limits               |                                                                                                                                            |            |
| Operating Temperature              | 0 to 60 °C (32 to 140 °F)                                                                                                                  |            |
| Storage Temperature                | -20 to 70 °C (-4 to 158 °F)                                                                                                                |            |
| Ambient Relative Humidity          | 5 to 95 % (non-condensing)                                                                                                                 |            |
| Regulatory Approvals               |                                                                                                                                            |            |
| EMI                                | FCC Part 15, CISPR (EN55022) Class A                                                                                                       |            |
| EMS                                | EN61000-4-2 (ESD), level 2; EN61000-4-3 (RS), level 3; EN61000-4-4 (EFT), level 3; EN61000-4-5 (Surge), level 3; EN61000-4-6 (CS), level 3 |            |
| Warranty                           |                                                                                                                                            |            |
| Warranty Period                    | 5 years                                                                                                                                    |            |
| Ordering Information               |                                                                                                                                            |            |
| Models                             | Type                                                                                                                                       | Order No.  |
| External Backup and Restore Module | EBR-Module RS232                                                                                                                           | 1241430000 |

## Kit for 19"-rack mounting

- For assembling top-hat rail-based devices in 19" racks



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### Technical data

| Physical Characteristics |                        |            |
|--------------------------|------------------------|------------|
| Dimensions               | 481 x 177.8 x 202.4 mm |            |
| Ordering Information     |                        |            |
| Models                   | Type                   | Order No.  |
| 19" Rack Mounting Kit    | RM-KIT                 | 1241440000 |



# Passive components

## Passive components

|                                                    |      |
|----------------------------------------------------|------|
| IE-line connector                                  | C.2  |
| Differences between industrial and office Ethernet | C.4  |
| IE-LINE connectors: the modular principle          | C.5  |
| IE-LINE connectors: selection chart                | C.6  |
| PROFINET and SERCOS III cabling solutions          | C.8  |
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| IP 20 plug-in connector                            | C.16 |
| IP 20 mounting rail outlets                        | C.20 |
| 19" patch panel                                    | C.25 |
| IP 65 FrontCom® Micro service interface            | C.26 |
| IP 67 plug-in connector                            |      |
| PushPull V14                                       | C.28 |
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| SnapIn V6                                          | C.54 |
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| IP 65 connection components                        |      |
| FreeCon V14                                        | C.72 |
| FreeCon Active PROFINET FO repeater                | C.75 |
| V1 junction boxes                                  | C.76 |
| FreeCon V4                                         | C.78 |
| V4 junction boxes                                  | C.79 |
| V5 junction boxes                                  | C.80 |
| V6 junction box                                    | C.81 |

# The Weidmüller IE-LINE plug-in connectors with **STEADYTEC**® technology



**STEADYTEC**® – this name stands for the future of connection technology in the field of data and signal transmissions. Established by the leading names in this branch of industry, the technology brand **STEADYTEC**® forms the foundation for reliable, application-centric and conforming solutions, for offices and harsh industrial conditions.

**The objective:** The development of reliable plug-in connector technologies for industrial applications. Technologies that satisfy the highest customer demands and hence enable new, professional and consistent solutions.

**The result:** An extremely reliable, extraordinarily practical, flexible and especially efficient plug-in connector system for office and industrial applications. Using products whose characteristics reflect perfectly the values from which they originated:

- fast
- reliable
- solution-based
- simple

## The Ethernet connector system: clever – flexible – modular

Connectors for modern industrial applications need to be designed in such a way that they simplify processes and cope with faster data transmission. Weidmüller's Ethernet connectors keep you a step ahead. These products are not only ready for 10 gigabit, they are also standardised for IEC 61076-3-106 and IEC 61076-3-117. In addition, the connector variants 4 (Ethernet/TCP/IP), variants 5 and 1 (Ethernet IP) and variant 14 (PROFINET/AIDA) which are named in these standards are all specified as mandatory in the standards covering generic cabling systems for industrial premises: ISO/IEC 24702, IEC 61918 (Automation Island), as well as for Fieldbus installations IEC 61784-5. What's more, you have a unique choice of versions made of plastic or metal as well as inserts for copper and fibre-optic cabling.

All of the connectors are designed for ease of use and for quick on-site assembly. They are also modular and are tailored to suit your application.





### Tool-free assembly and powerful connections: the RJ45 gigabit connector!

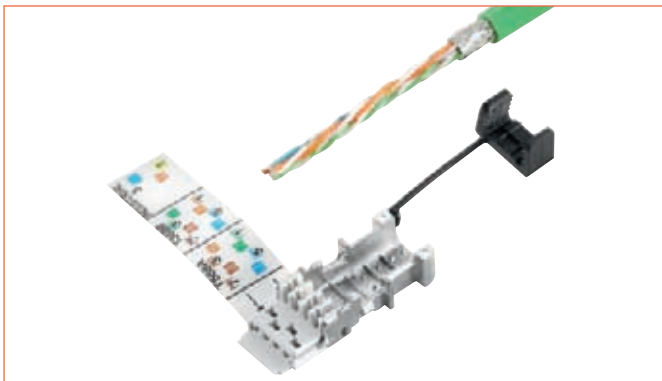
You can now securely plug the connector you need directly into your machinery with very little effort – and without a single tool! The 10-gigabit connector, with IDC-connection, was developed to provide quick, simple, secure and, most importantly, tool-free wiring.

In addition, zinc die-casting makes the connector extra robust and therefore suitable for industrial applications. It is also fitted with a protected locking clip for tough industrial applications. Weidmüller's IE product line fulfils the requirements for 10 GBit Ethernet, according to IEEE 802.3an, up to 500 MHz.

#### **STEADYTEC®: Systematic benefits**

- Cat.6<sub>A</sub> 10 GBit System Class E<sub>A</sub>
- Assembly without tools in the field
- Countless variations thanks to highly diverse combinations of inserts
- Unrestricted compatibility because standardised to IEC 61076-3-106
- Reliable and long-lasting thanks to use of diecast zinc
- Suitable for industry thanks to IP 67 class of protection
- Simple ordering procedure and low storage costs thanks to Weidmüller's modular system

C



1. Strip sheath cladding and shorten shield to 5 mm



2. Prepare wires and shorten



3. Snap together the two pluggable elements



4. Finished

# Differences between industrial and office Ethernet

## Office Ethernet



### Cabling

- Fixed building installation
- Variable connection options
- Pre-assembled connection cables
- Star topology most widely in use

### Transmission

- Large volume of data
- Mid-level network availability
- Mostly only acyclical transmission
- No real-time characteristics required for standard applications

### Surroundings

- No extreme conditions

## Industrial Ethernet



- Individual plant-influenced networks
- Robust component characteristics
- On-site, user assembly connections
- Redundant network topologies (ring)

- Small data packets (measurement values)
- Very high network availability
- Extremely high real-time requirement
- Mostly cyclical transmission

- Extreme temperatures
- Dust, dirt, splashing water, oils gases,
- Vibration, electromagnetic fields
- Risks of danger and damage from mechanical or chemical influences

# Unlimited combinations: the modular principle



|             | Plug insert                       | Plug housing                     | Flange-mounted housing | Flange insert           |
|-------------|-----------------------------------|----------------------------------|------------------------|-------------------------|
| Copper      | <br>RJ45 crimp                    | <br>HDC RockStar® / Variant 5    |                        | <br>RJ45 coupling       |
|             | <br>RJ45 can be assembled on-site | <br>Push-Pull / Variant 14       |                        | <br>RJ45 Module A, B, P |
|             |                                   | <br>Bayonet / Variant 1, plastic |                        | <br>USB-A coupling      |
| Fibre-optic |                                   | <br>Bayonet / Variant 1, metal   |                        |                         |
|             | <br>2 x SC                        | <br>Push-Pull / Variant 4        |                        | <br>2SC/SCRJ adapter    |
|             | <br>LC duplex                     | <br>Push-Pull / Variant 14       |                        | <br>LC duplex adapter   |

Take advantage of maximum flexibility! The range of products guarantees you decisive advantages for your industrial applications. During planning, assembling and everyday operations. All variants are designed for class of protection IP 67.

The Weidmüller products take account of the latest market conditions and most recent international standards. In doing so we offer you the option of unrestricted choice. What that means is that you get exactly the products you need for your application!

## Features

- The only 8-core, on-site assembled, RJ45 connector for 10 Gigabit-Ethernet (Cat.6<sub>A</sub> / Class E<sub>A</sub>).
- Larger cable sheath diameter range (up to 10 mm) for variants V4, V1, and V14. For V5 up to 12 mm.
- Suitable for connecting stranded conductors in sizes AWG 27/7 to AWG 22/7; solid conductors in sizes AWG 27/1 to 22/1.
- Modules and couplers have a robust diecast zinc housing.
- Design results in enhanced vibration and shock resistance for couplers and RJ45 modules.
- Variable bulkhead housing fixing options for variants V1 and V4.
- Additional marking surfaces on plug and bulkhead housing, subsequent colour coding of IP 20 and IP 67 plug-in connectors.
- Dirt-resistant housing design with enhanced resistance to oils, greases, acids and alkalis.

## IE-LINE connectors: selection chart



## Metal plug

| Housings                                                                          |                       |                                           |                                                      | Variant 1 Bayonet                                                                 |            | Variant 14 PushPull RJ                                                             |            | Variant 14 PushPull fibre-optic                                                     |            | Variant 5 HDC                                                                       |
|-----------------------------------------------------------------------------------|-----------------------|-------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|
|                                                                                   |                       |                                           |                                                      |  |            |  |            |  |            |  |
|                                                                                   |                       |                                           |                                                      | With KS                                                                           | Without KS | With KS                                                                            | Without KS | With KS                                                                             | Without KS | Without KS                                                                          |
| <b>Inserts</b>                                                                    |                       |                                           |                                                      | 1962560000                                                                        | 1962550000 | 1011570000                                                                         | 1011560000 | 1058110000                                                                          | 1058100000 | 1962540000                                                                          |
|  | RJ45 AWG 24 crimp     |                                           | 1962720000                                           | 1963150000                                                                        | 1963140000 | 1012070000                                                                         | 1012160000 |                                                                                     |            | 1963110000                                                                          |
|  | RJ45 AWG 22 tool-free | TIA-A/-B/-P<br>TIA-A<br>TIA-B<br>PROFINET | 1962730000<br>1132010000<br>1132020000<br>1132030000 | 1963130000                                                                        | 1963120000 | 1012090000                                                                         | 1012170000 |                                                                                     |            | 1963200000<br>1271250000                                                            |
|  | LWL SC                | multimode                                 | 1067380000                                           | 1963270000                                                                        | 1963260000 |                                                                                    |            | Please order separately                                                             |            |                                                                                     |
|                                                                                   |                       | singlemode                                | 1067390000                                           | 1963310000                                                                        | 1963300000 |                                                                                    |            | Please order separately                                                             |            |                                                                                     |
|                                                                                   |                       | POF                                       | 1067410000                                           | 1963290000                                                                        | 1963280000 |                                                                                    |            |                                                                                     | 1191550000 |                                                                                     |
|  | LWL LC                | multimode                                 | 1962780000                                           | 1963230000                                                                        | 1963220000 |                                                                                    |            | Please order separately                                                             |            |                                                                                     |
|                                                                                   |                       | singlemode                                | 1962790000                                           | 1963250000                                                                        | 1963240000 |                                                                                    |            | Please order separately                                                             |            |                                                                                     |
|                                                                                   | Protective cap        |                                           |                                                      | 1965690000                                                                        |            | 1058280000                                                                         |            | 1058280000                                                                          |            | 1968930002                                                                          |

KS = anti-kink protection

## Plastic plug

| Housings                                                                            |                       |                                           |                                                      | Variant 1 Bayonet                                                                   |            | Variant 4 PushPull                                                                   |                          |
|-------------------------------------------------------------------------------------|-----------------------|-------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------|--------------------------|
|                                                                                     |                       |                                           |                                                      |  |            |  |                          |
|                                                                                     |                       |                                           |                                                      | With KS                                                                             | Without KS | With KS                                                                              | Without KS               |
| <b>Inserts</b>                                                                      |                       |                                           |                                                      | 1012460000                                                                          | 1012440000 | 1962530000                                                                           | 1962520000               |
|  | RJ45 AWG 24 crimp     |                                           | 1962720000                                           | 1012560000                                                                          | 1012470000 | 1963190000                                                                           | 1963180000               |
|  | RJ45 AWG 22 tool-free | TIA-A/-B/-P<br>TIA-A<br>TIA-B<br>PROFINET | 1962730000<br>1132010000<br>1132020000<br>1132030000 | 1012570000                                                                          | 1012490000 | 1963170000                                                                           | 1963160000<br>1271240000 |
|  | LWL SC                | multimode                                 | 1067380000                                           | Please order separately                                                             |            | 1963370000                                                                           | 1963360000               |
|                                                                                     |                       | singlemode                                | 1067390000                                           | Please order separately                                                             |            | 1963410000                                                                           | 1963400000               |
|                                                                                     |                       | POF                                       | 1067410000                                           | Please order separately                                                             |            | 1963390000                                                                           | 1963380000               |
|  | LWL LC                | multimode                                 | 1962780000                                           | Please order separately                                                             |            | 1963330000                                                                           | 1963320000               |
|                                                                                     |                       | singlemode                                | 1962790000                                           | Please order separately                                                             |            | 1963350000                                                                           | 1963340000               |
|                                                                                     | Protective cap        |                                           |                                                      | 1965690000                                                                          |            | 1963890000                                                                           |                          |

KS = anti-kink protection

 Individual components

 Sets

V1 with SC multimode  
1963260000



V5 with RJ45 crimp  
1963110000



V4 with LC multimode  
1063320000



V14 with RJ45 tool-free  
1012170000



## Metal flange

| Housings                                                                          |                    |            |            | Variant 1 Bayonet                                                                 | Variant 14 PushPull RJ                                                                                |                                                                                                   | Variant 14 PushPull fibre-optic                                                                         |                                                                                                    | Variant 5 HDC                                                                       |
|-----------------------------------------------------------------------------------|--------------------|------------|------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Inserts                                                                           |                    |            |            |  |  Standardised flange |  Central flange |  Standardised flange |  Central flange |  |
|                                                                                   |                    |            |            | 1963540000                                                                        | 1011540000                                                                                            | 1047950000                                                                                        |                                                                                                         |                                                                                                    | 1963530000                                                                          |
|  | RJ45 coupling      |            | 1962840000 | 1963470000                                                                        | 1012310000                                                                                            | 1058250000                                                                                        |                                                                                                         |                                                                                                    | 1963510000                                                                          |
|  | RJ45 module        | TIA-A      | 1962850000 | 1963480000                                                                        | 1012320000                                                                                            | 1058270000                                                                                        |                                                                                                         |                                                                                                    | 1963460000                                                                          |
|                                                                                   |                    | TIA-B      | 1963840000 | Please order separately                                                           | Please order separately                                                                               | Please order separately                                                                           |                                                                                                         |                                                                                                    | Please order separately                                                             |
|                                                                                   |                    | PROFINET   | 1963830000 | Please order separately                                                           | 1085260000                                                                                            | Please order separately                                                                           |                                                                                                         |                                                                                                    | 1963700000                                                                          |
|  | SC/SCRJ coupling   | multimode  | 1964430000 | 1964450000                                                                        |                                                                                                       |                                                                                                   | 1058120000                                                                                              | 1062590000                                                                                         |                                                                                     |
|                                                                                   |                    | singlemode | 1962870000 | 1963440000                                                                        |                                                                                                       |                                                                                                   | 1058140000                                                                                              | 1062600000                                                                                         |                                                                                     |
|  | LC Duplex coupling | multimode  | 1964420000 | 1964440000                                                                        |                                                                                                       |                                                                                                   | 1058130000                                                                                              | 1062610000                                                                                         |                                                                                     |
|                                                                                   |                    | singlemode | 1962880000 | 1963430000                                                                        |                                                                                                       |                                                                                                   | 1058150000                                                                                              | 1062620000                                                                                         |                                                                                     |
|  | USB coupling       |            | 1019570000 | Please order separately                                                           | Please order separately                                                                               | Please order separately                                                                           |                                                                                                         |                                                                                                    | Please order separately                                                             |
|                                                                                   | Protective cap     |            |            | 1965700000                                                                        | 1058310000                                                                                            | 1058310000                                                                                        | 1058310000                                                                                              | 1058310000                                                                                         | 1968930000                                                                          |

## Plastic flange

| Housings                                                                            |                    |            |            | Variant 1 Bayonet                                                                   | Variant 4 PushPull                                                                  |
|-------------------------------------------------------------------------------------|--------------------|------------|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Inserts                                                                             |                    |            |            |  |  |
|                                                                                     |                    |            |            | 1016960000                                                                          | 1963520000                                                                          |
|  | RJ45 coupling      |            | 1962840000 | 1012370000                                                                          | 1963490000                                                                          |
|  | RJ45 module        | TIA-A      | 1962850000 | 1012380000                                                                          | 1963500000                                                                          |
|                                                                                     |                    | TIA-B      | 1963840000 | Please order separately                                                             | 1963730000                                                                          |
|                                                                                     |                    | PROFINET   | 1963830000 | Please order separately                                                             | Please order separately                                                             |
|  | SC/SCRJ coupling   | multimode  | 1964430000 | Please order separately                                                             | 1964470000                                                                          |
|                                                                                     |                    | singlemode | 1962870000 | Please order separately                                                             | 1963420000                                                                          |
|  | LC Duplex coupling | multimode  | 1964420000 | Please order separately                                                             | 1964460000                                                                          |
|                                                                                     |                    | singlemode | 1962880000 | Please order separately                                                             | 1963450000                                                                          |
|  | USB coupling       |            | 1019570000 | Please order separately                                                             | Please order separately                                                             |
|                                                                                     | Protective cap     |            |            | 1965700000                                                                          | 1963900000                                                                          |

 Individual components  
 Sets

V5 with RJ45 coupling  
1963510000



V1 with SC multimode  
1964450000



V4 with LC multimode  
1964460000

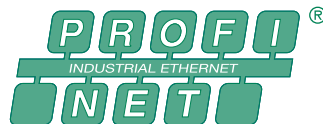


V14 with RJ45 module  
1012320000



# PROFINET and SERCOS III cabling solutions

Weidmüller offers all cabling products to create a profile specific infrastructure which meets all the needs of PROFINET and SERCOS III.



The cabling components for copper and fibre-optic cables are designed and tested for use in hard industrial conditions. Interoperability in the system is assured by the PROFINET and SERCOS cabling guidelines that specifically prescribe the interfaces to be used. For PROFINET this is guaranteed through the manufacturer's declaration.

Comprehensive protection against disturbance by electromagnetic fields is achieved through the use of high quality shielding of both cables and the related connection components. Significant system reserves are offered through the star quad design of the cables and their wire cross-section of AWG 22. Stable real-time transmission is guaranteed, for applications such as PROFINET IRT or SERCOS III typical hardware synchronisations, by the low signal transmission time differences resulting from the cable construction. At the same time the cables offer high crush resistance for reliable installation in industrial applications.

The cabling components also have a remarkable ease of handling in the field. The plug-in connectors for copper and fibre-optic can all be assembled on-site. This reduces installation time, reduces errors and simplifies maintenance.

## Profile specific guidelines for the connection components

### Cable:

- Quad-star design of AWG 22

### Connector:

- IP 20 RJ45
- IP 20 SC-RJ
- IP 67 PushPull RJ45
- IP 67 PushPull Power
- IP 67 PushPull SC-RJ
- IP 67 M12 D coding



Weidmüller offers you a wide range of cabling solutions for PROFINET and SERCOS III applications. IP 20 plug-in connectors for copper and fibre-optic cables belong to the program as well as IP 67 plug-in connectors and junction boxes

for the toughest requirements. The components are designed to be used together from the floor distributors down to the machines.

IP 67  
assembled RJ45 cables



IP 67  
assembled M12 cables



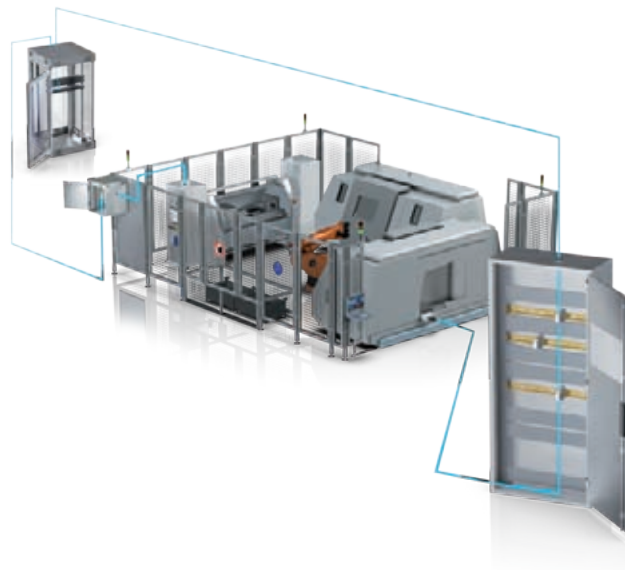
IP 67  
plug-in M12 connectors



IP 67  
connection components



Cable by the metre  
copper and fibre-optic



IP 67  
plug-in connectors data / power



19" patch panel



IP 67  
flanges data / power



IP 20  
plug-in connector



IP 20  
assembled cables



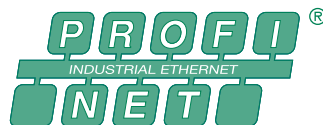
IP 20  
mounting rail outlets



IP 65  
service interfaces



# Selection table



## IP 20 plug-in connector



| Description                           | Type               | Order No.  | See page |
|---------------------------------------|--------------------|------------|----------|
| RJ 45 tool-free PROFINET printing     | IE-PS-RJ45-FH-BK-P | 1132060000 | C.16     |
| SC-RJ for 1 mm POF fibres             | IE-PS-SCRJ1-POF    | 1206720000 | C.18     |
| SC-RJ for multimode fibres 50/62.5 µm | IE-PS-SCRJ1-MM     | 1206730000 | C.18     |
| SC-RJ for singlemode fibres 9 µm      | IE-PS-SCRJ1-SM     | 1206740000 | C.18     |

## IP 20 assembled data cables



| Description                            | Type                    | Order No.  | See page |
|----------------------------------------|-------------------------|------------|----------|
| RJ 45 PUR patch cable - type C - 1 m   | IE-C5DD4UG0010A20A20-E  | 1173030010 | D.20     |
| RJ 45 PUR patch cable - type C - 3 m   | IE-C5DD4UG0030A20A20-E  | 1173030030 | D.20     |
| RJ 45 PUR patch cable - type C - 5 m   | IE-C5DD4UG0050A20A20-E  | 1173030050 | D.20     |
| RJ 45 PUR patch cable - type C - 10 m  | IE-C5DD4UG0100A20A20-E  | 1173030100 | D.20     |
| SC-RJ zipcord patch cable - POF - 1 m  | IE-FPOZ2EE0001MSJ0SJ0-X | 1273430010 | D.35     |
| SC-RJ zipcord patch cable - POF - 3 m  | IE-FPOZ2EE0003MSJ0SJ0-X | 1273430030 | D.35     |
| SC-RJ zipcord patch cable - POF - 5 m  | IE-FPOZ2EE0005MSJ0SJ0-X | 1273430050 | D.35     |
| SC-RJ zipcord patch cable - POF - 10 m | IE-FPOZ2EE0010MSJ0SJ0-X | 1273430100 | D.35     |

Further PROFINET cables are available on request - SERCOS 3 cables on request

## IP 20 mounting rail outlets



| Description                    | Type            | Order No.  | See page |
|--------------------------------|-----------------|------------|----------|
| RJ45 coupling                  | IE-TO-RJ45-C    | 8946920000 | C.20     |
| RJ45 module PROFINET printing  | IE-TO-RJ45-FJ-P | 8946950000 | C.21     |
| SC-RJ POF coupling / multimode | IE-TO-SCRJ-MM   | 8946990000 | C.23     |
| SC-RJ singlemode coupling      | IE-TO-SCRJ-SM   | 8947000000 | C.23     |

## 19" patch panel



| Description                        | Type                | Order No.  | See page |
|------------------------------------|---------------------|------------|----------|
| With adaptor, without RJ45 inserts | IE-PPA19-24P        | 1049270000 | C.25     |
| RJ 45 module PROFINET printing     | IE-BI-RJ45-FJ-P     | 1963830000 | C.25     |
| fitted with 24 RJ45 couplings      | IE-PPA19-24P-RJ45-C | 1049930000 | C.25     |

other inserts from page C.61

## IP 65 service interface



| Description                                   | Type             | Order No.  | See page |
|-----------------------------------------------|------------------|------------|----------|
| FrontCom® Micro RJ45 coupling                 | IE-FCM-RJ45-C    | 1018790000 | C.26     |
| FrontCom® Micro RJ45 module PROFINET printing | IE-FCM-RJ45-FJ-P | 1018830000 | C.26     |

## IP 67 flange data



| Description                                                               | Type                   | Order No.  | See page |
|---------------------------------------------------------------------------|------------------------|------------|----------|
| PushPull standard flange RJ45 coupling                                    | IE-BSS-V14M-RJ45-C     | 1012310000 | C.29     |
| PushPull central cable gland RJ45 coupling                                | IE-BSC-V14M-RJ45-C     | 1058250000 | C.29     |
| PushPull standardised flange RJ45 module PROFINET printing                | IE-BSS-V14M-RJ45-FJ-P  | 1085260000 | C.29     |
| PushPull standardised flange hybrid (Q10) 10-pole module without contacts | IE-BSS-V14M-HYB-10P-FJ | 1072900000 | C.31     |
| Contacts for Hybrid (Q10) module 0.5 mm² - 0.75 mm² VPE 300               | IE-BIC-HYB-P-0,75-300  | 1068970000 | C.31     |
| Contacts for Hybrid (Q10) module 0.2 mm² - 0.5 mm² VPE 300                | IE-BIC-HYB-P-0,5-300   | 1096150000 | C.31     |
| PushPull standardised flange SC-RJ coupling POF / multimode               | IE-BSS-V14M-SCRJ-MM-C  | 1058120000 | C.33     |
| PushPull standardised flange SC-RJ coupling singlemode                    | IE-BSS-V14M-SCRJ-SM-C  | 1058140000 | C.33     |
| PushPull central cable gland SC-RJ coupling POF / multimode               | IE-BSC-V14M-SCRJ-MM-C  | 1062590000 | C.33     |
| PushPull central cable gland SC-RJ coupling singlemode                    | IE-BSC-V14M-SCRJ-SM-C  | 1062600000 | C.33     |
| PushPull device flange                                                    | IE-BHD-V14M            | 1047940000 | C.33     |
| PushPull flange protective cap IP 67                                      | IE-BP-V14P             | 1058310000 | E.18     |

other inserts from page C.61

## IP 67 flange power



| Description                                             | Type            | Order No.  | See page |
|---------------------------------------------------------|-----------------|------------|----------|
| PushPull Power standardised flange with 24 V / 16 A use | IE-BSS-VAPM-24V | 1069030000 | C.69     |
| PushPull Power device flange                            | IE-BHD-VAPM     | 1068920000 | C.69     |
| PushPull Power flange protective cap IP 67              | IE-BP-VAPP      | 1068930000 | E.18     |

## IP 67 data connectors

|  | Description                                                                     | Type                  | Order No.  | See page |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------|------------|----------|
|                                                                                   | PushPull RJ45 tool-free module PROFINET printing                                | IE-PS-V14M-RJ45-FH-P  | 1012170000 | C.28     |
|                                                                                   | PushPull Hybrid (Q10) use, 10-pole module without contacts                      | IE-PS-V14M-HYB-10P    | 1072910000 | C.30     |
|                                                                                   | Contacts for Hybrid (Q10) use 0.75 mm <sup>2</sup> VPE 300                      | IE-PIC-HYB-S-0,75-300 | 1068950000 | C.30     |
|                                                                                   | Contacts for Hybrid (Q10) use 0.2 mm <sup>2</sup> - 0.5 mm <sup>2</sup> VPE 300 | IE-PIC-HYB-S-0,5-300  | 1096180000 | C.30     |
|                                                                                   | PushPull SC-RJ use POF 1 mm                                                     | IE-PS-V14M-2SC-POF    | 1191550000 | C.32     |
|                                                                                   | PushPull plug protective cap IP 67                                              | IE-PP-V14P            | 1058280000 | E.18     |

## IP 67 assembled data cables

|  | Description                                    | Type                   | Order No.  | See page |
|-----------------------------------------------------------------------------------|------------------------------------------------|------------------------|------------|----------|
|                                                                                   | PushPull RJ 45 patch cable PUR - Type C - 1 m  | IE-C5DD4UG0010A2EA2E-X | 1119730010 | D.20     |
|                                                                                   | PushPull RJ 45 patch cable PUR - Type C - 3 m  | IE-C5DD4UG0030A2EA2E-X | 1119730030 | D.20     |
|                                                                                   | PushPull RJ 45 patch cable PUR - Type C - 5 m  | IE-C5DD4UG0050A2EA2E-X | 1119730050 | D.20     |
|                                                                                   | PushPull RJ 45 patch cable PUR - Type C - 10 m | IE-C5DD4UG0100A2EA2E-X | 1119730100 | D.20     |

Further PROFINET cables are available on request - SERCOS 3 cables on request

## IP 67 Power connectors

|  | Description                         | Type           | Order No.  | See page |
|------------------------------------------------------------------------------------|-------------------------------------|----------------|------------|----------|
|                                                                                    | PushPull Power with 24 V / 16 A use | IE-PS-VAPM-24V | 1068910000 | C.68     |

## IP 67 plug-in M12 connectors

M 12 components can be found from page C.58

## IP 65 connection components

|  | Description                                                                        | Type                      | Order No.  | See page |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------|------------|----------|
|                                                                                     | FreeCon passive double socket junction box RJ45/Power                              | IE-CD-V14MRJ/VAPM24V-FJ   | 1068830000 | C.70     |
|                                                                                     | FreeCon passive single socket junction box RJ45                                    | IE-CD-V14MRJ-FJ           | 1068880000 | C.70     |
|                                                                                     | FreeCon passive single socket junction box Hybrid (Q10) without contacts           | IE-CD-V14MHYB-10P-FJ      | 1068850000 | C.72     |
|                                                                                     | Contacts for Hybrid (Q10) module 0.75 mm <sup>2</sup> VPE 300                      | IE-BIC-HYB-P-0,75-300     | 1068970000 | C.31     |
|                                                                                     | Contacts for Hybrid (Q10) module 0.2 mm <sup>2</sup> - 0.5 mm <sup>2</sup> VPE 300 | IE-BIC-HYB-P-0,5-300      | 1096150000 | C.31     |
|                                                                                     | Mounting foot for junction boxes                                                   | IE-CD-MA                  | 1099580000 | C.70     |
|                                                                                     | FreeCon passive double connection RJ45/Power                                       | IE-CD-V14MRJ/VAPM24V-C-MA | 1068820000 | C.71     |
|                                                                                     | FreeCon passive single connection RJ45                                             | IE-CD-V14MRJ-C-MA         | 1068870000 | C.71     |
|                                                                                     | FreeCon active FO PROFINET repeater                                                | IE-CDR-V14MSCPOF/VAPM-C   | 1253240000 | C.73     |
|                                                                                     | PushPull flange protective cap IP 67                                               | IE-BP-V14P                | 1058310000 | E.18     |

## Bulk stock copper cable

|  | Description                                         | Type          | Order No.  | See page |
|-------------------------------------------------------------------------------------|-----------------------------------------------------|---------------|------------|----------|
|                                                                                     | 100 m ring installation cable PVC type A            | IE-C5AS4V1000 | 8899000000 | D.12     |
|                                                                                     | Bulk stock installation cable PVC type A from 110 m | IE-C5AS4VG-MW | 8955950000 | D.12     |
|                                                                                     | 100 m ring connection cable PVC type B              | IE-C5DS4V1000 | 8898990000 | D.12     |
|                                                                                     | Bulk stock connection cable PVC type B from 110 m   | IE-C5DS4VG-MW | 8955560000 | D.12     |
|                                                                                     | 100 m ring dragline cable PUR type C                | IE-C5DD4U1000 | 8899010000 | D.13     |
|                                                                                     | Bulk stock dragline cable PUR type C from 110 m     | IE-C5DD4UG-MW | 8947670000 | D.13     |
|                                                                                     | Bulk stock hybrid cable PVC from 110 m              | IE-C5DHAG-MW  | 1172250000 | D.14     |

## Bulk stock fibre-optic cable

|  | Description                                     | Type          | Order No.  | See page |
|-------------------------------------------------------------------------------------|-------------------------------------------------|---------------|------------|----------|
|                                                                                     | Multimode breakout cable 2x50 µm PUR from 50 m  | IE-FM5B2UE-MW | 8946000000 | D.31     |
|                                                                                     | POF zip-cord cable 2X980/1000 µm TPE, from 50 m | IE-FPOZ2EE-MW | 1242820000 | D.32     |
|                                                                                     | POF breakout cable 2X980/1000 µm TPE, from 50 m | IE-FPOD2UE-MW | 1172280000 | D.32     |

# Ethernet/IP cabling solutions

The wiring guidelines for Ethernet/IP clearly defines the interfaces to be used to ensure interoperability in Ethernet/IP systems.



Weidmüller offers all the cabling products needed to build a requirement specific infrastructure which is tailored to the needs of Ethernet/IP.

The wiring components for copper and fibre-optic cables are designed and tested for use in harsh industrial environments. The user is provided with clear guidelines about the requirements of the components for use in industrial environments with the introduction of the MICE classification (Ethernet/IP Media Planning and Installation Manual).

The high-quality shielding of the cables and connection components offers comprehensive protection against electromagnetic interference.

The cables are 8-wire twisted-pair cables for RJ45 use or star quad for use in M12.

The cabling components are also easy to handle in the field. The plug-in connectors for copper and fibre-optic can all be assembled on-site. This reduces installation time, reduces errors and simplifies maintenance.

The connectors wire/pin assignment is either according to TIA568-A or TIA568-B as required. The connectors and modules are marked accordingly making them easier to connect.

## Profile specific guidelines for the connection components

### Cable:

- 8-wire twisted-pair shielded cables

### Connector:

- IP 20 RJ45
- IP 20 SC-RJ
- IP 67 bayonet RJ45
- IP 67 bayonet SC-RJ
- IP 67 M12 D coding



Weidmüller offers you a wide range of cabling solutions for Ethernet/IP applications. IP 20 plug-in connectors for copper and fibre-optic cables belong to the program as well as IP 67 plug-in connectors and junction boxes for the toughest

requirements. The components are designed to be used together from the floor distributors down to the machines.

IP 67  
assembled RJ45 cables



IP 67  
assembled M12 cables



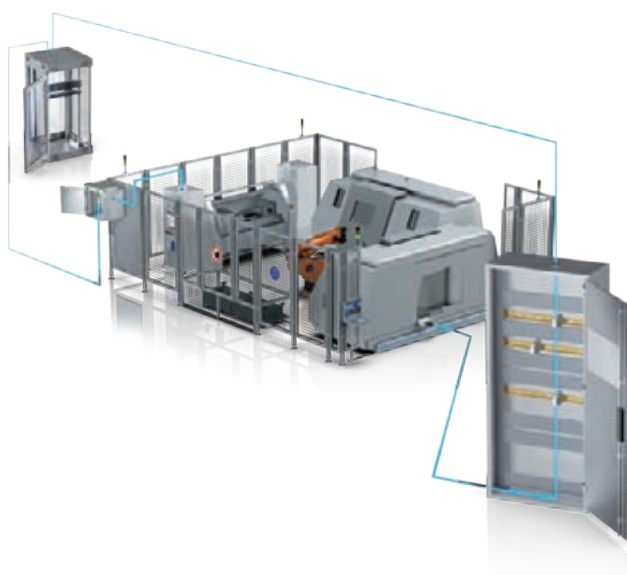
IP 67  
plug-in M12 connectors



IP 67  
connection components



Cable by the metre  
copper and fibre-optic



IP 67  
plug-in connectors data



19" patch panel



IP 67  
flanges data / power



IP 20  
plug-in connector



IP 20  
assembled cables



IP 20  
mounting rail outlets



IP 65  
service interfaces



# Selection table



## IP 20 plug-in connector

|  | Description                           | Type               | Order No.  | See page |
|--|---------------------------------------|--------------------|------------|----------|
|  | RJ45 crimp                            | IE-PS-RJ45-TH-BK   | 1963590000 | C.17     |
|  | RJ 45 tool-free TIA-A printing        | IE-PS-RJ45-FH-BK-A | 1132040000 | C.16     |
|  | RJ 45 tool-free TIA-B printing        | IE-PS-RJ45-FH-BK-B | 1132050000 | C.16     |
|  | SC-RJ for 1 mm POF fibres             | IE-PS-SCRJ1-POF    | 1206720000 | C.18     |
|  | SC-RJ for multimode fibres 50/62.5 µm | IE-PS-SCRJ1-MM     | 1206730000 | C.18     |
|  | SC-RJ for singlemode fibres 9 µm      | IE-PS-SCRJ1-SM     | 1206740000 | C.18     |

## IP 20 assembled data cables

|  | Description                                   | Type                    | Order No.  | See page |
|--|-----------------------------------------------|-------------------------|------------|----------|
|  | RJ 45 patch cables - see CabinetLine          |                         |            |          |
|  | SC-RJ zipcord patch cable - POF - 1 m         | IE-FPOZ2EE0001MSJ0SJ0-X | 1273430010 | D.35     |
|  | SC-RJ zipcord patch cable - POF - 3 m         | IE-FPOZ2EE0003MSJ0SJ0-X | 1273430030 | D.35     |
|  | SC-RJ zipcord patch cable - POF - 5 m         | IE-FPOZ2EE0005MSJ0SJ0-X | 1273430050 | D.35     |
|  | SC-RJ zipcord patch cable - POF - 10 m        | IE-FPOZ2EE0010MSJ0SJ0-X | 1273430100 | D.35     |
|  | Other Ethernet/IP cables available on request |                         |            |          |

## IP 20 mounting rail outlets

|  | Description                    | Type            | Order No.  | See page |
|--|--------------------------------|-----------------|------------|----------|
|  | RJ45 coupling                  | IE-TO-RJ45-C    | 8946920000 | C.20     |
|  | RJ45 Module TIA-A printing     | IE-TO-RJ45-FJ-A | 8946930000 | C.21     |
|  | RJ45 Module TIA-B printing     | IE-TO-RJ45-FJ-B | 8946940000 | C.21     |
|  | SC-RJ POF coupling / multimode | IE-TO-SCRJ-MM   | 8946990000 | C.23     |
|  | SC-RJ singlemode coupling      | IE-TO-SCRJ-SM   | 8947000000 | C.23     |
|  |                                |                 |            |          |

## 19" patch panel

|  | Description                                | Type                   | Order No.  | See page |
|--|--------------------------------------------|------------------------|------------|----------|
|  | fitted with 24 RJ45 modules TIA-A printing | IE-PPA19-24P-RJ45-FJ-A | 1049910000 | C.25     |
|  | fitted with 24 RJ45 modules TIA-B printing | IE-PPA19-24P-RJ45-FJ-B | 1049920000 | C.25     |
|  | fitted with 24 RJ45 couplings              | IE-PPA19-24P-RJ45-C    | 1049930000 | C.25     |
|  | other inserts from page C.61               |                        |            |          |

## IP 65 service interface

|  | Description                                | Type             | Order No.  | See page |
|--|--------------------------------------------|------------------|------------|----------|
|  | FrontCom® Micro RJ45 coupling              | IE-FCM-RJ45-C    | 1018790000 | C.26     |
|  | FrontCom® Micro RJ45 module TIA-A printing | IE-FCM-RJ45-FJ-A | 1018810000 | C.26     |
|  | FrontCom® Micro RJ45 module TIA-B printing | IE-FCM-RJ45-FJ-B | 1018820000 | C.26     |

## IP 67 flange data

|  | Description                                     | Type                 | Order No.  | See page |
|--|-------------------------------------------------|----------------------|------------|----------|
|  | Bayonet flange metal RJ45 coupling              | IE-BS-V01M-RJ45-C    | 1963470000 | C.35     |
|  | Bayonet flange metal RJ45 module TIA-A printing | IE-BS-V01M-RJ45-FJ-A | 1963480000 | C.35     |
|  | Bayonet flange plastic RJ45 coupling            | IE-BS-V01P-RJ45-C    | 1012370000 | C.41     |
|  | Bayonet flange metal RJ45 module TIA-A printing | IE-BS-V01P-RJ45-FJ-A | 1012380000 | C.41     |
|  | Bayonet flange metal SC-RJ POF / multimode      | IE-BS-V01M-SCRJ-MM   | 1221010000 | C.37     |
|  | Bayonet flange metal SC-RJ singlemode           | IE-BS-V01M-SCRJ-SM   | 1221020000 | C.37     |
|  | Bayonet flange protective cap IP 67             | IE-BP-V01P           | 1965700000 | C.37     |
|  | other inserts from page C.61                    |                      |            |          |

## IP 67 data connectors

|  | Description                             | Type               | Order No.  | See page |
|--|-----------------------------------------|--------------------|------------|----------|
|  | Bayonet plug metal RJ45 crimped         | IE-PS-V01M-RJ45-TH | 1963140000 | C.34     |
|  | Bayonet plug metal RJ45 tool-free       | IE-PS-V01M-RJ45-FH | 1963120000 | C.34     |
|  | Bayonet plug plastic RJ45 crimped       | IE-PS-V01P-RJ45-TH | 1012470000 | C.40     |
|  | Bayonet plug plastic RJ45 tool-free     | IE-PS-V01P-RJ45-FH | 1012490000 | C.40     |
|  | Bayonet plug metal SC-RJ use POF        | IE-PS-V01M-2SC-POF | 1963280000 | C.36     |
|  | Bayonet plug metal SC-RJ use multimode  | IE-PS-V01M-2SC-MM  | 1963260000 | C.36     |
|  | Bayonet plug metal SC-RJ use singlemode | IE-PS-V01M-2SC-SM  | 1963300000 | C.36     |
|  | Bayonet plug protective cap IP 67       | IE-PP-V01P         | 1965690000 | C.36     |
|  |                                         |                    |            |          |

## IP 67 assembled data cables

|  | Description                                | Type                   | Order No.  | See page |
|-----------------------------------------------------------------------------------|--------------------------------------------|------------------------|------------|----------|
|                                                                                   | Bayonet metal RJ 45 patch cable PUR 1 m    | IE-C5ES8UG0010B41B41-E | 1066850000 | D.23     |
|                                                                                   | Bayonet metal RJ 45 patch cable PUR 2 m    | IE-C5ES8UG0020B41B41-E | 1066860000 | D.23     |
|                                                                                   | Bayonet metal RJ 45 patch cable PUR 5 m    | IE-C5ES8UG0050B41B41-E | 1066870000 | D.23     |
|                                                                                   | Bayonet metal RJ 45 patch cable PUR 10 m   | IE-C5ES8UG0100B41B41-E | 1066880000 | D.23     |
|                                                                                   | Bayonet plastic RJ 45 patch cable PUR 1 m  | IE-C5ES8UG0010P41P41-E | 1106010000 | D.23     |
|                                                                                   | Bayonet plastic RJ 45 patch cable PUR 2 m  | IE-C5ES8UG0020P41P41-E | 1106020000 | D.23     |
|                                                                                   | Bayonet plastic RJ 45 patch cable PUR 5 m  | IE-C5ES8UG0050P41P41-E | 1106030000 | D.23     |
|                                                                                   | Bayonet plastic RJ 45 patch cable PUR 10 m | IE-C5ES8UG0100P41P41-E | 1106040000 | D.23     |
| Other Ethernet/IP cables available on request                                     |                                            |                        |            |          |

## IP 67 plug-in M12 connectors

M 12 components can be found from page C.58

## IP 65 connection components

|  | Description                         | Type              | Order No.  | See page |
|------------------------------------------------------------------------------------|-------------------------------------|-------------------|------------|----------|
|                                                                                    | Single junction box, metal straight | IE-OM-V01M-K11-1S | 1966300000 | C.74     |
|                                                                                    | Double junction box, metal straight | IE-OM-V01M-K21-2S | 1966330000 | C.74     |
|                                                                                    | Double junction box, metal left     | IE-OM-V01M-K21-2L | 1966320000 | C.74     |
|                                                                                    | Double junction box, metal right    | IE-OM-V01M-K21-2R | 1966310000 | C.74     |
|                                                                                    | Single junction box, plastic        | IE-OP-V01P-1S     | 1061830000 | C.75     |
|                                                                                    | Plastic cable coupling              | IE-CC-V01P        | 1061820000 | C.42     |
|                                                                                    | RJ45 module TIA-A printing          | IE-BI-RJ45-FJ-A   | 1962850000 | C.62     |
|                                                                                    | RJ45 module TIA-B printing          | IE-BI-RJ45-FJ-B   | 1963840000 | C.62     |

## Bulk stock copper cable

|  | Description                                                | Type                  | Order No.  | See page |
|-------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------|------------|----------|
|                                                                                     | 100 m ring installation cable PVC Cat. 5 SF/UTP            | IE-5IC4x2xAWG24/1-PVC | 8813150000 | D.6      |
|                                                                                     | Bulk stock installation cable PVC Cat. 5 SF/UTP from 110 m | IE-C5CS8VG-MW         | 8953160000 | D.6      |
|                                                                                     | 100 m ring installation cable PUR Cat. 5 SF/UTP            | IE-5IC4x2xAWG24/1-PUR | 8813160000 | D.6      |
|                                                                                     | Bulk stock installation cable PUR Cat. 5 SF/UTP from 110 m | IE-C5CS8UG-MW         | 8944310000 | D.6      |
|                                                                                     | 100 m ring connection cable PVC Cat. 5 SF/UTP              | IE-5CC4x2xAWG26/7-PVC | 8813190000 | D.8      |
|                                                                                     | Bulk stock connection cable PVC Cat. 5 SF/UTP from 110 m   | IE-C5ES8VG-MW         | 8955490000 | D.8      |
|                                                                                     | 100 m ring connection cable PUR Cat. 5 SF/UTP              | IE-5CC4x2xAWG26/7-PUR | 8813200000 | D.8      |
|                                                                                     | Bulk stock connection cable PUR Cat. 5 SF/UTP from 110 m   | IE-C5ES8UG-MW         | 8938880000 | D.8      |
| Other Ethernet/IP cables available on request                                       |                                                            |                       |            |          |

## Bulk stock fibre-optic cable

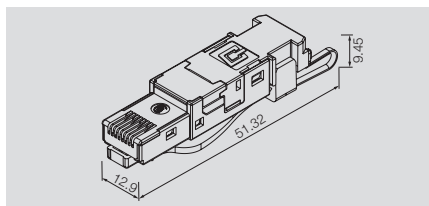
|  | Description                                     | Type          | Order No.  | See page |
|-------------------------------------------------------------------------------------|-------------------------------------------------|---------------|------------|----------|
|                                                                                     | Multimode breakout cable 2x50 µm PUR from 50 m  | IE-FM5B2UE-MW | 8946000000 | D.31     |
|                                                                                     | POF zip-cord cable 2X980/1000 µm TPE, from 50 m | IE-FPOZ2EE-MW | 1242820000 | D.32     |
|                                                                                     |                                                 |               | 1172280000 | D.32     |

## IP20 plug-in connector

## RJ45 plug

- Cat.6<sub>A</sub>
- IP 20

## tool-free



## Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Housing main material                          |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, solid, min. / max.         |
| Wire cross-section, solid, min. / max.         |
| Insulation cross-section, max.                 |
| Sheath diameter, min. / max.                   |
| Shielding                                      |
| Plugging cycles                                |
| Configuration                                  |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Current-carrying capacity at 50 °C             |

## Note

|                                                                                                        |
|--------------------------------------------------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010)                                         |
| IP 20                                                                                                  |
| Zinc diecast                                                                                           |
| 0.48 mm / 0.76 mm                                                                                      |
| AWG 26 / AWG 22                                                                                        |
| 0.4 mm / 0.64 mm                                                                                       |
| AWG 24 / AWG 22                                                                                        |
| 1.6 mm                                                                                                 |
| 5.5 mm / 8.5 mm                                                                                        |
| 360° all-round enclosure                                                                               |
| 750                                                                                                    |
| Eight-wire field-assembled RJ45 plug with colour coding on the plug, TIA A/B/ProfiNet, multiport-ready |
| -40 °C...+70 °C                                                                                        |
| IEC 60603-7-51                                                                                         |
| 1 A                                                                                                    |

## Ordering data

| Plug                                            |
|-------------------------------------------------|
| with tear-off flags: EIA / TIA 568 A/B/PROFINET |
| with printing: PROFINET                         |
| with printing: EIA / TIA 568 A                  |
| with printing: EIA / TIA 568 B                  |

## Note

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-PS-RJ45-FH-BK   | 10   | 1963600000 |
| IE-PS-RJ45-FH-BK-P | 10   | 1132060000 |
| IE-PS-RJ45-FH-BK-A | 10   | 1132040000 |
| IE-PS-RJ45-FH-BK-B | 10   | 1132050000 |

## Accessories

| Strain relief |
|---------------|
| blue          |
| orange        |
| green         |
| grey          |
| white         |
| yellow        |



## Tools

Optional pressing tool

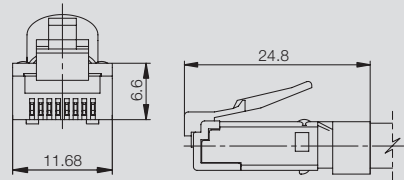
| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-CR-IP20-RJ45-FH-BU | 10   | 1963080000 |
| IE-CR-IP20-RJ45-FH-OG | 10   | 1963070000 |
| IE-CR-IP20-RJ45-FH-GN | 10   | 1963100000 |
| IE-CR-IP20-RJ45-FH-GY | 10   | 1963060000 |
| IE-CR-IP20-RJ45-FH-WH | 10   | 1963050000 |
| IE-CR-IP20-RJ45-FH-YE | 10   | 1963090000 |

|          |   |            |
|----------|---|------------|
| PWZ RJ45 | 1 | 1118040000 |
|----------|---|------------|

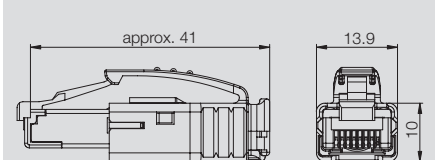
## RJ45 plug

- Cat.6
- With kink prevention
- With protective mechanism for locking lever

## Crimp / housing 1-part



## Crimp / housing 2-part



## Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, solid, min. / max.         |
| Wire cross-section, solid, min. / max.         |
| Insulation cross-section, max.                 |
| Sheath diameter, min. / max.                   |
| Shielding                                      |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Bending protection sleeve material             |
| Material insulator                             |
| Contact material / Contact surface             |
| Shielding material                             |
| Cable pull-out force, min.                     |
| Contact resistance                             |
| Insulation resistance                          |
| Dielectric strength, contact / contact         |
| Dielectric strength, contact / shield          |
| Current-carrying capacity at 50 °C             |

## Note

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 20                                                          |
| 0.46 mm / 0.61 mm                                              |
| AWG 27 / AWG 24                                                |
| 0.36 mm / 0.51 mm                                              |
| AWG 27 / AWG 24                                                |
| 1.02 mm                                                        |
| 6.2 mm / 7.1 mm                                                |
| 360° all-round enclosure                                       |
| 750                                                            |
| -40 °C...+70 °C                                                |
| IEC 60603-7-51                                                 |
| Polyamide PA6, UL94-V0                                         |
| PC UL 94 V-0                                                   |
| Phosphor bronze / gold-plated                                  |
| 0.5 mm brass, 2 µm nickel                                      |
| 89 N                                                           |
| ≤ 20 mΩ                                                        |
| 500 MΩ                                                         |
| ≤ 1000 V DC                                                    |
| ≤ 1500 V DC                                                    |
| 1 A                                                            |

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 20                                                          |
| 0.46 mm / 0.61 mm                                              |
| AWG 27 / AWG 24                                                |
| 0.36 mm / 0.51 mm                                              |
| AWG 27 / AWG 24                                                |
| 1.05 mm                                                        |
| 5 mm / 7.3 mm                                                  |
| 360° all-round enclosure                                       |
| 750                                                            |
| -40 °C...+70 °C                                                |
| IEC 60603-7-51                                                 |
| Polycarbonate PC, UL94 V-0                                     |
| PC UL 94 V-0                                                   |
| Phosphor bronze / gold-plated                                  |
| 0.5 mm brass, 2 µm nickel                                      |
| 89 N                                                           |
| ≤ 20 mΩ                                                        |
| 500 MΩ                                                         |
| ≤ 1000 V DC                                                    |
| ≤ 1500 V DC                                                    |
| 1 A                                                            |

## Ordering data

| Plug                               |  |
|------------------------------------|--|
| with kink prevention; 5,5 - 6,2 mm |  |
| with kink prevention; 6,2 - 7,1 mm |  |
| with kink prevention sleeve, black |  |
| without kink prevention sleeve     |  |

## Note

| Type   | Qty. | Order No.  |
|--------|------|------------|
| IE-P63 | 10   | 8813110000 |
| IE-P70 | 10   | 8813120000 |

| Type             | Qty. | Order No.  |
|------------------|------|------------|
| IE-PS-RJ45-TH-BK | 10   | 1963590000 |
| IE-PM-RJ45-TH    | 100  | 1963580000 |

## Accessories

| Kink prevention sleeve |  |
|------------------------|--|
| blue                   |  |
| orange                 |  |
| black                  |  |
| green                  |  |
| grey                   |  |
| white                  |  |
| yellow                 |  |



## Tools



Crimping tool

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| TT 8 RS MP 8 | 1    | 9202800000 |

| Type             | Qty. | Order No.  |
|------------------|------|------------|
| IE-PH-RJ45-TH-BU | 10   | 1962470000 |
| IE-PH-RJ45-TH-OG | 10   | 1962450000 |
| IE-PH-RJ45-TH-BK | 10   | 1962500000 |
| IE-PH-RJ45-TH-GN | 10   | 1962490000 |
| IE-PH-RJ45-TH-GY | 10   | 1962440000 |
| IE-PH-RJ45-TH-WH | 10   | 1962430000 |
| IE-PH-RJ45-TH-YE | 10   | 1962480000 |
| TT 8 RS MP 8     | 1    | 9202800000 |

## IP20 plug-in connector

## FO connector

- IP 20

## SC-RJ



## Technical data

|                                                |
|------------------------------------------------|
| Degree of protection                           |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Insertion loss (attenuation)                   |
| Return loss (attenuation)                      |
| Individual wire diameter, min. / max.          |
| Crimp barrel material                          |
| Pressure spring material                       |
| Ferrule material                               |
| Dust protection cap material                   |
| Bending protection sleeve material             |
| Cable pull-out force, min.                     |
| Housing main material                          |
| Housing material, insert                       |
| Humidity                                       |
| Sheath diameter, min. / max.                   |

## Note

|                         |
|-------------------------|
| IP 20                   |
| 1000                    |
| -20 °C...+80 °C         |
| IEC 61754-24            |
| ≤ 0.5 dB                |
| ≥ 40 dB                 |
| 0.6 mm...1.4 mm         |
| Copper, nickel-plated   |
| Stainless steel         |
| Zirconia, Hole 125.5 µm |
| TPE                     |
| TPE                     |
| 100 N                   |
| PC UL 94 V0             |
| Zinc diecast            |
| 0...93 % rel. humidity  |
| 2.8 mm / 3 mm           |

## Ordering data

|  |            |
|--|------------|
|  | Singlemode |
|  | Multimode  |
|  | POF        |

## Note

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-PS-SCRJ1-SM  | 10   | 1206740000 |
| IE-PS-SCRJ1-MM  | 10   | 1206730000 |
| IE-PS-SCRJ1-POF | 10   | 1206720000 |

## Accessories

| Tools               |
|---------------------|
| Crimping pliers POF |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| HTX-IE-POF | 1    | 1208870000 |

FO connector

- IP 20

SC Duplex



LC Duplex



Technical data

|                                                |
|------------------------------------------------|
| Degree of protection                           |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Insertion loss (attenuation)                   |
| Return loss (attenuation)                      |
| Individual wire diameter, min. / max.          |
| Crimp barrel material                          |
| Pressure spring material                       |
| Ferrule material                               |
| Dust protection cap material                   |
| Bending protection sleeve material             |
| Cable pull-out force, min.                     |
| Housing main material                          |
| Housing material, insert                       |
| Humidity                                       |
| Sheath diameter, min. / max.                   |

Note

|                        |
|------------------------|
| IP 20                  |
| 1000                   |
| -40 °C...+70 °C        |
| IEC 61754-4            |
| ≤ 0.4 dB               |
| ≥ 30 dB                |
| 0.6 mm...1.4 mm        |
| Copper, nickel-plated  |
| Stainless steel        |
| Zirconia, Hole 127 µm  |
| TPE                    |
| TPE                    |
| 100 N                  |
| PC UL 94 V0            |
| Zinc diecast           |
| 0...93 % rel. humidity |
| 2.8 mm / 3 mm          |

|                        |
|------------------------|
| IP 20                  |
| 1000                   |
| -40 °C...+70 °C        |
| IEC 61754-20           |
| ≤ 0.4 dB               |
| ≥ 30 dB                |
| 0.6 mm...1.4 mm        |
| Copper, nickel-plated  |
| Stainless steel        |
| Zirconia, Hole 127 µm  |
| TPE                    |
| TPE                    |
| 100 N                  |
| PC UL 94 V0            |
| Zinc diecast           |
| 0...93 % rel. humidity |
| 2.8 mm / 3 mm          |

Ordering data

|            |
|------------|
| Singlemode |
| Multimode  |

Note

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-PS-SCD-SM | 10   | 1964410000 |
| IE-PS-SCD-MM | 10   | 1964480000 |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-PS-LCD-SM | 10   | 1962980000 |
| IE-PS-LCD-MM | 10   | 1962970000 |

Accessories

|                              |
|------------------------------|
| Fibre-optic plug clip        |
| SC duplex, multi-mode, beige |



| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-PB-SCD-MM | 10   | 1962900000 |

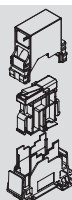
| Type | Qty. | Order No. |
|------|------|-----------|
|------|------|-----------|

## IP20 mounting rail outlets

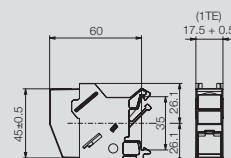
## Coupling RJ45

- Cat.6<sub>A</sub>
- IP 20
- TS35

## Outlet direction straight



## Outlet direction diagonal



## Technical data

Category  
Degree of protection  
Housing main material  
Colour  
Type of mounting  
Plugging cycles  
Configuration

Ambient temperature (operational), min. / max.  
Humidity  
Shock resistance acc. to IEC 60512-4  
Vibration resistance acc. to IEC 60512-4  
Housing material, insert  
Contact material / Contact surface  
Connector standard

## Electrical properties

PoE+  
Contact resistance  
Current-carrying capacity at 50 °C  
Dielectric strength, contact / contact  
Dielectric strength, contact / shield  
Insulation resistance

## Note

Cat.6<sub>A</sub> / Class E<sub>A</sub> (ISO/IEC 11801 2010)  
IP 20  
PA UL 94 V0  
light grey  
TS 35  
750  
Switchable voltage connection from module / coupling to mounting rail  
-25 °C...+70 °C  
0...93 % rel. humidity  
250 ms<sup>-2</sup>  
50 ms<sup>-2</sup> sinusoidal (9 – 500 Hz)  
Zinc diecast  
Spring steel, Ni 1.2 µm / AU ≥ 0.8 µm  
IEC 60603-7-51

conforming to IEEE 802.3af

≤ 20 mΩ

1 A

≥ 1000 V DC

≥ 1500 V DC

500 MΩ

Cat.6 (ISO/IEC 11801)  
IP 20  
PA 66, UL 94: V-0  
light grey  
TS 35  
750  
Inspection window for labelling  
1 TE pitch dimension acc. to DIN 43880, insta-compatible

IEC 60603-7-5

≤ 20 mΩ

1 A

≥ 1000 V DC

≥ 1500 V DC

500 MΩ

## Ordering data

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-TO-RJ45-C | 10   | 8946920000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-XM-RJ45/RJ45 | 1    | 8879050000 |

## Note

## Accessories

| Labels |                 |
|--------|-----------------|
|        | 9*11 mm, blue   |
|        | 9*11 mm, green  |
|        | 9*11 mm, grey   |
|        | 9*11 mm, orange |
|        | 9*11 mm, white  |
|        | 9*11 mm, yellow |



## Markers

9\*11 mm, white  
Marking tag

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| LM MT DIN A5 9/11 BL | 10   | 1964100000 |
| LM MT DIN A5 9/11 GN | 10   | 1964120000 |
| LM MT DIN A5 9/11 GR | 10   | 1964080000 |
| LM MT DIN A5 9/11 OR | 10   | 1964090000 |
| LM MT DIN A5 9/11 WS | 10   | 1964070000 |
| LM MT DIN A5 9/11 GE | 10   | 1964110000 |

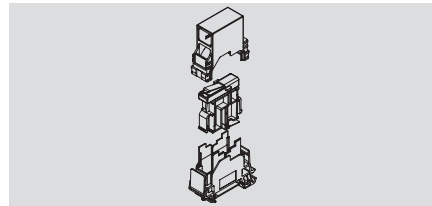
|                      |     |            |
|----------------------|-----|------------|
| ESG 9/11K MC NEUTRAL | 200 | 1857440000 |
|----------------------|-----|------------|

| Type  | Qty. | Order No.  |
|-------|------|------------|
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
|       |      |            |
| IE-DM | 50   | 8813500000 |

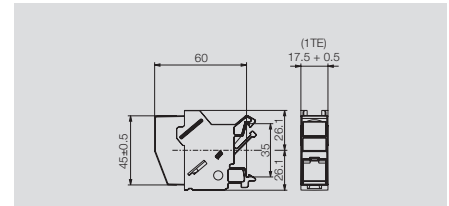
## Module RJ45

- Cat.6<sub>A</sub>
- IP 20
- TS35

## Outlet direction straight



## Outlet direction diagonal



## Technical data

Category  
Degree of protection  
Housing main material  
Colour  
Type of mounting  
Plugging cycles  
Configuration

Ambient temperature (operational), min. / max.  
Connector standard

## Electrical properties

PoE+  
Contact resistance  
Current-carrying capacity at 50 °C  
Dielectric strength, contact / contact  
Dielectric strength, contact / shield  
Insulation resistance  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.

## Note

Cat.6<sub>A</sub> / Class E<sub>A</sub> (ISO/IEC 11801 2010)  
IP 20  
PA UL 94 V0  
light grey  
TS 35  
750  
Switchable voltage connection from module / coupling to mounting rail  
-25 °C...+70 °C  
IEC 60603-7-51

conforming to IEEE 802.3af  
≤ 20 mΩ  
1 A  
≥ 1000 V DC  
≥ 1500 V DC  
500 MΩ  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm

Cat.6 (ISO/IEC 11801)  
IP 20  
PA 66, UL 94: V-0  
light grey  
TS 35  
750  
Inspection window for labelling  
1 TE pitch dimension acc. to DIN 43880, insta-compatible  
IEC 60603-7-5

≤ 20 mΩ  
1 A  
≥ 1000 V DC  
≥ 1500 V DC  
500 MΩ  
AWG 26 / AWG 26  
0.48 mm<sup>2</sup> / 0.48 mm<sup>2</sup>  
AWG 24 / AWG 22  
0.4 mm<sup>2</sup> / 0.64 mm<sup>2</sup>

## Ordering data

Outlet RJ45 A-coded  
Outlet RJ45 B-coded  
Outlet RJ45 PROFINET-coded

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-TO-RJ45-FJ-A | 10   | 8946930000 |
| IE-TO-RJ45-FJ-B | 10   | 8946940000 |
| IE-TO-RJ45-FJ-P | 10   | 8946950000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-XM-RJ45/DC   | 1    | 8808360000 |
| IE-XM-RJ45/DC-B | 1    | 8891980000 |

## Note

## Accessories

## Labels

9\*11 mm, blue  
9\*11 mm, green  
9\*11 mm, grey  
9\*11 mm, orange  
9\*11 mm, white  
9\*11 mm, yellow



## Markers

9\*11 mm, white  
Marking tag

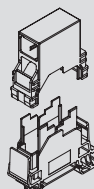
| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| LM MT DIN A5 9/11 BL | 10   | 1964100000 |
| LM MT DIN A5 9/11 GN | 10   | 1964120000 |
| LM MT DIN A5 9/11 GR | 10   | 1964080000 |
| LM MT DIN A5 9/11 OR | 10   | 1964090000 |
| LM MT DIN A5 9/11 WS | 10   | 1964070000 |
| LM MT DIN A5 9/11 GE | 10   | 1964110000 |
| ESG 9/11K MC NEUTRAL | 200  | 1857440000 |

| Type  | Qty. | Order No.  |
|-------|------|------------|
| IE-DM | 50   | 8813500000 |

## IP20 mounting rail outlets

## Coupling USB

## Outlet direction straight



## Technical data

Degree of protection  
Housing main material  
Colour  
Type of mounting  
Ambient temperature (operational), min. / max.  
Connector standard  
Connection 1 / 2

IP 20  
PA UL 94 V0  
light grey  
TS 35  
-25 °C...+70 °C  
IEC 61076-3-107  
USB A / USB A

## Note

## Ordering data

## USB

| Type      | Qty. | Order No.  |
|-----------|------|------------|
| IE-TO-USB | 10   | 8946960000 |

## Note

## Accessories

## Labels



9\*11 mm, blue  
9\*11 mm, green  
9\*11 mm, grey  
9\*11 mm, orange  
9\*11 mm, white  
9\*11 mm, yellow

## Markers

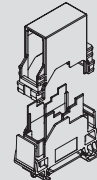
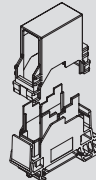
9\*11 mm, white

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| LM MT DIN A5 9/11 BL | 10   | 1964100000 |
| LM MT DIN A5 9/11 GN | 10   | 1964120000 |
| LM MT DIN A5 9/11 GR | 10   | 1964080000 |
| LM MT DIN A5 9/11 OR | 10   | 1964090000 |
| LM MT DIN A5 9/11 WS | 10   | 1964070000 |
| LM MT DIN A5 9/11 GE | 10   | 1964110000 |
| ESG 9/11K MC NEUTRAL | 200  | 1857440000 |

## Coupling fibre-optic

## SC duplex

## SC-RJ



## Technical data

Degree of protection  
Housing main material  
Colour  
Type of mounting  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

## Note

IP 20  
PA UL 94 V0  
light grey  
TS 35  
1000  
-25 °C...+70 °C  
IEC 61754-4

IP 20  
PA UL 94 V0  
light grey  
TS 35  
1000  
-25 °C...+70 °C  
IEC 61754-24

## Ordering data

## Fibre-optic

Singlemode  
Multimode/POF

## Note

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-TO-SCD-SM | 10   | 8946980000 |
| IE-TO-SCD-MM | 10   | 8946970000 |

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-TO-SCRJ-SM | 10   | 8947000000 |
| IE-TO-SCRJ-MM | 10   | 8946990000 |

## Accessories

## Labels



9\*11 mm, blue  
9\*11 mm, green  
9\*11 mm, grey  
9\*11 mm, orange  
9\*11 mm, white  
9\*11 mm, yellow

## Markers

9\*11 mm, white

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| LM MT DIN A5 9/11 BL | 10   | 1964100000 |
| LM MT DIN A5 9/11 GN | 10   | 1964120000 |
| LM MT DIN A5 9/11 GR | 10   | 1964080000 |
| LM MT DIN A5 9/11 OR | 10   | 1964090000 |
| LM MT DIN A5 9/11 WS | 10   | 1964070000 |
| LM MT DIN A5 9/11 GE | 10   | 1964110000 |
| ESG 9/11K MC NEUTRAL | 200  | 1857440000 |

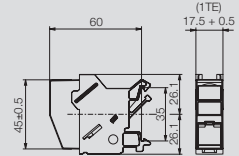
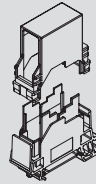
| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| LM MT DIN A5 9/11 BL | 10   | 1964100000 |
| LM MT DIN A5 9/11 GN | 10   | 1964120000 |
| LM MT DIN A5 9/11 GR | 10   | 1964080000 |
| LM MT DIN A5 9/11 OR | 10   | 1964090000 |
| LM MT DIN A5 9/11 WS | 10   | 1964070000 |
| LM MT DIN A5 9/11 GE | 10   | 1964110000 |
| ESG 9/11K MC NEUTRAL | 200  | 1857440000 |

## IP20 mounting rail outlets

## Coupling fibre-optic

## LC Duplex

## ST



## Technical data

Degree of protection  
Housing main material  
Colour  
Type of mounting  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

## Note

IP 20  
PA UL 94 V0  
light grey  
TS 35  
1000  
-25 °C...+70 °C  
IEC 61754-20

IP 20  
PA 66, UL 94: V-0  
light grey  
TS 35  
750  
IEC 61754-2

## Ordering data

Singlemode  
Multimode

## Note

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-TO-LCD-SM | 10   | 8947020000 |
| IE-TO-LCD-MM | 10   | 8947010000 |

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-XM-ST/ST | 1    | 8808340000 |

## Accessories

## Labels



9\*11 mm, blue  
9\*11 mm, green  
9\*11 mm, grey  
9\*11 mm, orange  
9\*11 mm, white  
9\*11 mm, yellow

## Markers

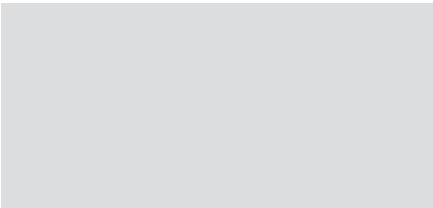
Marking tag  
9\*11 mm, white

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| LM MT DIN A5 9/11 BL | 10   | 1964100000 |
| LM MT DIN A5 9/11 GN | 10   | 1964120000 |
| LM MT DIN A5 9/11 GR | 10   | 1964080000 |
| LM MT DIN A5 9/11 OR | 10   | 1964090000 |
| LM MT DIN A5 9/11 WS | 10   | 1964070000 |
| LM MT DIN A5 9/11 GE | 10   | 1964110000 |
| ESG 9/11K MC NEUTRAL | 200  | 1857440000 |

| Type  | Qty. | Order No.  |
|-------|------|------------|
| IE-DM | 50   | 8813500000 |

RJ45

- Cat.6<sub>A</sub>
- IP 20



Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Housing main material                          |
| Colour                                         |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Note                                           |

Ordering data

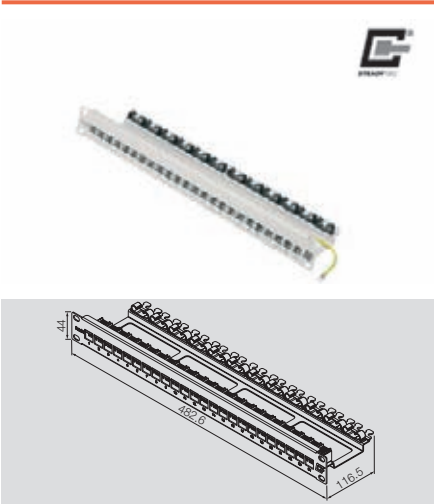
|                                        |
|----------------------------------------|
| 19" Patch Panel                        |
| with 24 RJ45 couplings                 |
| with 24 RJ45 modules A                 |
| with 24 RJ45 modules B                 |
| with 24 RJ45 adapters, without inserts |
| Note                                   |

Accessories

|                      |
|----------------------|
| Flange insert        |
| RJ45 EIA/TIA 568 A   |
| RJ45 EIA/TIA 568 B   |
| RJ45 PROFINET        |
| USB coupling, type A |



RJ45



|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 20                                                          |
| Powder-coated steel sheet                                      |
| light grey                                                     |
| 750                                                            |
| -40 °C...+70 °C                                                |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-PPA19-24P-RJ45-C    | 1    | 1049930000 |
| IE-PPA19-24P-RJ45-FJ-A | 1    | 1049910000 |
| IE-PPA19-24P-RJ45-FJ-B | 1    | 1049920000 |
| IE-PPA19-24P           | 1    | 1049270000 |

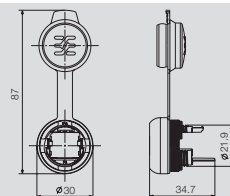
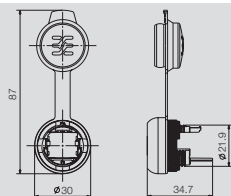
| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |
| IE-BI-USB-A     | 10   | 1019570000 |

## IP 65 FrontCom® Micro service interface

## FrontCom® Micro RJ45

## Module

## Coupling



## Technical data

Category  
Degree of protection  
Housing main material  
Colour  
Shielding  
Type of mounting  
Plugging cycles  
Connector standard  
Connection 1 / 2  
Dust protection cap material

## Note

Cat.6<sub>A</sub> / Class E<sub>A</sub> (ISO/IEC 11801 2010)  
IP 65 according to DIN EN 60529  
PA UL 94 V0  
black  
360° shield contact  
Cabinet, Distribution box  
750  
IEC 60603-7-51  
RJ45 / IDC  
EPDM

Cat.6<sub>A</sub> / Class E<sub>A</sub> (ISO/IEC 11801 2010)  
IP 65 according to DIN EN 60529  
PA UL 94 V0  
black  
360° shield contact  
Cabinet, Distribution box  
750  
IEC 60603-7-51  
RJ45 / RJ45  
EPDM

## Ordering data

PROFINET module  
TIA-A module  
TIA-B module  
Coupling

| Type             | Qty. | Order No.  |
|------------------|------|------------|
| IE-FCM-RJ45-FJ-P | 10   | 1018830000 |
| IE-FCM-RJ45-FJ-A | 10   | 1018810000 |
| IE-FCM-RJ45-FJ-B | 10   | 1018820000 |

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-FCM-RJ45-C | 10   | 1018790000 |

## Note

## Accessories

## Fixing tool



## Markers



SwitchMark markers, white  
SwitchMark holder

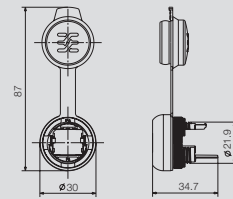
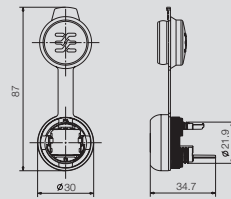
| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| IE-FISP-V4          | 2    | 9204370000 |
| SM 27/18 NEUTRAL WS | 80   | 1699860000 |
| SM-H 27/18 SW       | 25   | 1716630000 |

| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| IE-FISP-V4          | 2    | 9204370000 |
| SM 27/18 NEUTRAL WS | 80   | 1699860000 |
| SM-H 27/18 SW       | 25   | 1716630000 |

## FrontCom® Micro USB

## Coupling AA

## Coupling AB



## Technical data

Operating temperature  
Degree of protection  
Housing main material  
Colour  
Shielding  
Type of mounting  
Connector standard  
Connection 1 / 2  
Dust protection cap material

-40 °C...+70 °C  
IP 65 according to DIN EN 60529  
PA UL 94 V0  
black  
360° shield contact  
Cabinet, Distribution box  
IEC 61076-3-107  
USB A / USB A  
EPDM

-40 °C...+70 °C  
IP 65 according to DIN EN 60529  
PA UL 94 V0  
black  
360° shield contact  
Cabinet, Distribution box  
IEC 61076-3-107  
USB A / USB B  
EPDM

## Note

## Ordering data

## Note

## Accessories

## Fixing tool



## Markers



SwitchMark markers, white  
SwitchMark holder

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-FCM-USB-A | 10   | 1018840000 |

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-FCM-USB-AB | 10   | 1222550000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-FISP-V4 | 2    | 9204370000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-FISP-V4 | 2    | 9204370000 |

|                     |    |            |
|---------------------|----|------------|
| SM 27/18 NEUTRAL WS | 80 | 1699860000 |
| SM-H 27/18 SW       | 25 | 1716630000 |

|                     |    |            |
|---------------------|----|------------|
| SM 27/18 NEUTRAL WS | 80 | 1699860000 |
| SM-H 27/18 SW       | 25 | 1716630000 |

## IP67 plug-in connector

## Plug PushPull V14 - RJ45

- 8-wire, on-site-assembled RJ45 plug with colour-coding on plug

## With kink prevention

## Tear-off flags with TIA-A/-B/PROFINET



## Without kink prevention

## PROFINET printing



## Technical data

|                                                |
|------------------------------------------------|
| Degree of protection                           |
| Housing main material                          |
| Sheath diameter, min. / max.                   |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, solid, min. / max.         |
| Wire cross-section, solid, min. / max.         |

## Note

|                                            |
|--------------------------------------------|
| IP 67                                      |
| Zinc diecast                               |
| 5 mm / 10 mm                               |
| 750                                        |
| -40 °C...+70 °C                            |
| IEC 61076-3-117 Var. 14, IEC 60603-7-51    |
| AWG 26 / AWG 22                            |
| 0.48 mm / 0.76 mm                          |
| AWG 24 / AWG 22                            |
| 0.4 mm <sup>2</sup> / 0.64 mm <sup>2</sup> |

|                                            |
|--------------------------------------------|
| IP 67                                      |
| Zinc diecast                               |
| 5 mm / 10 mm                               |
| 750                                        |
| -40 °C...+70 °C                            |
| IEC 61076-3-117 Var. 14, IEC 60603-7-51    |
| AWG 26 / AWG 22                            |
| 0.48 mm / 0.76 mm                          |
| AWG 24 / AWG 22                            |
| 0.4 mm <sup>2</sup> / 0.64 mm <sup>2</sup> |

## Ordering data - Sets

RJ45 tool-free

## Note

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PS-V14M-RJ45-FH-BP | 10   | 1012090000 |

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-PS-V14M-RJ45-FH-P | 10   | 1012170000 |

## Ordering data - Empty housings

## Note

| Type             | Qty. | Order No.  |
|------------------|------|------------|
| IE-PH-V14M-RJ-BP | 10   | 1011570000 |

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V14M-RJ | 10   | 1011560000 |

## Accessories

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

## Dust protection cap



| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |
| IE-PP-V14P         | 10   | 1058280000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |
| IE-PP-V14P         | 10   | 1058280000 |

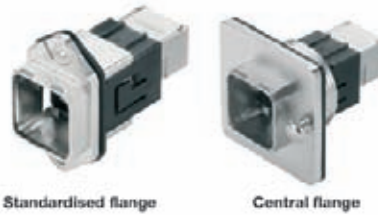
Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

## Flange PushPull V14 - RJ45

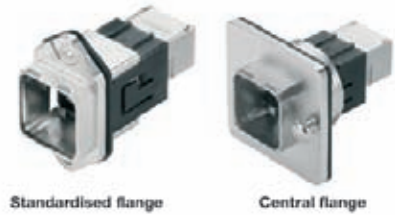
## Module

## Coupling



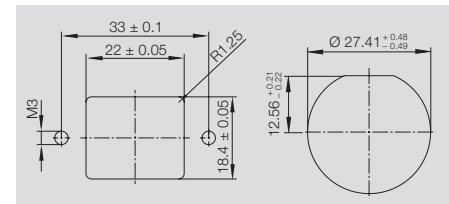
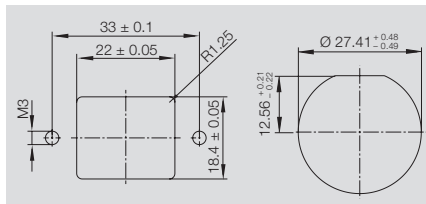
Standardised flange

Central flange



Standardised flange

Central flange



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.

## Note

IP 67  
Zinc diecast  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
IEC 61076-3-117 Var. 14, IEC 60603-7-51  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm

IP 67  
Zinc diecast  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
IEC 61076-3-117 Var. 14, IEC 60603-7-51

## Ordering data - Sets

Standardised flange, PROFINET  
Standardised flange  
Central flange TIA-A  
Central flange

## Note

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-BSS-V14M-RJ45-FJ-P | 10   | 1085260000 |
| IE-BSC-V14M-RJ45-FJ-A | 10   | 1058270000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-BSS-V14M-RJ45-C | 10   | 1012310000 |
| IE-BSC-V14M-RJ45-C | 10   | 1058250000 |

## Ordering data - Empty housings

Central flange  
Device flange  
Standardised flange

## Note

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BHC-V14M-RJA | 10   | 1047950000 |
| IE-BHD-V14M     | 10   | 1047940000 |
| IE-BHS-V14M-RJA | 10   | 1011540000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BHC-V14M-RJA | 10   | 1047950000 |
| IE-BHD-V14M     | 10   | 1047940000 |
| IE-BHS-V14M-RJA | 10   | 1011540000 |

## Accessories

## Dust protection cap



| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V14P | 10   | 1058310000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V14P | 10   | 1058310000 |

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

## Plug PushPull V14 - hybrid

## Without kink prevention



## Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Housing main material                          |
| Sheath diameter, min. / max.                   |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connection 1 / 2                               |
| Connector standard                             |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Rated current                                  |
| Volume resistance                              |

## Note

|                         |
|-------------------------|
| Cat.5 (ISO/IEC 11801)   |
| IP 67                   |
| Zinc diecast            |
| 5 mm / 10 mm            |
| 500                     |
| -40 °C...+70 °C         |
| Hybrid (Q10) / Crimp    |
| IEC 61076-3-117 Var. 14 |
| AWG 27 / AWG 20         |
| 0.08 mm² / 0.75 mm²     |
| 3 A per contact         |
| < 10 mΩ                 |

## Ordering data - Sets

## Note

| Type | Qty. | Order No. |
|------|------|-----------|
|------|------|-----------|

|                    |    |            |
|--------------------|----|------------|
| IE-PS-V14M-HYB-10P | 10 | 1072910000 |
|--------------------|----|------------|

Order contacts separately

## Ordering data - Empty housings

## Note

| Type | Qty. | Order No. |
|------|------|-----------|
|------|------|-----------|

|               |    |            |
|---------------|----|------------|
| IE-PH-V14M-RJ | 10 | 1011560000 |
|---------------|----|------------|

## Accessories

## Crimp contacts



|                |
|----------------|
| 0,33...0,5 mm² |
| 0,75 mm²       |
| 0,08...0,2 mm² |

## Crimping tool



## Cable

Hybrid cable

## Dust protection cap



| Type | Qty. | Order No. |
|------|------|-----------|
|------|------|-----------|

|                       |     |            |
|-----------------------|-----|------------|
| IE-PIC-HYB-S-0,5-300  | 300 | 1096180000 |
| IE-PIC-HYB-S-0,75-300 | 300 | 1068950000 |
| IE-PIC-HYB-S-0,2-300  | 300 | 1135150000 |

|         |   |            |
|---------|---|------------|
| HTF HYB | 1 | 1119580000 |
|---------|---|------------|

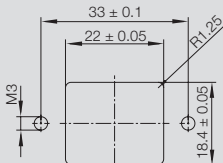
|              |   |            |
|--------------|---|------------|
| IE-C5DHAG-MW | 1 | 1172250000 |
|--------------|---|------------|

|            |    |            |
|------------|----|------------|
| IE-PP-V14P | 10 | 1058280000 |
|------------|----|------------|

Plug inserts can also be ordered separately. Refer to Inserts.

Flange PushPull V14 - hybrid

Standardised flange



Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Housing main material                          |
| Sheath diameter, min. / max.                   |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connection 1 / 2                               |
| Connector standard                             |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Rated current                                  |
| Volume resistance                              |
| Note                                           |

|                         |
|-------------------------|
| Cat.5 (ISO/IEC 11801)   |
| IP 67                   |
| Zinc diecast            |
| 5 mm / 10 mm            |
| 500                     |
| -40 °C...+70 °C         |
| Hybrid (Q10) / Crimp    |
| IEC 61076-3-117 Var. 14 |
| AWG 27 / AWG 20         |
| 0.08 mm² / 0.75 mm²     |
| 3 A per contact         |
| < 10 mΩ                 |

Ordering data - Sets

|      |
|------|
| Note |
|------|

| Type                      | Qty. | Order No.  |
|---------------------------|------|------------|
| IE-BSS-V14M-HYB-10P-FJ    | 10   | 1072900000 |
| Order contacts separately |      |            |

Ordering data - Empty housings

|                     |
|---------------------|
| Standardised flange |
| Note                |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BHS-V14M-RJA | 10   | 1011540000 |

Accessories

|                     |                |
|---------------------|----------------|
| Crimp contacts      | 0,33...0,5 mm² |
|                     | 0,75 mm²       |
|                     | 0,08...0,2 mm² |
| Crimping tool       |                |
| Cable               | Hybrid cable   |
| Dust protection cap |                |

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-BIC-HYB-P-0,5-300  | 300  | 1096150000 |
| IE-BIC-HYB-P-0,75-300 | 300  | 1068970000 |
| IE-BIC-HYB-P-0,2-300  | 300  | 1135160000 |
| HTF HYB               | 1    | 1119580000 |
| IE-C5DHAG-MW          | 1    | 1172250000 |
| IE-BP-V14P            | 10   | 1058310000 |

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

## Plug PushPull V14 - fibre-optic

## With kink prevention

## Without kink prevention



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Insertion loss (attenuation)

## Note

IP 67  
Zinc diecast  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
IEC 61076-3-117 Var. 14

IP 67  
Zinc diecast  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
IEC 61076-3-117 Var. 14, IEC 61754-24  
1.5 dB

## Ordering data - Sets

POF

## Note

| Type | Qty. | Order No. |
|------|------|-----------|
|------|------|-----------|

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-PS-V14M-2SC-POF | 1    | 1191550000 |

## Ordering data - Empty housings

## Note

| Type             | Qty. | Order No.  |
|------------------|------|------------|
| IE-PH-V14M-FO-BP | 10   | 1058110000 |

Only empty housings; order inserts separately

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V14M-FO | 10   | 1058100000 |

## Accessories

## Inserts



Singlemode  
Multimode  
POF

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

## Dust protection cap



Plug housing protective cap

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| IE-PI-SCRJ-SM  | 10   | 1067390000 |
| IE-PI-SCRJ-MM  | 10   | 1067380000 |
| IE-PI-SCRJ-POF | 10   | 1067410000 |

|                    |    |            |
|--------------------|----|------------|
| IE-CR-IP67-WS20-BU | 10 | 1963020000 |
| IE-CR-IP67-WS20-OG | 10 | 1963010000 |
| IE-CR-IP67-WS20-GN | 10 | 1963040000 |
| IE-CR-IP67-WS20-GY | 10 | 1963000000 |
| IE-CR-IP67-WS20-WH | 10 | 1962990000 |
| IE-CR-IP67-WS20-YE | 10 | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| IE-PI-SCRJ-SM  | 10   | 1067390000 |
| IE-PI-SCRJ-MM  | 10   | 1067380000 |
| IE-PI-SCRJ-POF | 10   | 1067410000 |

|                    |    |            |
|--------------------|----|------------|
| IE-CR-IP67-WS20-BU | 10 | 1963020000 |
| IE-CR-IP67-WS20-OG | 10 | 1963010000 |
| IE-CR-IP67-WS20-GN | 10 | 1963040000 |
| IE-CR-IP67-WS20-GY | 10 | 1963000000 |
| IE-CR-IP67-WS20-WH | 10 | 1962990000 |
| IE-CR-IP67-WS20-YE | 10 | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

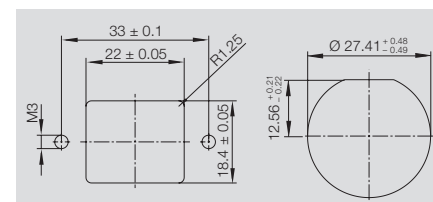
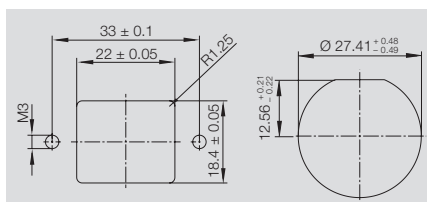
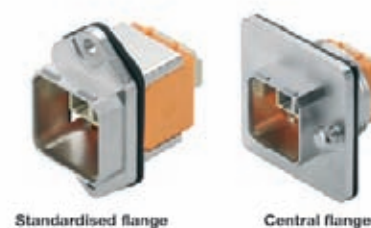
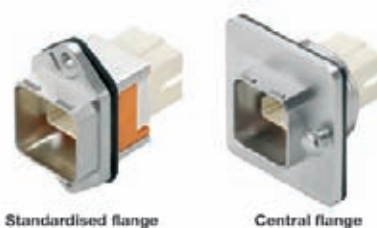
Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

## Flange PushPull V14 - fibre-optic

## SC-RJ

## LC Duplex



## Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Insertion loss (attenuation)  
Connector standard

## Note

IP 67  
Zinc diecast  
500  
-40 °C...+70 °C  
< 0.2 dB  
IEC 61076-3-117 Var. 14, IEC 61754-24

IP 67  
Zinc diecast  
500  
-40 °C...+70 °C  
< 0.2 dB  
IEC 61076-3-117 Var. 14, IEC 61754-20

## Ordering data - Sets

Central flange Singlemode  
Standardised flange Singlemode  
Central flange Multimode/POF  
Standardised flange Multimode/POF

## Note

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-BSC-V14M-SCRJ-SM-C | 10   | 1062600000 |
| IE-BSS-V14M-SCRJ-SM-C | 10   | 1058140000 |
| IE-BSC-V14M-SCRJ-MM-C | 10   | 1062590000 |
| IE-BSS-V14M-SCRJ-MM-C | 10   | 1058120000 |

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-BSC-V14M-LCD-SM-C | 10   | 1062620000 |
| IE-BSS-V14M-LCD-SM-C | 10   | 1058150000 |
| IE-BSC-V14M-LCD-MM-C | 10   | 1062610000 |
| IE-BSS-V14M-LCD-MM-C | 10   | 1058130000 |

## Ordering data - Empty housings

Device flange

## Note

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-BHD-V14M | 10   | 1047940000 |

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-BHD-V14M | 10   | 1047940000 |

## Accessories

## Dust protection cap



| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V14P | 10   | 1058310000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V14P | 10   | 1058310000 |

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

## Plug bayonet V1 metal - RJ45

## With kink prevention

## Without kink prevention



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.  
Connector standard

## Note

IP 67  
Zinc diecast  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
AWG 27 / AWG 24  
0.46 mm / 0.61 mm  
AWG 24 / AWG 22  
0.36 mm / 0.51 mm  
IEC 61076-3-106 Var. 1, IEC 60603-7-51

IP 67  
Zinc diecast  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
AWG 27 / AWG 24  
0.46 mm / 0.61 mm  
AWG 24 / AWG 22  
0.36 mm / 0.51 mm  
IEC 61076-3-106 Var. 1, IEC 60603-7-51

## Ordering data - Sets

RJ45 tool-free, AWG 26-22, TIA-A/-B/-PROFINET  
RJ45 Crimp, AWG 27-24

## Note

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PS-V01M-RJ45-FH-BP | 10   | 1963130000 |
| IE-PS-V01M-RJ45-TH-BP | 10   | 1963150000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-PS-V01M-RJ45-FH | 10   | 1963120000 |
| IE-PS-V01M-RJ45-TH | 10   | 1963140000 |

## Ordering data - Empty housings

## Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V01M-BP | 10   | 1962560000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V01M | 10   | 1962550000 |

## Accessories

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

## Dust protection cap



Plug housing protective cap

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

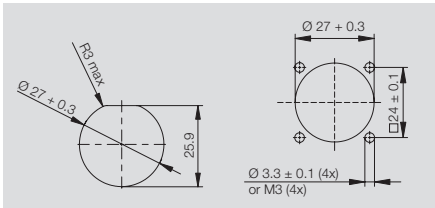
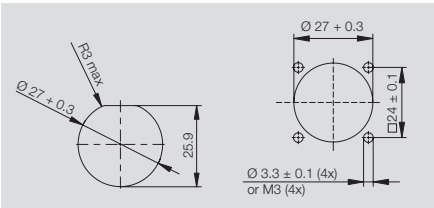
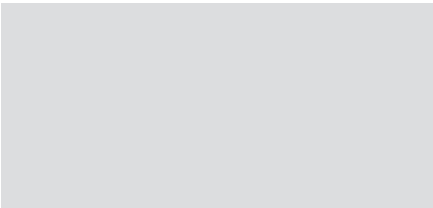
Flange bayonet V1 metal - RJ45

Module

TIA-A



Coupling



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.

Note

IP 67  
Zinc diecast  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 60603-7-51  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm

IP 67  
Zinc diecast  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 60603-7-51

Ordering data - Sets

Note

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-BS-V01M-RJ45-FJ-A | 10   | 1963480000 |

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-BS-V01M-RJ45-C | 10   | 1963470000 |

Ordering data - Empty housings

Note

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V01M | 10   | 1963540000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V01M | 10   | 1963540000 |

Accessories

Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V01P | 10   | 1965700000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V01P | 10   | 1965700000 |

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

Plug bayonet V1 metal -  
fibre-optic-SC

## With kink prevention



## Without kink prevention



## Technical data

|                                                |
|------------------------------------------------|
| Degree of protection                           |
| Housing main material                          |
| Sheath diameter, min. / max.                   |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Insertion loss (attenuation)                   |
| Return loss (attenuation)                      |

## Note

|                                                 |
|-------------------------------------------------|
| IP 67                                           |
| Zinc diecast                                    |
| 5 mm / 10 mm                                    |
| 500                                             |
| -40 °C...+70 °C                                 |
| IEC 61076-3-106 Var. 1, IEC 61754-24            |
| 0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF |
| 40 dB singlemode; 30 dB multimode               |

|                                                 |
|-------------------------------------------------|
| IP 67                                           |
| Zinc diecast                                    |
| 5 mm / 10 mm                                    |
| 500                                             |
| -40 °C...+70 °C                                 |
| IEC 61076-3-106 Var. 1, IEC 61754-24            |
| 0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF |
| 40 dB singlemode; 30 dB multimode               |

## Ordering data - Sets

|            |
|------------|
| Singlemode |
| Multimode  |
| POF        |

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PS-V01M-2SC-SM-BP  | 10   | 1963310000 |
| IE-PS-V01M-2SC-MM-BP  | 10   | 1963270000 |
| IE-PS-V01M-2SC-POF-BP | 10   | 1963290000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-PS-V01M-2SC-SM  | 10   | 1963300000 |
| IE-PS-V01M-2SC-MM  | 10   | 1963260000 |
| IE-PS-V01M-2SC-POF | 10   | 1963280000 |

## Note

## Ordering data - Empty housings

|               |
|---------------|
| IE-PH-V01M-BP |
|---------------|

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V01M-BP | 10   | 1962560000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V01M | 10   | 1962550000 |

## Note

## Accessories

| Colour coding |
|---------------|
| blue          |
| orange        |
| green         |
| grey          |
| white         |
| yellow        |



## Tools



POF tool set  
Fibre-optic tool case

## Dust protection cap



Plug housing protective cap

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|                 |   |            |
|-----------------|---|------------|
| TOOL SET IE-POF | 1 | 1208930000 |
| IE-CTC-SCST-GOF | 1 | 1032030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|                 |   |            |
|-----------------|---|------------|
| TOOL SET IE-POF | 1 | 1208930000 |
| IE-CTC-SCST-GOF | 1 | 1032030000 |

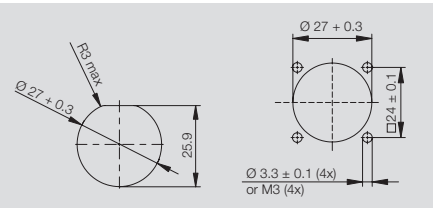
|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

Flange bayonet V1 metal -  
fibre-optic-SC

Standardised flange



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
Zinc diecast  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 61754-24

Note

Ordering data - Sets

Singlemode  
Multimode/POF

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-BS-V01M-SCRJ-SM | 10   | 1221020000 |
| IE-BS-V01M-SCRJ-MM | 10   | 1221010000 |

Note

Ordering data - Empty housings

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BHD-V01M-SCA | 10   | 1221030000 |

Note

Accessories

Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V01P | 10   | 1965700000 |

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

Plug bayonet V1 metal -  
fibre-optic-LC

## With kink prevention

## Without kink prevention



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Insertion loss (attenuation)  
Return loss (attenuation)

## Note

IP 67  
Zinc diecast  
5 mm / 10 mm  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 61754-20  
0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF  
40 dB Singlemode; 30 dB multimode

IP 67  
Zinc diecast  
5 mm / 10 mm  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 61754-20  
0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF  
40 dB singlemode; 30 dB multimode

## Ordering data - Sets

Singlemode  
Multimode

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-PS-V01M-2LC-SM-BP | 10   | 1963250000 |
| IE-PS-V01M-2LC-MM-BP | 10   | 1963230000 |

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-PS-V01M-2LC-SM | 10   | 1963240000 |
| IE-PS-V01M-2LC-MM | 10   | 1963220000 |

## Note

## Ordering data - Empty housings

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V01M-BP | 10   | 1962560000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V01M | 10   | 1962550000 |

## Note

## Accessories

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

## Tools



Fibre-optic tool case

## Dust protection cap



Plug housing protective cap

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-CTC-SCST-GOF | 1    | 1032030000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PP-V01P | 10   | 1965690000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-CTC-SCST-GOF | 1    | 1032030000 |

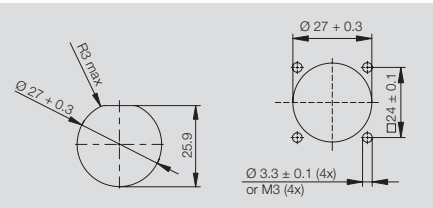
| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PP-V01P | 10   | 1965690000 |

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

Flange bayonet V1 metal -  
fibre-optic-LC

Standardised flange



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
Zinc diecast  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 61754-20

Note

Ordering data - Sets

Singlemode  
Multimode

| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| IE-BS-V01M-LCD-SM-C | 10   | 1963430000 |
| IE-BS-V01M-LCD-MM-C | 10   | 1964440000 |

Note

Ordering data - Empty housings

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V01M | 10   | 1963540000 |

Note

Accessories

Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V01P | 10   | 1965700000 |

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

## Plug bayonet V1 plastic - RJ45

## With kink prevention

## Without kink prevention



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.  
Connector standard

## Note

IP 67  
PA UL 94 V0  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm  
IEC 61076-3-106 Var. 1, IEC 60603-7-51

IP 67  
PA UL 94 V0  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm  
IEC 61076-3-106 Var. 1, IEC 60603-7-51

## Ordering data - Sets

RJ45 tool-free, AWG 26-22, TIA-A/-B/-PROFINET  
RJ45 Crimp, AWG 27-24

## Note

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PS-V01P-RJ45-FH-BP | 10   | 1012570000 |
| IE-PS-V01P-RJ45-TH-BP | 10   | 1012560000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-PS-V01P-RJ45-FH | 10   | 1012490000 |
| IE-PS-V01P-RJ45-TH | 10   | 1012470000 |

## Ordering data - Empty housings

## Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V01P-BP | 10   | 1012460000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V01P | 10   | 1012440000 |

## Accessories

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

## Dust protection cap



Plug housing protective cap

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V01P | 10 | 1965690000 |
|------------|----|------------|

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

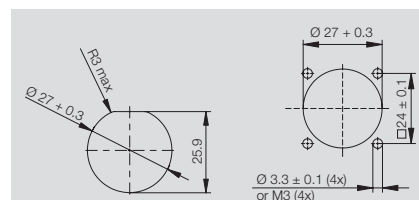
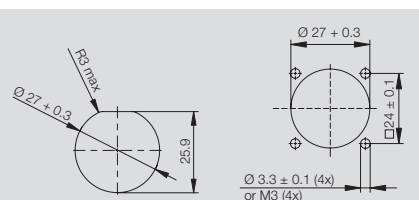
## Flange bayonet V1 plastic - RJ45

## Module

TIA-A



## Coupling



## Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.

## Note

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 60603-7-51  
AWG 26 / AWG 22  
0.48 mm<sup>2</sup> / 0.76 mm<sup>2</sup>  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1, IEC 60603-7-51

## Ordering data - Sets

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-BS-V01P-RJ45-FJ-A | 10   | 1012380000 |

## Note

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-BS-V01P-RJ45-C | 10   | 1012370000 |

## Ordering data - Empty housings

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V01P | 10   | 1016960000 |

## Note

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V01P | 10   | 1016960000 |

## Accessories

## Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V01P | 10   | 1965700000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V01P | 10   | 1965700000 |

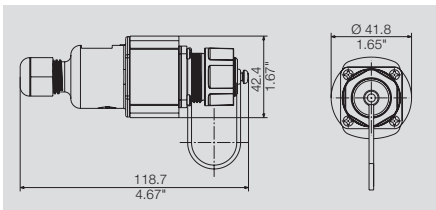
Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

IP67 plug-in connector

Cable coupling bayonet V1  
plastic - RJ45

Cable coupling



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1

Note

Ordering data

| Variant 1      |
|----------------|
| Cable coupling |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-CC-V01P | 10   | 1061820000 |

Note

RJ45 modules can be ordered separately

Accessories

| Flange insert      |
|--------------------|
| RJ45 EIA/TIA 568 A |
| RJ45 EIA/TIA 568 B |
| RJ45 PROFINET      |



| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |



## IP67 plug-in connector

## Plug PushPull V4 - RJ45

## With kink prevention



## Without kink prevention



## Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Housing main material                          |
| Sheath diameter, min. / max.                   |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, solid, min. / max.         |
| Wire cross-section, solid, min. / max.         |
| Connector standard                             |

## Note

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 67                                                          |
| PA UL 94 V0                                                    |
| 5 mm / 10 mm                                                   |
| 750                                                            |
| -40 °C...+70 °C                                                |
| AWG 27 / AWG 24                                                |
| 0.46 mm / 0.61 mm                                              |
| AWG 24 / AWG 22                                                |
| 0.36 mm / 0.51 mm                                              |
| IEC 61076-3-106 Var. 4, IEC 60603-7-51                         |

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 67                                                          |
| PA UL 94 V0                                                    |
| 5 mm / 10 mm                                                   |
| 750                                                            |
| -40 °C...+70 °C                                                |
| AWG 27 / AWG 24                                                |
| 0.46 mm / 0.61 mm                                              |
| AWG 24 / AWG 22                                                |
| 0.36 mm / 0.51 mm                                              |
| IEC 61076-3-106 Var. 4, IEC 60603-7-51                         |

## Ordering data - Sets

|                                               |
|-----------------------------------------------|
| RJ45 tool-free, AWG 26-22, TIA-A/-B/-PROFINET |
| RJ45 tool-free, AWG 26-22, TIA-B              |
| RJ45 Crimp, AWG 27-24                         |

## Note

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PS-V04P-RJ45-FH-BP | 10   | 1963170000 |
| IE-PS-V04P-RJ45-TH-BP | 10   | 1963190000 |

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-PS-V04P-RJ45-FH   | 10   | 1963160000 |
| IE-PS-V04P-RJ45-FH-B | 10   | 1271240000 |
| IE-PS-V04P-RJ45-TH   | 10   | 1963180000 |

## Ordering data - Empty housings

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V04P-BP | 10   | 1962530000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V04P | 10   | 1962520000 |

## Note

## Accessories

## Colour coding



|        |
|--------|
| blue   |
| orange |
| green  |
| grey   |
| white  |
| yellow |

## Dust protection cap



Plug housing protective cap

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V04P | 10 | 1963890000 |
|------------|----|------------|

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|            |    |            |
|------------|----|------------|
| IE-PP-V04P | 10 | 1963890000 |
|------------|----|------------|

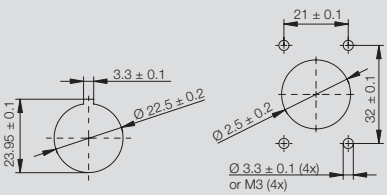
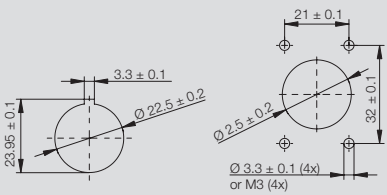
Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

Flange PushPull V4 - RJ45

Module

Coupling



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.

Note

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 60603-7-51  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 60603-7-51

Ordering data - Sets

RJ45 module TIA-B  
RJ45 module TIA-A  
Coupling

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-BS-V04P-RJ45-FJ-B | 10   | 1963730000 |
| IE-BS-V04P-RJ45-FJ-A | 10   | 1963500000 |

Note

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-BS-V04P-RJ45-C | 10   | 1963490000 |

Ordering data - Empty housings

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V04P | 10   | 1963520000 |

Note

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V04P | 10   | 1963520000 |

Accessories

Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V04P | 10   | 1963900000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V04P | 10   | 1963900000 |

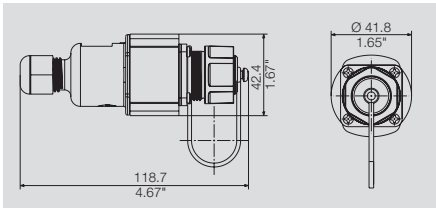
Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

IP67 plug-in connector

Cable coupling PushPull V4 - RJ45

Cable coupling



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4

Note

Ordering data

Cable coupling

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-CC-V04P | 10   | 1045960000 |

Note

RJ45 modules can be ordered separately

Accessories

Flange insert



RJ45 EIA/TIA 568 A  
RJ45 EIA/TIA 568 B  
RJ45 PROFINET

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

Plug inserts can also be ordered separately. Refer to Inserts.



## IP67 plug-in connector

## Plug PushPull V4 - fibre-optic-SC

## With kink prevention

## Without kink prevention



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Insertion loss (attenuation)  
Return loss (attenuation)

## Note

IP 67  
PA UL 94 V0  
5 mm / 10 mm  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 61754-24  
0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF  
40 dB singlemode; 30 dB multimode

IP 67  
PA UL 94 V0  
5 mm / 10 mm  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 61754-24  
0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF  
40 dB singlemode; 30 dB multimode

## Ordering data - Sets

Singlemode  
Multimode  
POF

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PS-V04P-2SC-SM-BP  | 10   | 1963410000 |
| IE-PS-V04P-2SC-MM-BP  | 10   | 1963370000 |
| IE-PS-V04P-2SC-POF-BP | 10   | 1963390000 |

## Note

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-PS-V04P-2SC-SM  | 10   | 1963400000 |
| IE-PS-V04P-2SC-MM  | 10   | 1963360000 |
| IE-PS-V04P-2SC-POF | 10   | 1963380000 |

## Ordering data - Empty housings

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V04P-BP | 10   | 1962530000 |

## Note

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V04P | 10   | 1962520000 |

## Accessories

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

## Tools



POF tool set  
Fibre-optic tool case

|                 |   |            |
|-----------------|---|------------|
| TOOL SET IE-POF | 1 | 1208930000 |
| IE-CTC-SCST-GOF | 1 | 1032030000 |

|                 |   |            |
|-----------------|---|------------|
| TOOL SET IE-POF | 1 | 1208930000 |
| IE-CTC-SCST-GOF | 1 | 1032030000 |

## Dust protection cap



Plug housing protective cap

|            |    |            |
|------------|----|------------|
| IE-PP-V04P | 10 | 1963890000 |
|------------|----|------------|

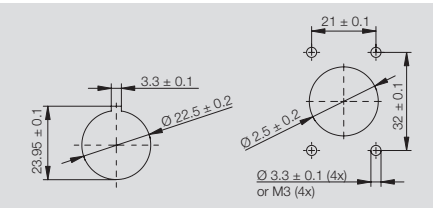
|            |    |            |
|------------|----|------------|
| IE-PP-V04P | 10 | 1963890000 |
|------------|----|------------|

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

Flange PushPull V4 - fibre-optic-SC

Standardised flange



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
PA UL 94 V0  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 61754-4, IEC 61754-24

Note

Ordering data - Sets

Singlemode  
Multimode/POF

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-BS-V04P-SCRJ2SC-SM-C | 10   | 1963420000 |
| IE-BS-V04P-SCRJ2SC-MM-C | 10   | 1964470000 |

Note

Ordering data - Empty housings

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V04P | 10   | 1963520000 |

Note

Accessories

Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V04P | 10   | 1963900000 |

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

## Plug PushPull V4 - fibre-optic-LC

## With kink prevention

## Without kink prevention



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Insertion loss (attenuation)  
Return loss (attenuation)

## Note

IP 67  
PA UL 94 V0  
5 mm / 10 mm  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 61754-20  
0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF  
40 dB singlemode; 30 dB multimode

IP 67  
PA UL 94 V0  
5 mm / 10 mm  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 61754-20  
0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF  
40 dB singlemode; 30 dB multimode

## Ordering data - Sets

Singlemode  
Multimode

## Note

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-PS-V04P-2LC-SM-BP | 10   | 1963350000 |
| IE-PS-V04P-2LC-MM-BP | 10   | 1963330000 |

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-PS-V04P-2LC-SM | 10   | 1963340000 |
| IE-PS-V04P-2LC-MM | 10   | 1963320000 |

## Ordering data - Empty housings

## Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PH-V04P-BP | 10   | 1962530000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V04P | 10   | 1962520000 |

## Accessories

## Colour coding



blue  
orange  
green  
grey  
white  
yellow

## Tools



Fibre-optic tool case

## Dust protection cap



Plug housing protective cap

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|                 |   |            |
|-----------------|---|------------|
| IE-CTC-SCST-GOF | 1 | 1032030000 |
|-----------------|---|------------|

|            |    |            |
|------------|----|------------|
| IE-PP-V04P | 10 | 1963890000 |
|------------|----|------------|

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

|                 |   |            |
|-----------------|---|------------|
| IE-CTC-SCST-GOF | 1 | 1032030000 |
|-----------------|---|------------|

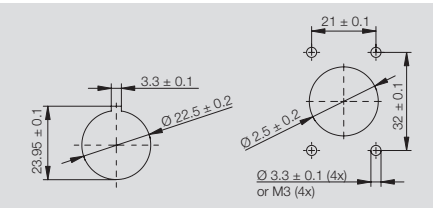
|            |    |            |
|------------|----|------------|
| IE-PP-V04P | 10 | 1963890000 |
|------------|----|------------|

Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

Flange PushPull V4 - fibre-optic-LC

Standardised flange



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
PA UL 94 V0  
500  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 4, IEC 61754-20

Note

Ordering data - Sets

Singlemode  
Multimode

| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| IE-BS-V04P-LCD-SM-C | 10   | 1963450000 |
| IE-BS-V04P-LCD-MM-C | 10   | 1964460000 |

Note

Ordering data - Empty housings

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V04P | 10   | 1963520000 |

Note

Accessories

Dust protection cap



Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V04P | 10   | 1963900000 |

Plug inserts can also be ordered separately. Refer to Inserts.

## IP67 plug-in connector

## Plug RockStar® V5 - RJ45

## V5 - RJ45 plug, straight



## V5-RJ45 plug, angled



## Technical data

Degree of protection  
Housing main material  
Sheath diameter, min. / max.  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

## Note

IP 67  
diecast aluminium  
5 mm / 12 mm  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 5, IEC 60603-7-51

IP 67  
diecast aluminium  
5 mm / 10 mm  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 5, IEC 60603-7-51

## Ordering data - Sets

RJ45 tool-free, AWG 26-22, TIA-A/-B/-PROFINET  
RJ45 tool-free, AWG 26-22, TIA-B  
RJ45 Crimp, AWG 27-24

## Note

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-PS-V05M-RJ45-FH   | 10   | 1963200000 |
| IE-PS-V05M-RJ45-FH-B | 10   | 1271250000 |
| IE-PS-V05M-RJ45-TH   | 10   | 1963110000 |

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-PS-V05M-A-RJ45-FH | 10   | 1077300000 |
|                      |      |            |
|                      |      |            |

## Ordering data - Empty housings

## Note

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PH-V05M | 10   | 1962540000 |

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |

## Accessories

## Dust protection cap

Plug housing protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PP-V05M | 10   | 1968920000 |
|            |      |            |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-PP-V05M | 10   | 1968920000 |
|            |      |            |

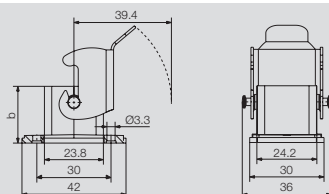
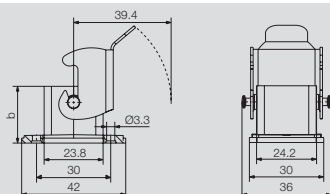
Plug inserts can also be ordered separately. Refer to Inserts.

Plug inserts can also be ordered separately. Refer to Inserts.

## Flange RockStar® V5 - RJ45

## Module

## Coupling



## Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Wire cross-section, solid, min. / max.  
Wire cross-section, solid, min. / max.

## Note

IP 67  
diecast aluminium  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 5, IEC 60603-7-51  
AWG 26 / AWG 22  
0.48 mm / 0.76 mm  
AWG 24 / AWG 22  
0.4 mm / 0.64 mm

IP 67  
diecast aluminium  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 5, IEC 60603-7-51

## Ordering data - Sets

PROFINET module  
TIA-A modul  
Coupling

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-BS-V05M-RJ45-FJ-P | 10   | 1963700000 |
| IE-BS-V05M-RJ45-FJ-A | 10   | 1963460000 |

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-BS-V05M-RJ45-C | 10   | 1963510000 |

## Note

## Ordering data - Empty housings

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V05M | 10   | 1963530000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BH-V05M | 10   | 1963530000 |

## Note

## Accessories

## Dust protection cap

Flange-mounted housing, protective cap

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V05M | 10   | 1968930000 |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-V05M | 10   | 1968930000 |

Plug inserts can also be ordered separately. Refer to Inserts.

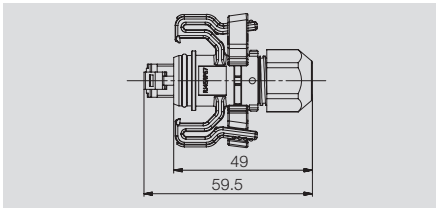
Plug inserts can also be ordered separately. Refer to Inserts.

IP67 plug-in connector

Plug SnapIn V6 - RJ45

- Cat.6
- IP 67

Without kink prevention



Technical data

|                                                |                                                      |
|------------------------------------------------|------------------------------------------------------|
| Category                                       | Cat.6 (ISO/IEC 11801)                                |
| Degree of protection                           | IP 67                                                |
| Shielding                                      | 360° shield contact                                  |
| Housing main material                          | PA 66, UL 94: V-0                                    |
| Colour                                         | light grey                                           |
| Plugging cycles                                | 750                                                  |
| Type of mounting                               | Floor-mounted, for exposed connections, Wall-mounted |
| Wiring                                         | Colour-coded pin assignment to EIA/TIA T568 A.       |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                                      |
| Connector standard                             | IEC 61076-3-106 Var. 6, IEC 60603-7-5                |
| Note                                           |                                                      |

Ordering data

| Type      | Qty. | Order No.  |
|-----------|------|------------|
| IE-P-IP67 | 1    | 8808380000 |
| Note      |      |            |

Accessories

|  |  |
|--|--|
|  |  |
|--|--|

|  |
|--|
|  |
|--|

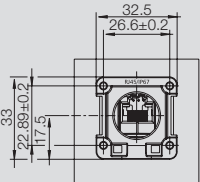
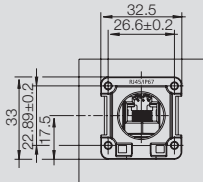
|                                     |
|-------------------------------------|
| See also the „Accessories“ chapter. |
|-------------------------------------|

Flange SnapIn V6 - RJ45

- Cat.6
- IP 67

Module

Coupling



Technical data

Category  
Degree of protection  
Shielding  
Housing main material  
Colour  
Plugging cycles  
Type of mounting  
Wiring  
  
Ambient temperature (operational), min. / max.  
Connector standard

Cat.6 (ISO/IEC 11801)  
IP 67  
360° shield contact  
PA 66, UL 94: V-0  
light grey  
750  
Cabinet, Distribution box  
Colour-coded pin assignment to  
EIA/TIA T568 A.  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 6, IEC 60603-7-5

Cat.6 (ISO/IEC 11801)  
IP 67  
360° shield contact  
PA 66, UL 94: V-0  
light grey  
750  
Cabinet, Distribution box  
  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 6, IEC 60603-7-5

Note

Ordering data

Straight  
Angled, downwards  
Angled, upwards

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-XM-RJ45/DC-IP67 | 1    | 8808440000 |
|                    |      |            |
|                    |      |            |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-XM-RJ45/RJ45-IP67    | 1    | 8808450000 |
| IE-XM-6D-RJ45/RJ45-IP67 | 1    | 8829450000 |
| IE-XM-6U-RJ45/RJ45-IP67 | 1    | 8829440000 |

Note

Accessories

| Flange insert           |
|-------------------------|
| RJ45 module A, straight |

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-XRJ45/DC | 1    | 8808330000 |
|             |      |            |
|             |      |            |

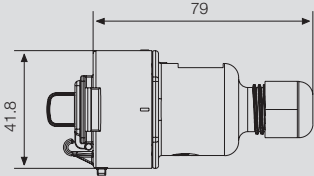
| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-XRJ45/DC | 1    | 8808330000 |
|             |      |            |
|             |      |            |

IP67 plug-in connector

Cable coupling SnapIn V6 - RJ45

- Cat.6
- IP 67

Cable coupling



Technical data

|                                                |                                                      |
|------------------------------------------------|------------------------------------------------------|
| Category                                       | Cat.6 (ISO/IEC 11801)                                |
| Degree of protection                           | IP 67                                                |
| Shielding                                      | 360° shield contact                                  |
| Housing main material                          | PA 66, UL 94: V-0                                    |
| Colour                                         | light grey                                           |
| Plugging cycles                                | 750                                                  |
| Type of mounting                               | Floor-mounted, for exposed connections, Wall-mounted |
| Wiring                                         | Colour-coded pin assignment to EIA/TIA T568 A.       |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                                      |
| Connector standard                             | IEC 61076-3-106 Var. 6, IEC 60603-7-5                |
| Note                                           |                                                      |

Ordering data

|      |                |
|------|----------------|
|      | Cable coupling |
| Note |                |

| Type      | Qty. | Order No.  |
|-----------|------|------------|
| IE-C-IP67 | 1    | 8813090000 |

Accessories

|  |
|--|
|  |
|--|

See also the „Accessories“ chapter.



# IP67 plug-in connector

## M12 plug

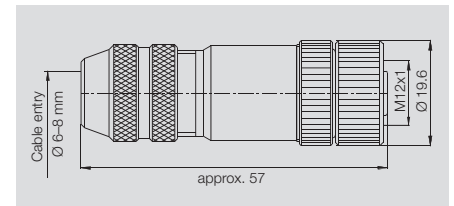
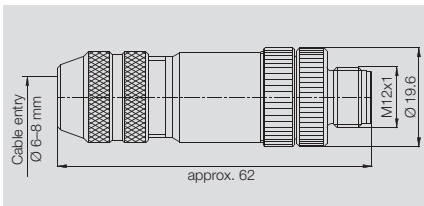
### Male pin contact

straight



### Female socket contact

straight



### Technical data

Degree of protection  
Type of connection  
Housing main material  
Contact tube diameter  
Cable diameter, min.  
Cross-section for connected wire  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
Tension clamp connection  
CuZn  
M12  
6 mm / 8 mm  
0.25 - 0.5 mm<sup>2</sup>  
-25 °C...+85 °C  
IEC 61076-2-101

IP 67  
Tension clamp connection  
CuZn  
M12  
6 mm / 8 mm  
0.25 - 0.5 mm<sup>2</sup>  
-25 °C...+85 °C  
IEC 61076-2-101

#### Note

### Ordering data

| Tension-clamp connection |          |
|--------------------------|----------|
|                          | Straight |
|                          | Angled   |
| Screw connection         |          |
|                          | Straight |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| SAISM-4/8S-M12 4P D-ZF  | 1    | 1892120001 |
| SAISW-4/8S-M12 4P D-ZF  | 1    | 1803930001 |
| SAISM-4/8S-M12-4P D-COD | 1    | 1892120000 |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| SAIBM-4/8S-M12 4P D-ZF  | 1    | 1892130001 |
| SAIBM-4/8S-M12-4P D-COD | 1    | 1892130000 |

#### Note

### Accessories

Adapter / coupling M12

- Cat.5
- IP 67

Adapter M12-RJ45

M12 D-coded on RJ45



Coupling M12-M12

M12 D-coded



Technical data

Category  
Degree of protection  
Housing main material  
Shielding  
Ambient temperature (operational), min. / max.  
Connector standard

Note

Cat.5 (ISO/IEC 11801)  
IP 67  
Polyamide, fully shielded metal housing  
360° shield contact  
-5 °C...+60 °C  
IEC 60603-7-5, IEC 61076-2-101

Cat.5 (ISO/IEC 11801)  
IP 67  
Polyamide, fully shielded metal housing  
360° shield contact  
-5 °C...+60 °C  
IEC 61076-2-101

Ordering data

| Adaptor  |          |
|----------|----------|
|          | Straight |
|          | Angled   |
| Coupling |          |

Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-M12-ADAP S | 1    | 8901620000 |
| IE-M12-ADAP A | 1    | 8901630000 |
|               |      |            |
|               |      |            |

| Type        | Qty. | Order No.  |
|-------------|------|------------|
|             |      |            |
|             |      |            |
| IE-M12-COUP | 1    | 8901640000 |
|             |      |            |

Accessories

IP67 plug-in connector

M12 PCB connection element

- Cat.5
- For installation into the end device

Standard assembly



Additional fastening mechanism



Technical data

Category  
Degree of protection  
Configuration  
Housing main material  
Shielding  
Ambient temperature (operational), min. / max.  
Connector standard

Note

Cat.5 (ISO/IEC 11801)  
IP 65 according to DIN EN 60529  
Reflow compatible  
CuZn, Polyamide, nickel-plated  
360° shield contact  
-40 °C...+85 °C  
IEC 61076-2-101

Cat.5 (ISO/IEC 11801)  
IP 65 according to DIN EN 60529  
Reflow compatible  
CuZn, Polyamide, nickel-plated  
360° shield contact  
-25 °C...+85 °C  
IEC 61076-2-101

Ordering data

Connection element

Note

Accessories

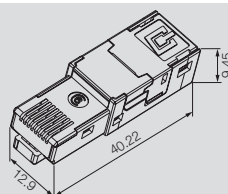
| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-M12-PCBCE | 60   | 8902810000 |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-M12-PCBCE-PANEL | 10   | 8902820000 |

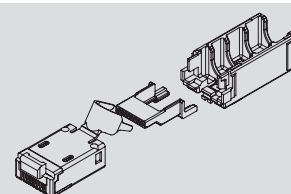
## Plug inserts RJ45

- Cat.6<sub>A</sub>
- IP 20
- For Variant 1, 4, 5 and 14 housings

## tool-free



## Crimp



## Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Plugging cycles                                |
| Shielding                                      |
| Housing main material                          |
| Contact material / Contact surface             |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, solid, min. / max.         |
| Wire cross-section, solid, min. / max.         |
| Insulation cross-section, max.                 |
| Humidity                                       |
| Ambient temperature (operational), min. / max. |
| Insulation resistance                          |
| Dielectric strength, contact / contact         |
| Dielectric strength, contact / shield          |
| Current-carrying capacity at 50 °C             |
| PoE+                                           |
| Speed                                          |
| Connector standard                             |

### Note

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 67 with housing                                             |
| 750                                                            |
| 360° all-round enclosure                                       |
| Zinc diecast                                                   |

|                   |
|-------------------|
| AWG 26 / AWG 22   |
| 0.48 mm / 0.76 mm |
| AWG 24 / AWG 24   |
| 0.4 mm / 0.64 mm  |
| 1.6 mm            |

-40 °C...+70 °C

500 MΩ

≥ 1000 V DC

≥ 1500 V DC

1 A

10 GBit

IEC 60603-7-51

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 67 with housing                                             |
| 750                                                            |
| 360° all-round enclosure                                       |
| Brass, PC UL 94 V0                                             |

|                                           |
|-------------------------------------------|
| Phosphor bronze / AU ≥ 0.8 μm, Ni 2.54 μm |
| AWG 27 / AWG 24                           |
| 0.46 mm / 0.61 mm                         |
| AWG 24 / AWG 24                           |
| 0.4 mm / 0.51 mm                          |
| 1.05 mm                                   |

0...93 % rel. humidity

-40 °C...+70 °C

500 MΩ

≥ 1000 V DC

≥ 1500 V DC

1 A

conforming to IEEE 802.3af

10 GBit

IEC 60603-7-51

## Ordering data

|                  |                  |
|------------------|------------------|
| <b>tool-free</b> | TIA-A/B/PROFINET |
|                  | TIA-A            |
|                  | TIA-B            |
|                  | PROFINET         |

### Crimp

### Note

## Accessories

|                        |
|------------------------|
| <b>Tools</b>           |
| Crimping tool          |
| Optional pressing tool |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-PI-RJ45-FH   | 10   | 1962730000 |
| IE-PI-RJ45-FH-A | 10   | 1132010000 |
| IE-PI-RJ45-FH-B | 10   | 1132020000 |
| IE-PI-RJ45-FH-P | 10   | 1132030000 |

| Type     | Qty. | Order No.  |
|----------|------|------------|
| PWZ RJ45 | 1    | 1118040000 |

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PI-RJ45-TH | 10   | 1962720000 |

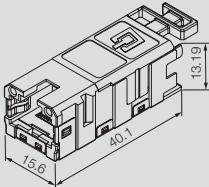
| Type         | Qty. | Order No.  |
|--------------|------|------------|
| TT 8 RS MP 8 | 1    | 9202800000 |

IP67 plug-in connector

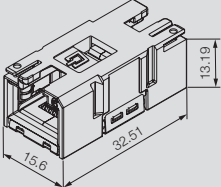
Flange inserts RJ45

- Cat.6<sub>A</sub>
- IP 20
- For Variant 1, 4, 5 and 14 housings

Module



Coupling



Technical data

|                                                |
|------------------------------------------------|
| Category                                       |
| Degree of protection                           |
| Plugging cycles                                |
| Shielding                                      |
| Housing main material                          |
| Wire cross-section, flexible, min. / max.      |
| Wire cross-section, solid, min. / max.         |
| Insulation cross-section, max.                 |
| Connector standard                             |
| Ambient temperature (operational), min. / max. |
| Note                                           |

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 67 with housing                                             |
| 750                                                            |
| 360° all-round enclosure                                       |
| Zinc diecast                                                   |
| AWG 26 / AWG 22                                                |
| AWG 24 / AWG 24                                                |
| 1.6 mm                                                         |
| IEC 60603-7-51                                                 |
| -40 °C...+70 °C                                                |

|                                                                |
|----------------------------------------------------------------|
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| IP 67 with housing                                             |
| 750                                                            |
| 360° all-round enclosure                                       |
| Zinc diecast                                                   |
|                                                                |
|                                                                |
| IEC 60603-7-51                                                 |
| -40 °C...+70 °C                                                |

Ordering data

|                 |
|-----------------|
| No tools needed |
| TIA-A           |
| TIA-B           |
| PROFINET        |
| Coupling        |
| Note            |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
|              |      |            |
|              |      |            |
| IE-BI-RJ45-C | 10   | 1962840000 |

Accessories

|                        |
|------------------------|
| Tools                  |
| Optional pressing tool |

| Type     | Qty. | Order No.  |
|----------|------|------------|
| PWZ RJ45 | 1    | 1118040000 |

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |

Hybrid plug inserts

- Cat.5
- IP 20
- For Variant 1, 4 and 14 housings

Crimp



Technical data

Category  
Degree of protection  
Plugging cycles  
Shielding  
Housing main material  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.  
Ambient temperature (operational), min. / max.  
Volume resistance  
Rated current

Note

Cat.5 (ISO/IEC 11801)  
IP 67 with housing  
500  
360° all-round enclosure  
Nickel silver, PA 66  
AWG 27 / AWG 20  
0.08 mm² / 0.75 mm²  
-40 °C...+70 °C  
< 10 mΩ  
3 A per contact

Ordering data

Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-PI-HYB-10P | 10   | 1068990000 |

Accessories

Crimp contacts



0,33...0,5 mm²  
0,75 mm²  
0,08...0,2 mm²

Crimping tool



| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-PIC-HYB-S-0,5-300  | 300  | 1096180000 |
| IE-PIC-HYB-S-0,75-300 | 300  | 1068950000 |
| IE-PIC-HYB-S-0,2-300  | 300  | 1135150000 |

|         |   |            |
|---------|---|------------|
| HTF HYB | 1 | 1119580000 |
|---------|---|------------|

IP67 plug-in connector

Hybrid flange inserts

- Cat.5
- IP 20
- For Variant 1, 4 and 14 housings

Module



Technical data

Category

Degree of protection

Plugging cycles

Shielding

Housing main material

Wire cross-section, flexible, min. / max.

Wire cross-section, flexible, min. / max.

Rated current

Volume resistance

Ambient temperature (operational), min. / max.

Note

Cat.5 (ISO/IEC 11801)

IP 67 with housing

500

360° all-round enclosure

Zinc diecast, Nickel silver, PA 66

AWG 27 / AWG 20

0.08 mm² / 0.75 mm²

3 A per contact

< 10 mΩ

-40 °C...+70 °C

Ordering data

Note

Accessories

Crimp contacts



0,33...0,5 mm²

0,75 mm²

0,08...0,2 mm²

Crimping tool



| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-BI-HYB-10P | 10   | 1069010000 |

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-BIC-HYB-P-0,5-300  | 300  | 1096150000 |
| IE-BIC-HYB-P-0,75-300 | 300  | 1068970000 |
| IE-BIC-HYB-P-0,2-300  | 300  | 1135160000 |

|         |   |            |
|---------|---|------------|
| HTF HYB | 1 | 1119580000 |
|---------|---|------------|

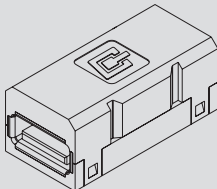
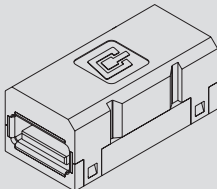
Flange inserts USB

- IP 20
- For Variant 1, 4, 5 and 14 housings

Coupling USB A/A



Coupling USB A/B



Technical data

Degree of protection  
Shielding  
Ambient temperature (operational), min. / max.  
Connection 1 / 2  
Connector standard

Note

IP 67 with housing  
360° all-round enclosure  
-40 °C...+70 °C  
USB A / USB A  
IEC 61076-3-107

IP 67 with housing  
360° all-round enclosure  
-40 °C...+70 °C  
USB A / USB B  
IEC 61076-3-107

Ordering data

USB coupling

Note

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-BI-USB-A | 10   | 1019570000 |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-BI-USB-AB | 10   | 1131380000 |

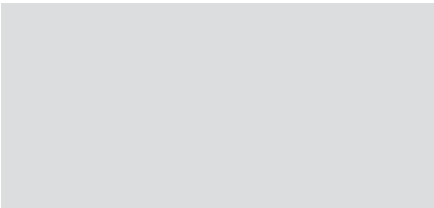
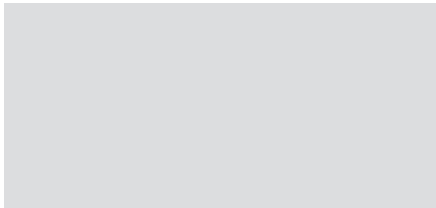
Accessories

IP67 plug-in connector

Plug inserts SC

- IP 20
- For Variant 1, 4 and 14 housings

Plug inserts SC



Technical data

|                                                |
|------------------------------------------------|
| Degree of protection                           |
| Housing main material                          |
| Plugging cycles                                |
| Ambient temperature (operational), min. / max. |
| Connector standard                             |
| Note                                           |

|                    |
|--------------------|
| IP 67 with housing |
| Zinc diecast       |
| 1000               |
| -40 °C...+70 °C    |
| IEC 61754-24       |
|                    |

Ordering data

|             |            |
|-------------|------------|
|             | Singlemode |
|             | Multimode  |
|             | POF        |
| <b>Note</b> |            |

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| IE-PI-SCRJ-SM  | 10   | 1067390000 |
| IE-PI-SCRJ-MM  | 10   | 1067380000 |
| IE-PI-SCRJ-POF | 10   | 1067410000 |
|                |      |            |
|                |      |            |

Accessories

| Tools                                                                               |                              |
|-------------------------------------------------------------------------------------|------------------------------|
|  | POF tool set                 |
|                                                                                     | Crimping pliers POF          |
|                                                                                     | Fibre-optic tool case        |
|                                                                                     | Crimping pliers GOF SC       |
|                                                                                     | Crimping pliers GOF PROFINET |

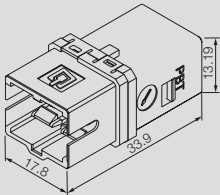


| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| TOOL SET IE-POF | 1    | 1208930000 |
| HTX-IE-POF      | 1    | 1208870000 |
| IE-CTC-SCST-GOF | 1    | 1032030000 |
| IE-CT-SC-GOF    | 1    | 9205320000 |
| IE-CT-SC-GOF-P  | 1    | 9205350000 |

Flange inserts SC

- IP 20
- SC-RJ on 2 SC
- For Variant 1, 4 and 14 housings

Flange inserts SC



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.

Note

IP 67 with housing  
PA  
1000  
-40 °C...+70 °C

Ordering data

| Flange insert |
|---------------|
| Singlemode    |
| Multimode/POF |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-BI-SCRJ2SC-SM-C | 10   | 1962870000 |
| IE-BI-SCRJ2SC-MM-C | 10   | 1964430000 |

Note

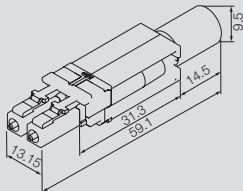
Accessories

IP67 plug-in connector

Plug inserts LC

- IP 20
- For Variant 1, 4 and 14 housings

Plug inserts LC



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67 with housing  
PBT diecast zinc  
1000  
-40 °C...+70 °C  
IEC 61754-20

Note

Ordering data

|             |                  |
|-------------|------------------|
| Plug insert | 2 LC, Singlemode |
|             | 2 LC, Multimode  |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-PI-2LC-SM | 10   | 1962790000 |
| IE-PI-2LC-MM | 10   | 1962780000 |

Note

Other versions on request

Accessories

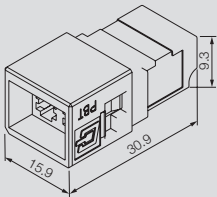
| Tools                                                                                                      |
|------------------------------------------------------------------------------------------------------------|
|  Crimping pliers GOF LC |
| Fibre-optic tool case                                                                                      |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-CT-LC-GOF    | 1    | 9205330000 |
| IE-CTC-SCST-GOF | 1    | 1032030000 |

Flange inserts LC

- IP 20
- For Variant 1, 4 and 14 housings

Flange inserts LC



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67 with housing  
PBT diecast zinc  
1000  
-40 °C...+70 °C  
IEC 61754-20

Note

Ordering data

|               |                       |
|---------------|-----------------------|
| Flange insert |                       |
|               | LC duplex, Singlemode |
|               | LC duplex, Multimode  |

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| IE-BI-LCD-SM-C | 10   | 1962880000 |
| IE-BI-LCD-MM-C | 10   | 1964420000 |

Note

Other versions on request

Accessories

|       |                        |
|-------|------------------------|
| Tools |                        |
|       | Crimping pliers GOF LC |
|       | Fibre-optic tool case  |

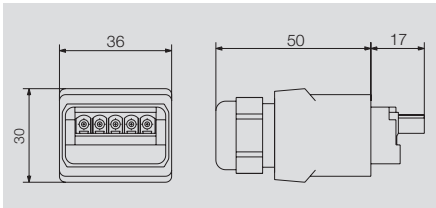


| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-CT-LC-GOF    | 1    | 9205330000 |
| IE-CTC-SCST-GOF | 1    | 1032030000 |

IP67 plug-in connector

Plug PushPull Power

Power plug



Technical data

| General data                                   |                                     |
|------------------------------------------------|-------------------------------------|
| Degree of protection                           | IP 67                               |
| Connector standard                             | According to PROFINET specification |
| Material properties                            |                                     |
| Housing base material                          | Zinc diecast, nickel-plated         |
| Sealing material                               | NBR                                 |
| Cable sealing material                         | TPE                                 |
| Contact material                               | Copper alloy                        |
| Flammability class UL 94                       | V-2                                 |
| Pollution severity level                       | 2                                   |
| Plugging cycles                                | ≤ 100                               |
| Electrical properties                          |                                     |
| Current-carrying capacity at 50 °C             | 16 A                                |
| Rated voltage                                  | 24 V                                |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                     |
| No. of poles                                   | 5                                   |
| Wire cross-section, flexible, min. / max.      | 0.75 mm² / 2.5 mm²                  |
| Sheath diameter, min. / max.                   | 9 mm / 13 mm                        |
| Connection 2                                   | Tension clamp                       |
| Note                                           |                                     |

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| IE-PS-VAPM-24V | 10   | 1068910000 |
|                |      |            |
|                |      |            |

Ordering data - Sets

| Note |  |
|------|--|

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| IE-PS-VAPM-24V | 10   | 1068910000 |
|                |      |            |
|                |      |            |

Ordering data - Empty housings

| Note |  |
|------|--|

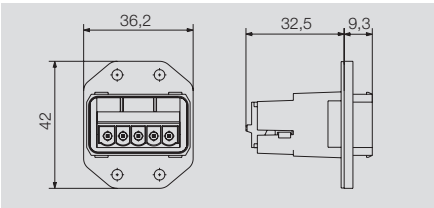
| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |
|      |      |           |

Accessories

|--|--|

Flange PushPull Power

Flange Power



Technical data

|                                                |
|------------------------------------------------|
| General data                                   |
| Degree of protection                           |
| Connector standard                             |
| Material properties                            |
| Housing base material                          |
| Sealing material                               |
| Cable sealing material                         |
| Contact carrier material                       |
| Contact material                               |
| Flammability class UL 94                       |
| Pollution severity level                       |
| Plugging cycles                                |
| Electrical properties                          |
| Current-carrying capacity at 50 °C             |
| Rated voltage                                  |
| Ambient temperature (operational), min. / max. |
| No. of poles                                   |
| Connection 1                                   |
| Installation                                   |
| Note                                           |

|                                     |
|-------------------------------------|
| IP 67                               |
| According to PROFINET specification |
| Zinc diecast, nickel-plated         |
| NBR                                 |
| TPE                                 |
| PA                                  |
| Copper alloy                        |
| V-2                                 |
| 2                                   |
| ≤ 100                               |
| 16 A                                |
| 24 V                                |
| -40 °C...+70 °C                     |
| 5                                   |
| Tension clamp                       |
| 4 screws                            |

Ordering data - Sets

|      |
|------|
| Note |
|------|

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BSS-VAPM-24V | 10   | 1069030000 |

Ordering data - Empty housings

|               |
|---------------|
| Device flange |
| Note          |

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| IE-BHD-VAPM | 10   | 1068920000 |

Accessories

|                     |
|---------------------|
| Dust protection cap |
|                     |

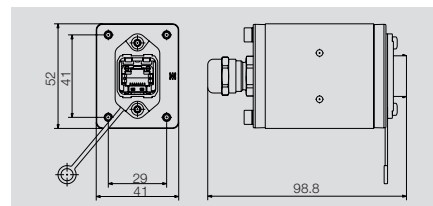
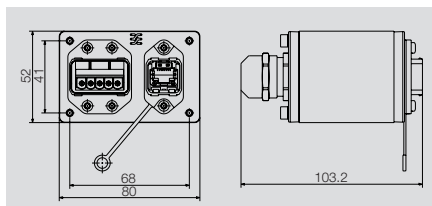
| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-BP-VAPP | 10   | 1068930000 |

## IP65 connection components

## FreeCon V14 - Junction box

## Double junction box

## Single junction box



## Technical data

| General data                                   |                                                                |
|------------------------------------------------|----------------------------------------------------------------|
| Housing main material                          | Aluminium profile, Cover: zinc diecast, painted                |
| Degree of protection                           | IP 65                                                          |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                                                |
| Connector standard                             | IEC 61076-3-117 Var. 14, IEC 60603-7-5                         |
| Technical specifications power connector       |                                                                |
| Housing base material                          | Zinc diecast, nickel-plated                                    |
| Sealing material                               | NBR                                                            |
| Contact material                               | Copper alloy                                                   |
| Contact carrier material                       | PA                                                             |
| Contact surface                                | Gold over nickel                                               |
| Plugging cycles                                | ≥ 100                                                          |
| Electrical properties power connector          |                                                                |
| Current-carrying capacity at 50 °C             | 16 A @ 20 °C                                                   |
| Rated voltage                                  | 24 V                                                           |
| No. of poles                                   | 5                                                              |
| Sheath diameter, min. / max.                   | 6 mm / 12 mm                                                   |
| Connection 2                                   | Tension clamp                                                  |
| Technical specifications RJ45                  |                                                                |
| Housing base material                          | Zinc diecast, nickel-plated                                    |
| Contact surface                                | Gold over nickel                                               |
| Sheath diameter, min. / max.                   | 5 / 10 mm                                                      |
| Electrical properties RJ45                     |                                                                |
| Category                                       | Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| Contact resistance                             | ≤ 20 mΩ                                                        |
| Insulation resistance                          | > 500 MΩ                                                       |
| Dielectric strength, contact – contact, max.   | ≤ 1000 V DC                                                    |
| Dielectric strength, contact – contact, min.   | ≤ 1500 V DC                                                    |
| Current carrying capacity                      | 1 A                                                            |
| Wire cross-section, flexible, min. / max.      | AWG 26 / AWG 22                                                |
| Connection 1, RJ 45 module                     | IDC                                                            |
| Note                                           |                                                                |

| General data                                   |                                                                |  |
|------------------------------------------------|----------------------------------------------------------------|--|
| Housing main material                          | Aluminium profile, Cover: zinc diecast, painted                |  |
| Degree of protection                           | IP 65                                                          |  |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                                                |  |
| Connector standard                             | IEC 61076-3-117 Var. 14, IEC 60603-7-5                         |  |
| Technical specifications power connector       |                                                                |  |
| Housing base material                          | Zinc diecast, nickel-plated                                    |  |
| Sealing material                               | NBR                                                            |  |
| Contact material                               | Copper alloy                                                   |  |
| Contact carrier material                       | PA                                                             |  |
| Contact surface                                | Gold over nickel                                               |  |
| Plugging cycles                                | ≥ 100                                                          |  |
| Electrical properties power connector          |                                                                |  |
| Current-carrying capacity at 50 °C             | 16 A @ 20 °C                                                   |  |
| Rated voltage                                  | 24 V                                                           |  |
| No. of poles                                   | 5                                                              |  |
| Sheath diameter, min. / max.                   | 6 mm / 12 mm                                                   |  |
| Connection 2                                   | Tension clamp                                                  |  |
| Technical specifications RJ45                  |                                                                |  |
| Housing base material                          | Zinc diecast, nickel-plated                                    |  |
| Contact surface                                | Gold over nickel                                               |  |
| Sheath diameter, min. / max.                   | 5 / 10 mm                                                      |  |
| Electrical properties RJ45                     |                                                                |  |
| Category                                       | Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |  |
| Contact resistance                             | ≤ 20 mΩ                                                        |  |
| Insulation resistance                          | > 500 MΩ                                                       |  |
| Dielectric strength, contact – contact, max.   | ≤ 1000 V DC                                                    |  |
| Dielectric strength, contact – contact, min.   | ≤ 1500 V DC                                                    |  |
| Current carrying capacity                      | 1 A                                                            |  |
| Wire cross-section, flexible, min. / max.      | AWG 26 / AWG 22                                                |  |
| Connection 1, RJ 45 module                     | IDC                                                            |  |
| Note                                           |                                                                |  |

| General data                                   |                                                                |  |
|------------------------------------------------|----------------------------------------------------------------|--|
| Housing main material                          | Aluminium profile, Cover: zinc diecast, painted                |  |
| Degree of protection                           | IP 65                                                          |  |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                                                |  |
| Connector standard                             | IEC 61076-3-117 Var. 14, IEC 60603-7-5                         |  |
| Technical specifications power connector       |                                                                |  |
| Housing base material                          | Zinc diecast, nickel-plated                                    |  |
| Sealing material                               | NBR                                                            |  |
| Contact material                               | Copper alloy                                                   |  |
| Contact carrier material                       | PA                                                             |  |
| Contact surface                                | Gold over nickel                                               |  |
| Plugging cycles                                | ≥ 100                                                          |  |
| Electrical properties power connector          |                                                                |  |
| Current-carrying capacity at 50 °C             | 16 A @ 20 °C                                                   |  |
| Rated voltage                                  | 24 V                                                           |  |
| No. of poles                                   | 5                                                              |  |
| Sheath diameter, min. / max.                   | 6 mm / 12 mm                                                   |  |
| Connection 2                                   | Tension clamp                                                  |  |
| Technical specifications RJ45                  |                                                                |  |
| Housing base material                          | Zinc diecast, nickel-plated                                    |  |
| Contact surface                                | Gold over nickel                                               |  |
| Sheath diameter, min. / max.                   | 5 / 10 mm                                                      |  |
| Electrical properties RJ45                     |                                                                |  |
| Category                                       | Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |  |
| Contact resistance                             | ≤ 20 mΩ                                                        |  |
| Insulation resistance                          | > 500 MΩ                                                       |  |
| Dielectric strength, contact – contact, max.   | ≤ 1000 V DC                                                    |  |
| Dielectric strength, contact – contact, min.   | ≤ 1500 V DC                                                    |  |
| Current carrying capacity                      | 1 A                                                            |  |
| Wire cross-section, flexible, min. / max.      | AWG 26 / AWG 22                                                |  |
| Connection 1, RJ 45 module                     | IDC                                                            |  |
| Note                                           |                                                                |  |

## Ordering data

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-CD-V14MRJ/VAPM24V-FJ | 1    | 1068830000 |
| Note                    |      |            |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-CD-V14MRJ/VAPM24V-FJ | 1    | 1068830000 |
| Note                    |      |            |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-CD-V14MRJ-FJ | 1    | 1068880000 |
| Note            |      |            |

## Accessories

| Mounting foot |      |            |
|---------------|------|------------|
| Type          | Qty. | Order No.  |
| IE-CD-MA      | 10   | 1099580000 |

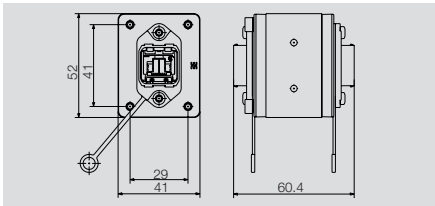
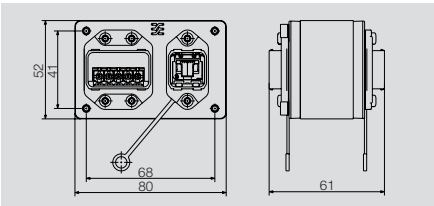
| Mounting foot |      |            |
|---------------|------|------------|
| Type          | Qty. | Order No.  |
| IE-CD-MA      | 10   | 1099580000 |

| Mounting foot |      |            |
|---------------|------|------------|
| Type          | Qty. | Order No.  |
| IE-CD-MA      | 10   | 1099580000 |

FreeCon V14 - Coupling

Double coupling

Single coupling



Technical data

| General data                                   |  |
|------------------------------------------------|--|
| Housing main material                          |  |
| Degree of protection                           |  |
| Ambient temperature (operational), min. / max. |  |
| Connector standard                             |  |
| Technical specifications power connector       |  |
| Housing base material                          |  |
| Sealing material                               |  |
| Contact material                               |  |
| Contact carrier material                       |  |
| Contact surface                                |  |
| Plugging cycles                                |  |
| Electrical properties power connector          |  |
| Current-carrying capacity at 50 °C             |  |
| Rated voltage                                  |  |
| No. of poles                                   |  |
| Sheath diameter, min. / max.                   |  |
| Connection 2                                   |  |
| Technical specifications RJ45                  |  |
| Housing base material                          |  |
| Electrical properties RJ45 coupling            |  |
| Category                                       |  |
| Contact resistance                             |  |
| Insulation resistance                          |  |
| Dielectric strength, contact – contact, min.   |  |
| Dielectric strength, contact – shielding, max. |  |
| Current carrying capacity                      |  |
| Note                                           |  |

|                                                                |
|----------------------------------------------------------------|
| Aluminium profile, Cover: zinc diecast, painted                |
| IP 65                                                          |
| -40 °C...+70 °C                                                |
| IEC 61076-3-117 Var. 14, IEC 60603-7-5                         |
| Zinc diecast, nickel-plated                                    |
| NBR                                                            |
| Copper alloy                                                   |
| PA                                                             |
| Gold over nickel                                               |
| ≥ 100                                                          |
| 16 A @ 20 °C                                                   |
| 24 V                                                           |
| 5                                                              |
| 6 mm / 12 mm                                                   |
| Tension clamp                                                  |
| Zinc diecast, PA 66                                            |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| ≤ 20 mΩ                                                        |
| > 500 MΩ                                                       |
| ≥ 1000 V DC                                                    |
| ≥ 1500 V DC                                                    |
| 1 A                                                            |

|                                                                |
|----------------------------------------------------------------|
| Aluminium profile, Cover: zinc diecast, painted                |
| IP 65                                                          |
| -40 °C...+70 °C                                                |
| IEC 61076-3-117 Var. 14, IEC 60603-7-5                         |
| Zinc diecast, PA 66                                            |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| ≤ 20 mΩ                                                        |
| > 500 MΩ                                                       |
| ≥ 1000 V DC                                                    |
| ≥ 1500 V DC                                                    |
| 1 A                                                            |

Ordering data

| Type                      | Qty. | Order No.  |
|---------------------------|------|------------|
| IE-CD-V14MRJ/VAPM24V-C-MA | 1    | 1068820000 |
| Including mounting foot   |      |            |

Note

Accessories

| Type                      | Qty. | Order No.  |
|---------------------------|------|------------|
| IE-CD-V14MRJ/VAPM24V-C-MA | 1    | 1068820000 |
| Including mounting foot   |      |            |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-CD-V14MRJ-C-MA       | 1    | 1068870000 |
| Including mounting foot |      |            |

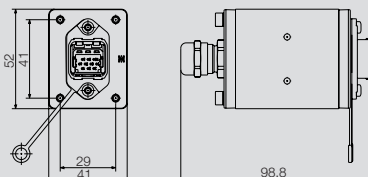
## IP65 connection components

## FreeCon V14 - Junction box

- in PUR

## Single junction box

Hybrid



## Technical data

## General data

Housing main material  
Degree of protection  
Ambient temperature (operational), min. / max.

## Technical specifications hybrid connector

Housing base material  
Sealing material  
Contact material  
Contact surface  
Plugging cycles

## Electrical properties hybrid connector

Current-carrying capacity at 50 °C  
Rated voltage (DIN EN 61984)  
Contact resistance  
Pole count, Hybrid  
Wire cross-section, flexible, min. / max.  
Wire cross-section, flexible, min. / max.

## Note

Aluminium profile, Cover: zinc diecast, painted

IP 65

-40 °C...+75 °C

Zinc diecast (flange), PA 66

NBR

Copper alloy

Gold over nickel

≤ 100

3 A

24 V

≤ 10 mΩ

10

AWG 27 / AWG 20

0.08 mm² / 0.75 mm²

## Ordering data

| Type                 | Qty. | Order No.  |
|----------------------|------|------------|
| IE-CD-V14MHYB-10P-FJ | 1    | 1068850000 |

## Note

## Accessories

## Mounting foot

| Type     | Qty. | Order No.  |
|----------|------|------------|
| IE-CD-MA | 10   | 1099580000 |

## Crimp contacts

0,33...0,5 mm²

0,75 mm²

0,08...0,2 mm²



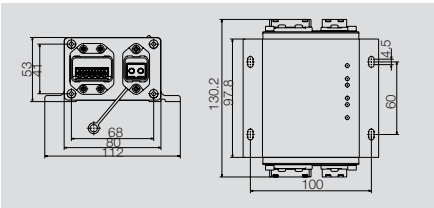
## Crimping tool



| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-BIC-HYB-P-0,5-300  | 300  | 1096150000 |
| IE-BIC-HYB-P-0,75-300 | 300  | 1068970000 |
| IE-BIC-HYB-P-0,2-300  | 300  | 1135160000 |
| HTF HYB               | 1    | 1119580000 |

FreeCon Active PROFINET FO  
Repeater with diagnostic functions

FreeCon Active



Technical data

| General data                                   |  |
|------------------------------------------------|--|
| Housing main material                          |  |
| Weight                                         |  |
| Data interface                                 |  |
| Power interface                                |  |
| Degree of protection                           |  |
| Ambient temperature (operational), min. / max. |  |
| Network standard                               |  |
| Electrical data                                |  |
| Operating voltage                              |  |
| Operational voltage range                      |  |
| Current consumption                            |  |
| Baud rate                                      |  |
| Protocol                                       |  |
| LED indication                                 |  |
| Note                                           |  |

|                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------|
| Aluminium profile, Cover: zinc diecast, painted                                                                    |
| 780 g                                                                                                              |
| PROFINET PushPull SCRJ POF (V14)                                                                                   |
| PROFINET PushPull Power                                                                                            |
| IP 65                                                                                                              |
| -20 °C...+55 °C                                                                                                    |
| IEC 61158, IEC 61784                                                                                               |
| 24 V DC                                                                                                            |
| 18...30 V DC                                                                                                       |
| 200 mA typical                                                                                                     |
| 100 MB                                                                                                             |
| PROFINET IRT                                                                                                       |
| FO1: port active, FO2: port active, SF: general error, BF: bus error, US1: voltage 1 (electronics), US2: voltage 2 |

Ordering data

| Note |  |
|------|--|
|------|--|

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-CDR-V14MSCPOF/VAPM-C | 1    | 1253240000 |

Accessories

|--|--|

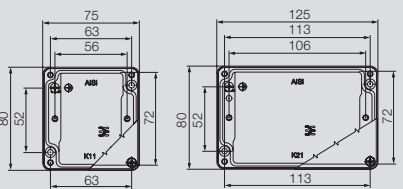
|--|--|

## IP65 connection components

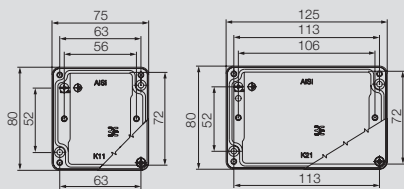
## V1 junction boxes - Metal

- IP 67
- For floor or wall mounting

## Double junction box



## Single junction box



## Technical data

Degree of protection  
Housing main material  
Colour  
Type of mounting  
Ambient temperature (operational), min. / max.  
Plugging cycles  
Connector standard

## Note

IP 67  
Al - Si 12  
grey  
Floor-mounted, Wall-mounted  
-40 °C...+70 °C  
750  
IEC 61076-3-106 Var. 1

Delivered with protective caps.

IP 67  
Al - Si 12  
grey  
Floor-mounted, Wall-mounted  
-40 °C...+70 °C  
750  
IEC 61076-3-106 Var. 1

Delivered with protective caps.

## Ordering data

## Variant 1

2 ports, straight  
2 ports, left  
2 ports, right  
1 port, straight

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-OM-V01M-K21-2S | 1    | 1966330000 |
| IE-OM-V01M-K21-2L | 1    | 1966320000 |
| IE-OM-V01M-K21-2R | 1    | 1966310000 |

RJ45 modules can be ordered separately

## Note

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-OM-V01M-K11-1S | 1    | 1966300000 |

RJ45 modules can be ordered separately

## Accessories

## Flange insert



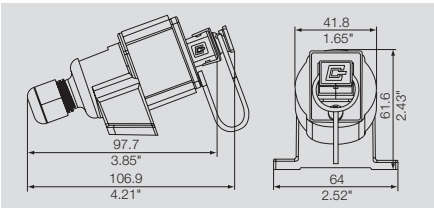
RJ45 EIA/TIA 568 A  
RJ45 EIA/TIA 568 B  
RJ45 PROFINET

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

V1 junction boxes - Plastic

Single junction box



Technical data

Degree of protection  
Housing main material  
Plugging cycles  
Ambient temperature (operational), min. / max.  
Connector standard

IP 67  
PA UL 94 V0  
750  
-40 °C...+70 °C  
IEC 61076-3-106 Var. 1

Note

Ordering data

|           |              |
|-----------|--------------|
| Variant 1 | Junction box |
|-----------|--------------|

Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-OP-V01P-1S | 10   | 1061830000 |

RJ45 modules can be ordered separately

Accessories

| Flange insert                                                                       |                                                           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------|
|  | RJ45 EIA/TIA 568 A<br>RJ45 EIA/TIA 568 B<br>RJ45 PROFINET |

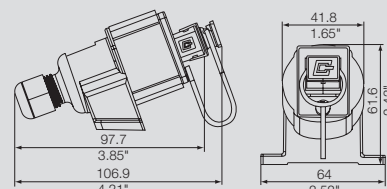
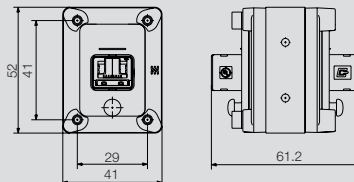
| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

# IP65 connection components

## FreeCon V4 junction box

## Single coupling

## Single junction box



### Technical data

| General data                                   |                                                                |
|------------------------------------------------|----------------------------------------------------------------|
| Plugging cycles                                | 750                                                            |
| Housing main material                          | Aluminium profile, Cover: zinc diecast, painted                |
| Flammability class UL 94                       |                                                                |
| Connector standard                             | IEC 61076-3-106 Var. 4, IEC 60603-7-5                          |
| Degree of protection                           | IP 65                                                          |
| Ambient temperature (operational), min. / max. | -40 °C...+70 °C                                                |
| Electrical properties RJ45 coupling            |                                                                |
| Category                                       | Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| Contact resistance                             | ≤ 20 mΩ                                                        |
| Insulation resistance                          | > 500 MΩ                                                       |
| Dielectric strength, contact – contact, min.   | ≥ 1000 V DC                                                    |
| Dielectric strength, contact – shielding, max. | ≥ 1500 V DC                                                    |
| Current carrying capacity                      | 1 A                                                            |
| Material properties RJ45 coupling              |                                                                |
| Housing base material                          | Zinc diecast, PA 66                                            |
| Note                                           |                                                                |

|  | 750                                                            |  |
|--|----------------------------------------------------------------|--|
|  | Aluminium profile, Cover: zinc diecast, painted                |  |
|  |                                                                |  |
|  | IEC 61076-3-106 Var. 4, IEC 60603-7-5                          |  |
|  | IP 65                                                          |  |
|  | -40 °C...+70 °C                                                |  |
|  |                                                                |  |
|  | Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |  |
|  | ≤ 20 mΩ                                                        |  |
|  | > 500 MΩ                                                       |  |
|  | ≥ 1000 V DC                                                    |  |
|  | ≥ 1500 V DC                                                    |  |
|  | 1 A                                                            |  |
|  |                                                                |  |
|  | Zinc diecast, PA 66                                            |  |

|  | 750                    |  |
|--|------------------------|--|
|  | PA                     |  |
|  | V-0                    |  |
|  | IEC 61076-3-106 Var. 4 |  |
|  | IP 67                  |  |
|  | -40 °C...+70 °C        |  |

### Ordering data

| Junction box |  |
|--------------|--|
| Coupling     |  |
| Note         |  |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-CD-V04PRJ-C-MA       | 1    | 1122710000 |
| Including mounting foot |      |            |

| Type                                   | Qty. | Order No.  |
|----------------------------------------|------|------------|
| IE-OP-V04P-1S                          | 10   | 1045780000 |
| RJ45 modules can be ordered separately |      |            |

### Accessories

| Flange insert      |  |
|--------------------|--|
| RJ45 EIA/TIA 568 A |  |
| RJ45 EIA/TIA 568 B |  |
| RJ45 PROFINET      |  |



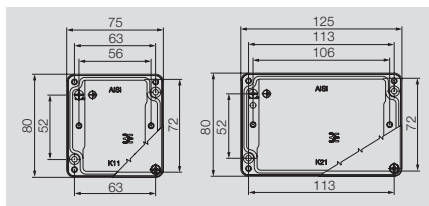
| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

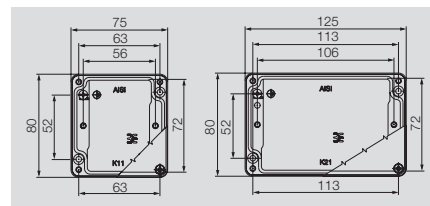
## V4 junction boxes

- IP 67
- For floor or wall mounting

## Double junction box



## Single junction box



## Technical data

Degree of protection  
Housing main material  
Colour  
Type of mounting  
Ambient temperature (operational), min. / max.  
Plugging cycles  
Connector standard

## Note

IP 67  
Al - Si 12  
grey  
Floor-mounted, Wall-mounted  
-40 °C...+70 °C  
750  
IEC 61076-3-106 Var. 4

IP 67  
Al - Si 12  
grey  
Floor-mounted, Wall-mounted  
-40 °C...+70 °C  
750  
IEC 61076-3-106 Var. 4

## Ordering data

| Variant 4         |  |
|-------------------|--|
| 2 ports, straight |  |
| 2 ports, left     |  |
| 2 ports, right    |  |
| 1 port, straight  |  |

## Note

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-OM-V04P-K21-2S | 1    | 1966250000 |
| IE-OM-V04P-K21-2L | 1    | 1966240000 |
| IE-OM-V04P-K21-2R | 1    | 1966230000 |

RJ45 modules can be ordered separately

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-OM-V04P-K11-1S | 1    | 1966220000 |

RJ45 modules can be ordered separately

## Accessories

| Flange insert                                                                       |                    |
|-------------------------------------------------------------------------------------|--------------------|
|  | RJ45 EIA/TIA 568 A |
|                                                                                     | RJ45 EIA/TIA 568 B |
|                                                                                     | RJ45 PROFINET      |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

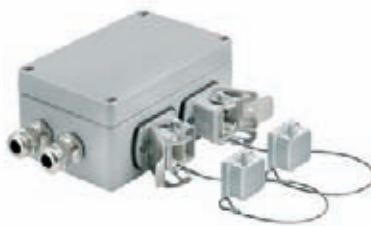
| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

## IP65 connection components

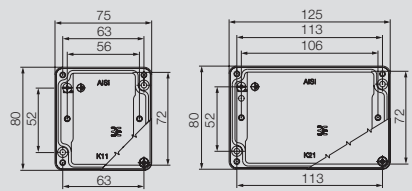
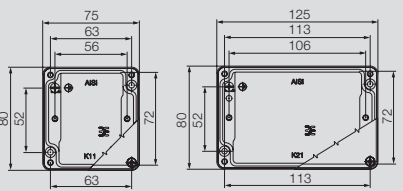
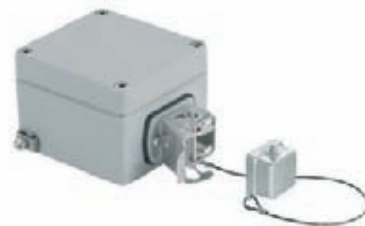
## V5 junction boxes

- IP 67
- For floor or wall mounting

## Double junction box



## Single junction box



## Technical data

Degree of protection  
Housing main material  
Colour  
Type of mounting  
Ambient temperature (operational), min. / max.  
Plugging cycles  
Connector standard

## Note

IP 67  
Al - Si 12  
grey  
Floor-mounted, Wall-mounted  
-40 °C...+70 °C  
750  
IEC 61076-3-106 Var. 5

IP 67  
Al - Si 12  
grey  
Floor-mounted, Wall-mounted  
-40 °C...+70 °C  
750  
IEC 61076-3-106 Var. 5

## Ordering data

## Variant 5

2 ports, straight  
2 ports, left  
2 ports, right  
1 port, straight

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-OM-V05M-K21-2S | 1    | 1966290000 |
| IE-OM-V05M-K21-2L | 1    | 1966280000 |
| IE-OM-V05M-K21-2R | 1    | 1966270000 |

## Note

RJ45 modules can be ordered separately

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| IE-OM-V05M-K11-1S | 1    | 1966260000 |

RJ45 modules can be ordered separately

## Accessories

## Flange insert



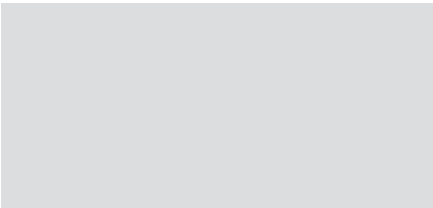
RJ45 EIA/TIA 568 A  
RJ45 EIA/TIA 568 B  
RJ45 PROFINET

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-BI-RJ45-FJ-A | 10   | 1962850000 |
| IE-BI-RJ45-FJ-B | 10   | 1963840000 |
| IE-BI-RJ45-FJ-P | 10   | 1963830000 |

V6 junction box

- Cat.6
- IP 67



Technical data

|                                                |
|------------------------------------------------|
| Degree of protection                           |
| Housing main material                          |
| Colour                                         |
| Type of mounting                               |
| Configuration                                  |
| Ambient temperature (operational), min. / max. |
| Plugging cycles                                |
| Connector standard                             |
| Note                                           |

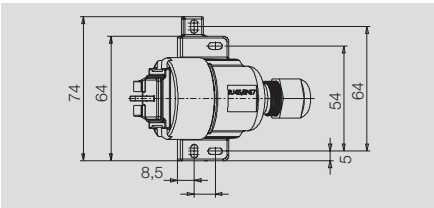
Ordering data

|              |
|--------------|
| Junction box |
| Note         |

Accessories

|                                                                                                   |
|---------------------------------------------------------------------------------------------------|
| Tools                                                                                             |
|  Crimping tool |

Single junction box



|                                                      |
|------------------------------------------------------|
| IP 67                                                |
| PA 66, UL 94: V-0                                    |
| light grey                                           |
| Floor-mounted, for exposed connections, Wall-mounted |
| Screw-on junction box                                |
| incl. RJ45 module with                               |
| IDC                                                  |
| -40 °C+70 °C                                         |
| 750                                                  |
| IEC 61076-3-106 Var. 6                               |
|                                                      |

| Type      | Qty. | Order No.  |
|-----------|------|------------|
| IE-S-IP67 | 1    | 8808370000 |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| TT 8 RS MP 8 | 1    | 9202800000 |



# Cables

|               |                                                   |      |
|---------------|---------------------------------------------------|------|
| <b>Cables</b> | Introduction                                      | D.2  |
|               | Product configurator – Copper cables              | D.3  |
|               | Overview – Copper cables                          | D.4  |
|               | Copper cabling solutions                          |      |
|               | Bulk stock - installation cable                   | D.6  |
|               | Bulk stock - connection cable                     | D.8  |
|               | Bulk stock - dragline cable                       | D.11 |
|               | Bulk stock - PROFINET cable                       | D.12 |
|               | Bulk stock - hybrid cable                         | D.14 |
|               | Assembled cables - patch cable                    | D.15 |
|               | Assembled cables - PROFINET cable                 | D.20 |
|               | Assembled cables - Ethernet/IP cable              | D.23 |
|               | Assembled cables - rail cable                     | D.24 |
|               | Overview – Fibre-optic cables                     | D.28 |
|               | Product configurator – Fibre-optic cables         | D.30 |
|               | Fibre-optic cabling solutions                     |      |
|               | Bulk stock - FO connection cable / dragline cable | D.31 |
|               | Assembled cables - FO patch cable                 | D.33 |
|               | Assembled cables - FO PROFINET cable              | D.35 |
|               | Assembled cables - FO system cable                | D.36 |
|               | Assembled cables - FO dragline cable              | D.37 |

# Passive components

## Advanced Line



The Advanced Line from Weidmüller offers all combinations of cables that are possible with the extensive range of plug connections.

This means flexibility and robustness through the high quality of the used components. The range comprises standard cables and customer-specific versions. Standard cables can be found in the catalogue; customer-specific versions can be freely configured online using the "Galaxy" configuration software. All Advanced Line cables are particularly suitable for industrial use.

- High-quality cables with very good technical characteristics
- Suitable for demanding IP20 to IP67 applications
- Suitable for temperatures from -40 to +70 °C
- High-quality shielding

## Cabinet Line



The new Cabinet Line range of patch cables from Weidmüller is available in a variety of colours for visually differentiating between various networks.

Additional advantage:

all Cabinet Line cables are fitted with Weidmüller TM marking sleeves for clearly labelling cables and ports. Cabinet Line is available in the colours grey, blue, red and violet in combination with LSZH sheathing material and transmission power Cat.6<sub>A</sub>. Furthermore, Cabinet Line is also available in the colour green and Cat.5 with PUR or PVC sheathing material. All variants are fitted with protected clips which facilitate, e.g., pulling through a cable duct.

- For applications in switching cabinets and simple environmental conditions
- Suitable for temperatures from 0 to +60 °C
- Simple shielding

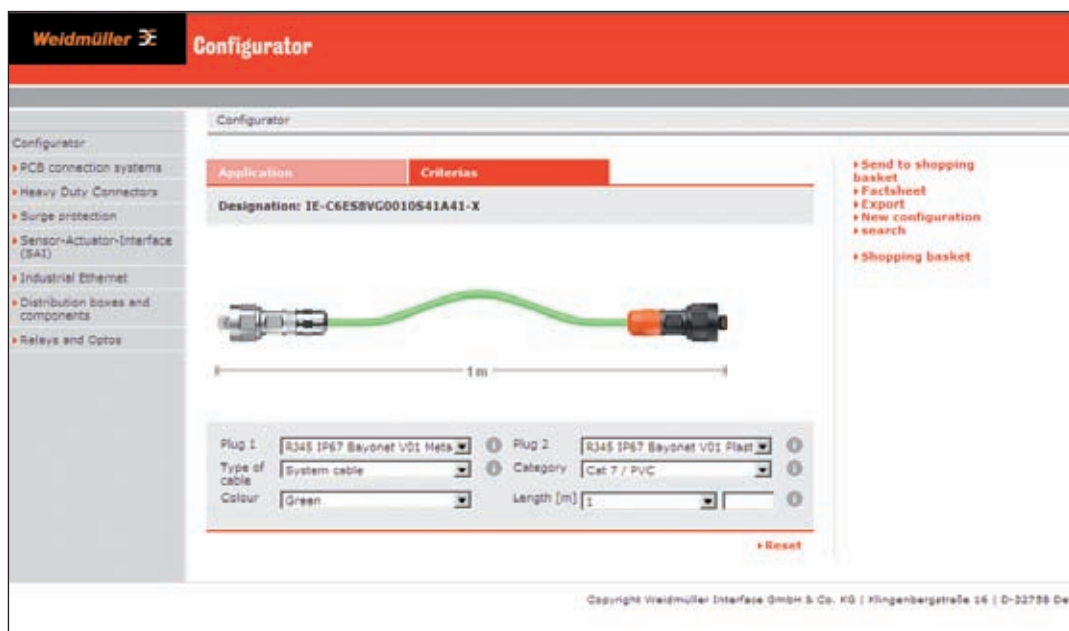
# Product configurator – Copper cables

The cable configurator in Weidmüller's online catalogue makes it possible for you to create fully-assembled cables adapted to your requirements and specifications.

You have the choice of configuring a cable which is identical on both ends, or with two different mating profiles, or with one end left open.

An RJ45 plug with IP20 protection is available. The following variants are also available with IP67 protection:

- Variant 1, metal
- Variant 4, plastic
- Variant 5, metal
- Variant 6, plastic
- M12 connector and additional housing variants to follow shortly



When selecting the cable, the following types are available:

- 8-wire system cable, AWG 26/7 in Cat.5 or Cat.7, with PVC or PUR sheath
- 8-wire dragline cable, AWG 26/7 in Cat.5, PUR sheath
- 4-wire PROFINET dragline cable in Cat.5, PUR sheath
- Additional cable variants to follow shortly.

The cable length can also be customised:

- From 0.3 m to 9.9 m, in 0.1 m steps
- From 10 m to 100 m, in 1 m steps

The cable configurator can also automatically create technical data sheets for all of your customised cable variants.

All of your customised cable selections can be sent to Weidmüller using the "request list". You will then quickly receive a price proposal for the cables from your local Weidmüller representative.

# Overview of copper cables

Copper cables should be your first choice for applications in offices and harsh industrial environments.

## Advantages:

- Available in many different variations and lengths
- Robust
- Easy to assemble
- RJ45 connections are the most popular

## Raw cables / Metre goods

### Industrial installation cables, horizontal cables



...for stationary, permanent installation in cable ducts and cable trays

- Cat.5 or Cat.7
- Available for PROFINET as well
- With PUR or PVC sheathing

### Industrial connecting cables



...for flexible installations in machines and plants in industrial applications and difficult environments

- Cat.5 or Cat.7
- Available for PROFINET as well
- With PUR or PVC sheathing

### Industrial trailing cables



...for applications subjected to constant movement

- Cat.5
- Available for PROFINET as well
- With PUR sheathing

## Assembled cables

### Industrial patch cables / CabinetLine



...not only for office applications, but also in switching cabinets for industrial applications

- Cat.6
- With LSZH sheathing – low smoke and zero halogens
- In straight and crossover versions

### Industrial system cables



...pre-assembled cables for flexible installations in machines and plants in industrial applications and difficult environments

- Cat.5 or Cat.6
- With PUR sheathing

### Industrial trailing cables



...pre-assembled cable for constant motion, e.g., with draglines

- Cat.5
- Available for PROFINET as well
- With PUR sheathing

### System cable for railway applications



...pre-assembled cable in Cat.5 with PUR sheath and IP67 protection – can be used on railway vehicles for both interior and exterior installations.

- In Cat. 5
- Also for PROFINET
- With Radox sheath

## Ordering data for copper cables

| Type                                  | Cat./Class     | Colour  | Plug-in connector<br>left | right     | Length      |             |            |            |            |            |
|---------------------------------------|----------------|---------|---------------------------|-----------|-------------|-------------|------------|------------|------------|------------|
| <b>Industrial installation cables</b> |                |         |                           |           | 100 m       | Metre goods |            |            |            |            |
| IE-5IC4x2xAWG24/1-PUR                 | Cat.5          | -       | -                         | -         | 8813160000  | 8944310000  |            |            |            |            |
| IE-5IC4x2xAWG24/1-PVC                 | Cat.5          | -       | -                         | -         | 8813150000  | 8953160000  |            |            |            |            |
| IE-7IC4x2xAWG23/1-PUR                 | Cat.7          | -       | -                         | -         | 8813140000  | 8955350000  |            |            |            |            |
| IE-7IC4x2xAWG23/1-PVC                 | Cat.7          | -       | -                         | -         | 8813130000  | 8955360000  |            |            |            |            |
| IE-C5AS4Vxx                           | Cat.5 PROFINET | -       | -                         | -         | 8899000000  | 8955950000  |            |            |            |            |
| <b>Industrial connecting cables</b>   |                |         |                           |           | 100 m       |             |            |            |            |            |
| IE-5CC4x2xAWG26/7-PUR                 | Cat.5          | -       | -                         | -         | 8813200000  | 8938880000  |            |            |            |            |
| IE-5CC4x2xAWG26/7-PVC                 | Cat.5          | -       | -                         | -         | 8813190000  | 8955490000  |            |            |            |            |
| IE-7CC4x2xAWG26/7-PUR                 | Cat.7          | -       | -                         | -         | 8813180000  | 8954300000  |            |            |            |            |
| IE-7CC4x2xAWG26/7-PVC                 | Cat.7          | -       | -                         | -         | 8813170000  | 8955480000  |            |            |            |            |
| IE-C5DS4Vxx                           | Cat.5 PROFINET | -       | -                         | -         | 8898990000  | 8955560000  |            |            |            |            |
| IE-C5DHAGxx                           | Cat.5 PROFINET | -       | -                         | -         |             | 1172250000  |            |            |            |            |
| <b>Industrial trailing cables</b>     |                |         |                           |           | Metre goods |             |            |            |            |            |
| IE-5TC4x2xAWG26/7-PUR                 | Cat.5          | -       | -                         | -         | 8813210000  |             |            |            |            |            |
| IE-C5DD4Uxx                           | Cat.5 PROFINET | -       | -                         | -         | 8899010000  | 8947670000  |            |            |            |            |
| <b>Industrial trailing cables</b>     |                |         |                           |           | 1 m         | 2 m         | 5 m        | 10 m       | 15 m       | 20 m       |
| IE-C5ED8UGxxxxA46A46-X                | Cat.5          |         | RJ45-IP67                 | RJ45-IP67 | 8829710000  | 8829720000  | 8829730000 | 8829740000 | 8829750000 | 8829760000 |
|                                       |                |         |                           |           | 1.5 m       | 3 m         | 5 m        | 10 m       |            |            |
| IE-C5AS4UGxxxxMCSMCS-X                | Cat.5          |         | M12                       | M12       | 8877610015  | 8877610030  | 8877610050 | 8877610100 |            |            |
| <b>Industrial patch cables</b>        |                |         |                           |           | 0.5 m       | 1 m         | 2 m        | 3 m        | 5 m        | 10 m       |
| IE-C6FP8LDxxxxM40M40-D                | Cat.6          | grey    | RJ45                      | RJ45      | 1165940005  | 1165940010  | 1165940020 | 1165940030 | 1165940050 | 1165940100 |
| IE-C6FP8LBxxxxM40M40-B                | Cat.6          | blue    | RJ45                      | RJ45      | 1165900005  | 1165900010  | 1165900020 | 1165900030 | 1165900050 | 1165900100 |
| IE-C6FP8LRxxxxM40M40-R                | Cat.6          | red     | RJ45                      | RJ45      | 1166030005  | 1166030010  | 1166030020 | 1166030030 | 1166030050 | 1166030100 |
| IE-C6FP8LMxxxxM40M40-M                | Cat.6          | magenta | RJ45                      | RJ45      | 1201270005  | 1201270010  | 1201270020 | 1201270030 | 1201270050 | 1201270100 |
| IE-C6FP8LYxxxxM40M40-Y                | Cat.6          | yellow  | RJ45                      | RJ45      | 1251580005  | 1251580010  | 1251580020 | 1251580030 | 1251580050 | 1251580100 |
| IE-C6FP8LExxxxM40M40-E                | Cat.6          | black   | RJ45                      | RJ45      | 1251610005  | 1251610010  | 1251610020 | 1251610030 | 1251610050 | 1251610100 |
| IE-C6FP8LGxxxxM40M40-G                | Cat.6          | green   | RJ45                      | RJ45      | 1251590005  | 1251590010  | 1251590020 | 1251590030 | 1251590050 | 1251590100 |
| IE-C6FP8LDxxxxM40W40-D                | Cat.6          | grey    | RJ45 spiralled 270°       | RJ45      | 1233160005  | 1233160010  | 1233160020 | 1233160030 | 1233160050 | 1233160100 |
| IE-C6FP8LDxxxxM40V40-D                | Cat.6          | grey    | RJ45 spiralled 90°        | RJ45      | 1248280005  | 1248280010  | 1248280020 | 1248280030 | 1248280050 | 1248280100 |
| IE-C5ES8VGxxxxM40M40-G                | Cat.5          | green   | RJ45                      | RJ45      | 1166020005  | 1166020010  | 1166020020 | 1166020030 | 1166020050 | 1166020100 |
| IE-C5ES8UGxxxxM40M40-G                | Cat.5          | green   | RJ45                      | RJ45      | 1166000005  | 1166000010  | 1166000020 | 1166000030 | 1166000050 | 1166000100 |
| <b>Industrial system cables</b>       |                |         |                           |           | 0.5 m       | 1 m         | 2 m        | 3 m        | 5 m        | 10 m       |
| IE-C5DD4UGxxxxA20A20-E                | Cat.5          | green   | RJ45                      | RJ45      |             | 1173030010  |            | 1173030030 | 1173030050 | 1173030100 |
| IE-C5DD4UGxxxxA2EA2E-X                | Cat.5          | green   | V14 RJ45                  | V14 RJ45  |             | 1119730010  |            | 1119730030 | 1119730050 | 1119730100 |
| IE-C5ES8UGxxxxB41B41-E                | Cat.5          | green   | V01 RJ45                  | V01 RJ45  |             | 1066850000  | 1066860000 |            | 1066870000 | 1066880000 |
| IE-C5ES8UGxxxxP41P41-E                | Cat.5          | green   | V01 RJ45                  | V01 RJ45  |             | 1106010000  | 1106020000 |            | 1106030000 | 1106040000 |



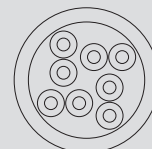
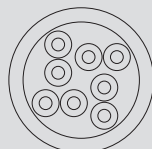
## Copper cabling solutions

## Metre goods

## Cat. 5 installation cable

## PUR

## PVC



## Technical data

|                                   | PUR                                        | PVC                                        |
|-----------------------------------|--------------------------------------------|--------------------------------------------|
| Product type                      | Installation cable                         | Installation cable                         |
| Category                          | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| Shielding                         | SF/UTP                                     | SF/UTP                                     |
| Cross-section                     | 4*2*AWG 24/1 - 4*2*0.205 mm <sup>2</sup>   | 4*2*AWG 24/1 - 4*2*0.205 mm <sup>2</sup>   |
| Sheath diameter, max.             | 6.7 mm                                     | 6.3 mm                                     |
| Material sheath                   | PUR                                        | PVC                                        |
| Sheathing colour                  | green (RAL 6018)                           | green (RAL 6018)                           |
| Insulation cross-section          | 1 mm                                       | 1 mm                                       |
| Min. bending radius, repetitive   | 10 x conductor cross-section               | 10 x conductor cross-section               |
| Min. bending radius, once only    | 5 x conductor cross-section                | 5 x conductor cross-section                |
| Ambient temperature (operational) | -40 °C...+80 °C                            | -40 °C...+80 °C                            |
| Installation temperature          | -15 °C...+60 °C                            | -15 °C...+60 °C                            |
| Storage temperature               | -40 °C...+80 °C                            | -40 °C...+80 °C                            |
| Abrasion resistance               | very good                                  | good                                       |
| Halogen                           | to IEC 60754-2                             |                                            |
| Resistance to spread of flame     | acc. to IEC 60332-1                        | acc. to IEC 60332-1                        |
| Resistance to oils                | acc. to IEC 60811-2-1                      |                                            |
| <b>Note</b>                       |                                            |                                            |

## Ordering data

|                              | Type                                                            | Qty. | Order No.  |
|------------------------------|-----------------------------------------------------------------|------|------------|
| 100 m                        | IE-5IC4x2xAWG24/1-PUR                                           | 1    | 8813160000 |
| Bulk stock starting at 110 m | IE-C5CS8UG-MW                                                   | 1    | 8944310000 |
| <b>Note</b>                  | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |

## Accessories

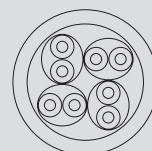
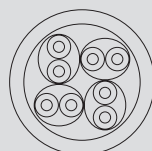
| Sheathing stripper |                                       |  |  |
|--------------------|---------------------------------------|--|--|
|                    | For UTP and STP data cables           |  |  |
|                    | For coaxial and round data cables     |  |  |
| Markers            |                                       |  |  |
|                    | Insertion label, yellow, 12 mm        |  |  |
|                    | Insertion label, yellow, 18 mm        |  |  |
|                    | Transparent sleeves, 12-mm length     |  |  |
|                    | Transparent sleeves, 18-mm length     |  |  |
|                    | Wire and cable marker, ø 4,7 - 7,4 mm |  |  |
|                    | Wire and cable marker, ø 5,8 - 7,8 mm |  |  |

## Metre goods

## Cat. 7 installation cable

## PUR

## PVC



## Technical data

| Product type                      | Installation cable                       | Installation cable                       |
|-----------------------------------|------------------------------------------|------------------------------------------|
| Category                          | Cat.7 (ISO/IEC 11801)                    | Cat.7 (ISO/IEC 11801)                    |
| Shielding                         | S/FTP                                    | S/FTP                                    |
| Cross-section                     | 4*2*AWG 23/1 - 4*2*0.255 mm <sup>2</sup> | 4*2*AWG 23/1 - 4*2*0.255 mm <sup>2</sup> |
| Sheath diameter, max.             | 8.4 mm                                   | 8.4 mm                                   |
| Material sheath                   | PUR                                      | PVC                                      |
| Sheathing colour                  | green (RAL 6018)                         | green (RAL 6018)                         |
| Insulation cross-section          | 1.4 mm                                   | 1.4 mm                                   |
| Min. bending radius, repetitive   | 10 x conductor cross-section             | 10 x conductor cross-section             |
| Min. bending radius, once only    | 5 x conductor cross-section              | 5 x conductor cross-section              |
| Ambient temperature (operational) | -40 °C...+80 °C                          | -40 °C...+80 °C                          |
| Installation temperature          | -15 °C...+60 °C                          | -15 °C...+60 °C                          |
| Storage temperature               | -40 °C...+80 °C                          | -40 °C...+80 °C                          |
| Abrasion resistance               | very good                                | good                                     |
| Halogen                           | to IEC 60754-2                           |                                          |
| Resistance to spread of flame     | acc. to IEC 60332-1                      | acc. to IEC 60332-1                      |
| Resistance to oils                | acc. to IEC 60811-2-1                    |                                          |
| Note                              |                                          |                                          |

## Ordering data

| Type                                                            | Qty. | Order No.  | Type                                                            | Qty. | Order No.  |
|-----------------------------------------------------------------|------|------------|-----------------------------------------------------------------|------|------------|
| IE-7IC4x2xAWG23/1-PUR                                           | 1    | 8813140000 | IE-7IC4x2xAWG23/1-PVC                                           | 1    | 8813130000 |
| IE-C7BS8UG-MW                                                   | 1    | 8955350000 | IE-C7BS8VG-MW                                                   | 1    | 8955360000 |
| Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |

## Accessories

| Sheathing stripper                    | Type                     | Qty. | Order No.  | Type                     | Qty. | Order No.  |
|---------------------------------------|--------------------------|------|------------|--------------------------|------|------------|
| For UTP and STP data cables           | AM 12                    | 1    | 9030060000 | AM 12                    | 1    | 9030060000 |
| For coaxial and round data cables     | IE-CST                   | 1    | 9204350000 | IE-CST                   | 1    | 9204350000 |
| Markers                               | Type                     | Qty. | Order No.  | Type                     | Qty. | Order No.  |
| Insertion label, yellow, 12 mm        | TM-I 12 NEUTRAL GE       | 320  | 1718411687 | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| Insertion label, yellow, 18 mm        | TM-I 18 NEUTRAL GE       | 320  | 1718431687 | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| Transparent sleeves, 12-mm length     | TM 4/12 HF/HB            | 500  | 1719840000 | TM 4/12 HF/HB            | 500  | 1719840000 |
| Transparent sleeves, 18-mm length     | TM 4/18 HF/HB            | 500  | 1719850000 | TM 4/18 HF/HB            | 500  | 1719850000 |
| Wire and cable marker, ø 4,7 - 7,4 mm | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| Wire and cable marker, ø 5,8 - 7,8 mm | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

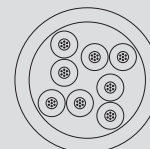
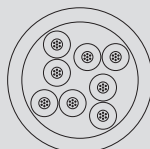
## Copper cabling solutions

## Metre goods

## Cat. 5 connection cable

## PUR

## PVC



## Technical data

|                                   | PUR                                        | PVC                                        |
|-----------------------------------|--------------------------------------------|--------------------------------------------|
| Product type                      | System cable                               | System cable                               |
| Category                          | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| Shielding                         | SF/UTP                                     | SF/UTP                                     |
| Cross-section                     | 4*2*AWG 26/7 - 4*2*0.128 mm <sup>2</sup>   | 4*2*AWG 26/7 - 4*2*0.128 mm <sup>2</sup>   |
| Sheath diameter, max.             | 6.1 mm                                     | 5.8 mm                                     |
| Material sheath                   | PUR                                        | PVC                                        |
| Sheathing colour                  | green (RAL 6018)                           | green (RAL 6018)                           |
| Insulation cross-section          | 1 mm                                       | 1 mm                                       |
| Min. bending radius, repetitive   | 10 x conductor cross-section               | 10 x conductor cross-section               |
| Min. bending radius, once only    | 5 x conductor cross-section                | 5 x conductor cross-section                |
| Ambient temperature (operational) | -40 °C...+80 °C                            | -40 °C...+80 °C                            |
| Installation temperature          | -10 °C...+60 °C                            | -15 °C...+60 °C                            |
| Storage temperature               | -40 °C...+80 °C                            | -40 °C...+80 °C                            |
| Abrasion resistance               | very good                                  | good                                       |
| Halogen                           | to IEC 60754-2                             |                                            |
| Resistance to spread of flame     | acc. to IEC 60332-1                        | acc. to IEC 60332-1                        |
| Resistance to oils                | acc. to IEC 60811-2-1                      |                                            |
| <b>Note</b>                       |                                            |                                            |

## Ordering data

|                              | Type                                                            | Qty. | Order No.  |
|------------------------------|-----------------------------------------------------------------|------|------------|
| 100 m                        | IE-5CC4x2xAWG26/7-PUR                                           | 1    | 8813200000 |
| Bulk stock starting at 110 m | IE-C5ES8UG-MW                                                   | 1    | 8938880000 |
| <b>Note</b>                  | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |

## Accessories

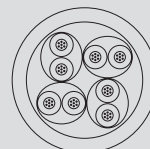
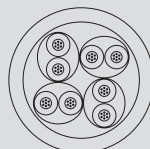
| Sheathing stripper |                                       |  |  |
|--------------------|---------------------------------------|--|--|
|                    | For UTP and STP data cables           |  |  |
|                    | For coaxial and round data cables     |  |  |
| Markers            |                                       |  |  |
|                    | Insertion label, yellow, 12 mm        |  |  |
|                    | Insertion label, yellow, 18 mm        |  |  |
|                    | Transparent sleeves, 12-mm length     |  |  |
|                    | Transparent sleeves, 18-mm length     |  |  |
|                    | Wire and cable marker, ø 4,7 - 7,4 mm |  |  |
|                    | Wire and cable marker, ø 5,8 - 7,8 mm |  |  |

## Metre goods

## Cat. 7 connection cable

## PUR

## PVC



## Technical data

|                                   | PUR                                      | PVC                                      |
|-----------------------------------|------------------------------------------|------------------------------------------|
| Product type                      | System cable                             | System cable                             |
| Category                          | Cat.7 (ISO/IEC 11801)                    | Cat.7 (ISO/IEC 11801)                    |
| Shielding                         | S/FTP                                    | S/FTP                                    |
| Cross-section                     | 4*2*AWG 26/7 - 4*2*0.128 mm <sup>2</sup> | 4*2*AWG 26/7 - 4*2*0.128 mm <sup>2</sup> |
| Sheath diameter, max.             | 6.6 mm                                   | 6.7 mm                                   |
| Material sheath                   | PUR                                      | PVC                                      |
| Sheathing colour                  | green (RAL 6018)                         | green (RAL 6018)                         |
| Insulation cross-section          | 1.03 mm                                  | 0.98 mm                                  |
| Min. bending radius, repetitive   | 10 x conductor cross-section             | 10 x conductor cross-section             |
| Min. bending radius, once only    | 5 x conductor cross-section              | 5 x conductor cross-section              |
| Ambient temperature (operational) | -40 °C...+80 °C                          | -40 °C...+80 °C                          |
| Installation temperature          | -15 °C...+60 °C                          | -15 °C...+60 °C                          |
| Storage temperature               | -40 °C...+80 °C                          | -40 °C...+80 °C                          |
| Abrasion resistance               | very good                                | good                                     |
| Halogen                           | to IEC 60754-2                           |                                          |
| Resistance to spread of flame     | acc. to IEC 60332-1                      | acc. to IEC 60332-1                      |
| Resistance to oils                | acc. to IEC 60811-2-1                    |                                          |
| Note                              |                                          |                                          |

## Ordering data

|                              | Type                                                            | Qty. | Order No.  |
|------------------------------|-----------------------------------------------------------------|------|------------|
| 100 m                        | IE-7CC4x2xAWG26/7-PUR                                           | 1    | 8813180000 |
| Bulk stock starting at 110 m | IE-C7ES8UG-MW                                                   | 1    | 8954300000 |
| Note                         | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |

## Accessories

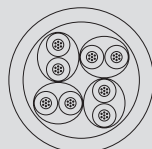
| Sheathing stripper                    | Type                     | Qty. | Order No.  |
|---------------------------------------|--------------------------|------|------------|
| For UTP and STP data cables           | AM 12                    | 1    | 9030060000 |
| For coaxial and round data cables     | IE-CST                   | 1    | 9204350000 |
| Markers                               |                          |      |            |
| Insertion label, yellow, 12 mm        | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| Insertion label, yellow, 18 mm        | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| Transparent sleeves, 12-mm length     | TM 4/12 HF/HB            | 500  | 1719840000 |
| Transparent sleeves, 18-mm length     | TM 4/18 HF/HB            | 500  | 1719850000 |
| Wire and cable marker, ø 4,7 - 7,4 mm | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| Wire and cable marker, ø 5,8 - 7,8 mm | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Copper cabling solutions

## Metre goods

## Cat. 7 connection cable

## LSZH



## Technical data

|                                   |
|-----------------------------------|
| Product type                      |
| Category                          |
| Shielding                         |
| Cross-section                     |
| Sheath diameter, max.             |
| Material sheath                   |
| Sheathing colour                  |
| Insulation cross-section          |
| Min. bending radius, repetitive   |
| Min. bending radius, once only    |
| Ambient temperature (operational) |
| Installation temperature          |
| Halogen                           |
| Resistance to spread of flame     |
| Resistance to oils                |

|                                        |
|----------------------------------------|
| System cable                           |
| Cat.7 (ISO/IEC 11801)                  |
| S/FTP                                  |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup> |
| 5.9 mm                                 |
| LSZH                                   |
| light grey (RAL 7035)                  |
| 1.04 mm                                |
| 50 mm                                  |
| 25 mm                                  |
| -20 °C...+60 °C                        |
| 0 °C...+50 °C                          |
| No                                     |
| acc. to IEC 60332-1                    |

## Note

## Ordering data

305 m / 1000 ft

## Note

## Accessories

## Sheathing stripper

For UTP and STP data cables  
For coaxial and round data cables

## Markers

Insertion label, yellow, 12 mm  
Insertion label, yellow, 18 mm  
Transparent sleeves, 12-mm length  
Transparent sleeves, 18-mm length  
Wire and cable marker, ø 4,7 - 7,4 mm  
Wire and cable marker, ø 5,8 - 7,8 mm

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-C7FS8LD-305M | 1    | 1273090000 |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

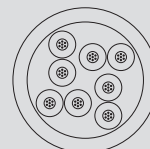
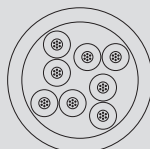
| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Metre goods

### Cat. 5 dragline cable

#### PUR, green

#### PUR, blue



### Technical data

|                                   |
|-----------------------------------|
| Product type                      |
| Category                          |
| Shielding                         |
| Cross-section                     |
| Sheath diameter, max.             |
| Material sheath                   |
| Sheathing colour                  |
| Insulation cross-section          |
| Min. bending radius, repetitive   |
| Min. bending radius, once only    |
| Bending cycles                    |
| Ambient temperature (operational) |
| Installation temperature          |
| Storage temperature               |
| Abrasion resistance               |
| Halogen                           |
| Resistance to spread of flame     |
| Resistance to oils                |

|                                            |
|--------------------------------------------|
| Dragline cable                             |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| SF/UTP                                     |
| 4*2*AWG 26/7 - 4*2*0.128 mm <sup>2</sup>   |
| 6.8 mm                                     |
| PUR                                        |
| green (RAL 6018)                           |
| 0.95 mm                                    |
| 7.5 *diameter                              |
| 4 x conductor cross-section                |
| 5 Mio                                      |
| -40 °C...+80 °C                            |
| -20 °C...+60 °C                            |
| -40 °C...+80 °C                            |
| very good                                  |
| to IEC 60754-2                             |
| acc. to IEC 60332-1                        |
| acc. to IEC 60811-2-1                      |

|                                            |
|--------------------------------------------|
| Dragline cable                             |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| SF/UTP                                     |
| 4*2*AWG 26/7 - 4*2*0.128 mm <sup>2</sup>   |
| 6.8 mm                                     |
| PUR                                        |
| blue (RAL 5015)                            |
| 0.95 mm                                    |
| 7.5 *diameter                              |
| 4 x conductor cross-section                |
| 5 Mio                                      |
| -40 °C...+80 °C                            |
| -20 °C...+60 °C                            |
| -40 °C...+80 °C                            |
| very good                                  |
| to IEC 60754-2                             |
| acc. to IEC 60332-1                        |
| acc. to IEC 60811-2-1                      |

#### Note

### Ordering data

100 m  
Bulk stock starting at 110 m

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| IE-5TC4x2xAWG26/7-PUR | 1    | 8813210000 |
| IE-C5ED8UG-MW         | 1    | 8936390000 |

Order example, for bulk: 150 x „article number“ = 150 m on drum

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-C5ED8UB-100M | 1    | 8960670000 |
| IE-C5ED8UB-MW   | 1    | 8949760000 |

Order example, for bulk: 150 x „article number“ = 150 m on drum

#### Note

### Accessories

#### Sheathing stripper

For UTP and STP data cables  
For coaxial and round data cables

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

#### Markers

Insertion label, yellow, 12 mm  
Insertion label, yellow, 18 mm  
Transparent sleeves, 12-mm length  
Transparent sleeves, 18-mm length  
Wire and cable marker, ø 4,7 - 7,4 mm  
Wire and cable marker, ø 5,8 - 7,8 mm

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

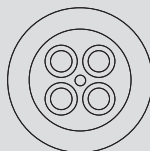
| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Copper cabling solutions

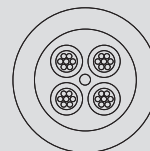
Metre goods  
PROFINET cable

- PVC

## Installation cable type A



## Connection cable type B



## Technical data

| Product type                      | Installation cable                         | System cable                               |
|-----------------------------------|--------------------------------------------|--------------------------------------------|
| Category                          | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| Shielding                         | SF/UTP                                     | SF/UTP                                     |
| Cross-section                     | 4*AWG 22/1 - 0.33 mm <sup>2</sup>          | 4*AWG 22/7 - 0.36 mm <sup>2</sup>          |
| Sheath diameter, max.             | 6.7 mm                                     | 6.7 mm                                     |
| Material sheath                   | PVC                                        | PVC                                        |
| Sheathing colour                  | green (RAL 6018)                           | green (RAL 6018)                           |
| Insulation cross-section          | 1.5 mm                                     | 1.5 mm                                     |
| Min. bending radius, repetitive   | 7.5 *diameter                              | 7.5 *diameter                              |
| Min. bending radius, once only    | 3.5 x conductor cross-section              | 3.5 x conductor cross-section              |
| Ambient temperature (operational) | -40 °C...+75 °C                            | -40 °C...+70 °C                            |
| Installation temperature          | -20 °C...+60 °C                            | -20 °C...+60 °C                            |
| Storage temperature               | -40 °C...+75 °C                            | -40 °C...+70 °C                            |
| Abrasion resistance               | good                                       | good                                       |
| Resistance to spread of flame     | acc. to IEC 60332-1 / UL 1685              | acc. to IEC 60332-1 / UL 1685              |
| <b>Note</b>                       |                                            |                                            |

## Ordering data

|                              | Type                                                            | Qty. | Order No.  |  | Type                                                            | Qty. | Order No.  |
|------------------------------|-----------------------------------------------------------------|------|------------|--|-----------------------------------------------------------------|------|------------|
| 100 m                        | IE-C5AS4V1000                                                   | 1    | 8899000000 |  | IE-C5DS4V1000                                                   | 1    | 8898990000 |
| Bulk stock starting at 110 m | IE-C5AS4VG-MW                                                   | 1    | 8955950000 |  | IE-C5DS4VG-MW                                                   | 1    | 8955560000 |
| <b>Note</b>                  | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |  | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |

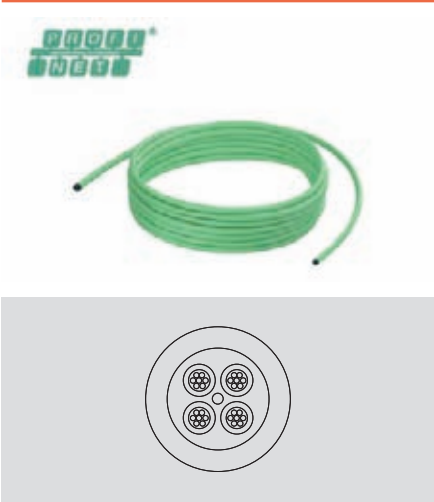
## Accessories

| Sheathing stripper |                                       |      |            |  |                          |      |            |
|--------------------|---------------------------------------|------|------------|--|--------------------------|------|------------|
|                    | For UTP and STP data cables           |      |            |  |                          |      |            |
|                    | For coaxial and round data cables     |      |            |  |                          |      |            |
| Markers            |                                       |      |            |  |                          |      |            |
|                    | Insertion label, yellow, 12 mm        |      |            |  |                          |      |            |
|                    | Insertion label, yellow, 18 mm        |      |            |  |                          |      |            |
|                    | Transparent sleeves, 12-mm length     |      |            |  |                          |      |            |
|                    | Transparent sleeves, 18-mm length     |      |            |  |                          |      |            |
|                    | Wire and cable marker, ø 4,7 - 7,4 mm |      |            |  |                          |      |            |
|                    | Wire and cable marker, ø 5,8 - 7,8 mm |      |            |  |                          |      |            |
|                    | Type                                  | Qty. | Order No.  |  | Type                     | Qty. | Order No.  |
|                    | AM 12                                 | 1    | 9030060000 |  | AM 12                    | 1    | 9030060000 |
|                    | IE-CST                                | 1    | 9204350000 |  | IE-CST                   | 1    | 9204350000 |
|                    |                                       |      |            |  |                          |      |            |
|                    | TM-I 12 NEUTRAL GE                    | 320  | 1718411687 |  | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
|                    | TM-I 18 NEUTRAL GE                    | 320  | 1718431687 |  | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
|                    | TM 4/12 HF/HB                         | 500  | 1719840000 |  | TM 4/12 HF/HB            | 500  | 1719840000 |
|                    | TM 4/18 HF/HB                         | 500  | 1719850000 |  | TM 4/18 HF/HB            | 500  | 1719850000 |
|                    | VT SF 5/21 NEUTRAL WS V0              | 160  | 1689470001 |  | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
|                    | VT SF 6/21 NEUTRAL WS V0              | 160  | 1730560001 |  | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

Metre goods  
PROFINET cable

- PUR

Dragline cable type C



Technical data

|                                   |                                            |
|-----------------------------------|--------------------------------------------|
| Product type                      | Dragline cable                             |
| Category                          | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| Shielding                         | SF/UTP                                     |
| Cross-section                     | 4*AWG 22/7 - 0.36 mm²                      |
| Sheath diameter, max.             | 6.7 mm                                     |
| Material sheath                   | PUR                                        |
| Sheathing colour                  | green (RAL 6018)                           |
| Insulation cross-section          | 1.5 mm                                     |
| Min. bending radius, repetitive   | 7.5 *diameter                              |
| Min. bending radius, once only    | 5 x conductor cross-section                |
| Bending cycles                    | 3 Mio                                      |
| Ambient temperature (operational) | -40 °C...+70 °C                            |
| Installation temperature          | -20 °C...+60 °C                            |
| Storage temperature               | -50 °C...+70 °C                            |
| Abrasion resistance               | very good                                  |
| Halogen                           | to IEC 60754-2                             |
| Resistance to spread of flame     | acc. to IEC 60332-1                        |
| Resistance to oils                | acc. to IEC 60811-2-1                      |
| Note                              |                                            |

Ordering data

| Cat,5 PROFINET, PUR          | Type                                                            | Qty. | Order No.  |
|------------------------------|-----------------------------------------------------------------|------|------------|
| 100 m                        | IE-C5DD4U1000                                                   | 1    | 8899010000 |
| Bulk stock starting at 110 m | IE-C5DD4UG-MW                                                   | 1    | 8947670000 |
| Note                         | Order example, for bulk: 150 x „article number“ = 150 m on drum |      |            |

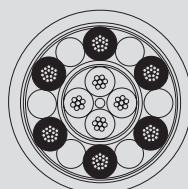
Accessories

| Sheathing stripper                    | Type                     | Qty. | Order No.  |
|---------------------------------------|--------------------------|------|------------|
| For UTP and STP data cables           | AM 12                    | 1    | 9030060000 |
| For coaxial and round data cables     | IE-CST                   | 1    | 9204350000 |
| Markers                               | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| Insertion label, yellow, 12 mm        | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| Insertion label, yellow, 18 mm        | TM 4/12 HF/HB            | 500  | 1719840000 |
| Transparent sleeves, 12-mm length     | TM 4/18 HF/HB            | 500  | 1719850000 |
| Transparent sleeves, 18-mm length     | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| Wire and cable marker, ø 4,7 - 7,4 mm | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |
| Wire and cable marker, ø 5,8 - 7,8 mm |                          |      |            |

## Copper cabling solutions

Metre goods  
hybrid cable

## PVC



## Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Sheathing colour                                 |
| Insulation cross-section / Insulation diameter 2 |
| Min. bending radius, repetitive                  |
| Min. bending radius, once only                   |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Abrasion resistance                              |
| Halogen                                          |
| Resistance to spread of flame                    |
| Resistance to oils                               |

|                                                           |
|-----------------------------------------------------------|
| Connecting cables                                         |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)                |
| SF/UTP                                                    |
| 4*AWG 22/7 - 0.36 mm <sup>2</sup> , 6*0.5 mm <sup>2</sup> |
| 9.5 mm                                                    |
| PVC                                                       |
| green (RAL 6018)                                          |
| 1.5 mm / 1.75 mm                                          |
| 7.5 *diameter                                             |
| 3.5 x conductor cross-section                             |
| -40 °C...+70 °C                                           |
| -20 °C...+60 °C                                           |
| -40 °C...+70 °C                                           |
| good                                                      |
| Yes                                                       |
| acc. to IEC 60332-1 / UL 1685                             |
| Limited                                                   |

## Note

## Ordering data

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-C5DHAG-MW | 1    | 1172250000 |

## Note

Order example, for bulk: 150 x „article number“ = 150 m on drum

## Accessories

## Sheathing stripper

|                                   |
|-----------------------------------|
| For UTP and STP data cables       |
| For coaxial and round data cables |

## Markers

|                                       |
|---------------------------------------|
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Assembled cables

### Cat. 6 patch cable, straight, Cabinet Line

#### LSZH grey



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

#### LSZH blue



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

### Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Colour                                           |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Min. bending radius, once only                   |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Halogen                                          |
| Resistance to spread of flame                    |

#### Note

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| grey                                                           |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| blue                                                           |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

### Ordering data

|       | Type                   | Qty. | Order No.  |
|-------|------------------------|------|------------|
| 0,5 m | IE-C6FP8LD0005M40M40-D | 1    | 1165940005 |
| 1 m   | IE-C6FP8LD0010M40M40-D | 1    | 1165940010 |
| 1,5 m | IE-C6FP8LD0015M40M40-D | 1    | 1165940015 |
| 2 m   | IE-C6FP8LD0020M40M40-D | 1    | 1165940020 |
| 3 m   | IE-C6FP8LD0030M40M40-D | 1    | 1165940030 |
| 5 m   | IE-C6FP8LD0050M40M40-D | 1    | 1165940050 |
| 7,5 m | IE-C6FP8LD0075M40M40-D | 1    | 1165940075 |
| 10 m  | IE-C6FP8LD0100M40M40-D | 1    | 1165940100 |
| 15 m  | IE-C6FP8LD0150M40M40-D | 1    | 1165940150 |
| 20 m  | IE-C6FP8LD0200M40M40-D | 1    | 1165940200 |
| 25 m  | IE-C6FP8LD0250M40M40-D | 1    | 1165940250 |

#### Note

### Accessories

|                                   |
|-----------------------------------|
| Sheathing stripper                |
| For UTP and STP data cables       |
| For coaxial and round data cables |

#### Markers

|                                       |
|---------------------------------------|
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Copper cabling solutions

## Assembled cables

Cat. 6 patch cable, straight,  
Cabinet Line

## LSZH black



## LSZH green



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

## Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Colour                                           |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Min. bending radius, once only                   |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Halogen                                          |
| Resistance to spread of flame                    |
| <b>Note</b>                                      |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| black                                                          |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| green                                                          |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

## Ordering data

|  |       |
|--|-------|
|  | 0,5 m |
|  | 1 m   |
|  | 1,5 m |
|  | 2 m   |
|  | 3 m   |
|  | 5 m   |
|  | 10 m  |
|  | 15 m  |
|  | 20 m  |
|  | 25 m  |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LE0005M40M40-E | 1    | 1251610005 |
| IE-C6FP8LE0010M40M40-E | 1    | 1251610010 |
| IE-C6FP8LE0015M40M40-E | 1    | 1251610015 |
| IE-C6FP8LE0020M40M40-E | 1    | 1251610020 |
| IE-C6FP8LE0030M40M40-E | 1    | 1251610030 |
| IE-C6FP8LE0050M40M40-E | 1    | 1251610050 |
| IE-C6FP8LE0100M40M40-E | 1    | 1251610100 |
| IE-C6FP8LE0150M40M40-E | 1    | 1251610150 |
| IE-C6FP8LE0200M40M40-E | 1    | 1251610200 |
| IE-C6FP8LE0250M40M40-E | 1    | 1251610250 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LG0005M40M40-G | 1    | 1251590005 |
| IE-C6FP8LG0010M40M40-G | 1    | 1251590010 |
| IE-C6FP8LG0015M40M40-G | 1    | 1251590015 |
| IE-C6FP8LG0020M40M40-G | 1    | 1251590020 |
| IE-C6FP8LG0030M40M40-G | 1    | 1251590030 |
| IE-C6FP8LG0050M40M40-G | 1    | 1251590050 |
| IE-C6FP8LG0100M40M40-G | 1    | 1251590100 |
| IE-C6FP8LG0150M40M40-G | 1    | 1251590150 |
| IE-C6FP8LG0200M40M40-G | 1    | 1251590200 |
| IE-C6FP8LG0250M40M40-G | 1    | 1251590250 |

Note

## Accessories

|                                       |
|---------------------------------------|
| <b>Sheathing stripper</b>             |
| For UTP and STP data cables           |
| For coaxial and round data cables     |
| <b>Markers</b>                        |
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## LSZH red



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| red                                                            |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LR0005M40M40-R | 1    | 1166030005 |
| IE-C6FP8LR0010M40M40-R | 1    | 1166030010 |
| IE-C6FP8LR0015M40M40-R | 1    | 1166030015 |
| IE-C6FP8LR0020M40M40-R | 1    | 1166030020 |
| IE-C6FP8LR0030M40M40-R | 1    | 1166030030 |
| IE-C6FP8LR0050M40M40-R | 1    | 1166030050 |
| IE-C6FP8LR0100M40M40-R | 1    | 1166030100 |
| IE-C6FP8LR0150M40M40-R | 1    | 1166030150 |
| IE-C6FP8LR0200M40M40-R | 1    | 1166030200 |
| IE-C6FP8LR0250M40M40-R | 1    | 1166030250 |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

|                          |     |            |
|--------------------------|-----|------------|
| TM-I 12 NEUTRAL GE       | 320 | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320 | 1718431687 |
| TM 4/12 HF/HB            | 500 | 1719840000 |
| TM 4/18 HF/HB            | 500 | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160 | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160 | 1730560001 |

## LSZH magenta



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| magenta                                                        |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LM0005M40M40-M | 1    | 1201270005 |
| IE-C6FP8LM0010M40M40-M | 1    | 1201270010 |
| IE-C6FP8LM0015M40M40-M | 1    | 1201270015 |
| IE-C6FP8LM0020M40M40-M | 1    | 1201270020 |
| IE-C6FP8LM0030M40M40-M | 1    | 1201270030 |
| IE-C6FP8LM0050M40M40-M | 1    | 1201270050 |
| IE-C6FP8LM0100M40M40-M | 1    | 1201270100 |
| IE-C6FP8LM0150M40M40-M | 1    | 1201270150 |
| IE-C6FP8LM0200M40M40-M | 1    | 1201270200 |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

|                          |     |            |
|--------------------------|-----|------------|
| TM-I 12 NEUTRAL GE       | 320 | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320 | 1718431687 |
| TM 4/12 HF/HB            | 500 | 1719840000 |
| TM 4/18 HF/HB            | 500 | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160 | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160 | 1730560001 |

## LSZH yellow



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20 / RJ45 IP 20                                         |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| yellow                                                         |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LY0005M40M40-Y | 1    | 1251580005 |
| IE-C6FP8LY0010M40M40-Y | 1    | 1251580010 |
| IE-C6FP8LY0015M40M40-Y | 1    | 1251580015 |
| IE-C6FP8LY0020M40M40-Y | 1    | 1251580020 |
| IE-C6FP8LY0030M40M40-Y | 1    | 1251580030 |
| IE-C6FP8LY0050M40M40-Y | 1    | 1251580050 |
| IE-C6FP8LY0100M40M40-Y | 1    | 1251580100 |
| IE-C6FP8LY0150M40M40-Y | 1    | 1251580150 |
| IE-C6FP8LY0200M40M40-Y | 1    | 1251580200 |
| IE-C6FP8LY0250M40M40-Y | 1    | 1251580250 |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

|                          |     |            |
|--------------------------|-----|------------|
| TM-I 12 NEUTRAL GE       | 320 | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320 | 1718431687 |
| TM 4/12 HF/HB            | 500 | 1719840000 |
| TM 4/18 HF/HB            | 500 | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160 | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160 | 1730560001 |

## Copper cabling solutions

## Assembled cables

## Cat. 6 Cabinet Line patch cable angled

## LSZH grey 270°



## LSZH grey 90°



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

## Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Colour                                           |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Min. bending radius, once only                   |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Halogen                                          |
| Resistance to spread of flame                    |
| <b>Note</b>                                      |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20, Angled 270° / RJ45 IP 20                            |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| grey                                                           |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

|                                                                |
|----------------------------------------------------------------|
| Patch cable                                                    |
| Cat.6 <sub>A</sub> / Class E <sub>A</sub> (ISO/IEC 11801 2010) |
| S/FTP                                                          |
| RJ45 IP20, Angled 90° / RJ45 IP 20                             |
| 4*2*AWG 27/7 - 4*2*0.1 mm <sup>2</sup>                         |
| 5.9 mm                                                         |
| LSZH                                                           |
| grey                                                           |
| 1.04 mm                                                        |
| 50 mm                                                          |
| 25 mm                                                          |
| -20 °C...+60 °C                                                |
| 0 °C...+50 °C                                                  |
| -20 °C...+60 °C                                                |
| to IEC 60754-2                                                 |
| to IEC 60332-1/ UL 1581 FT2                                    |

## Ordering data

|  |       |
|--|-------|
|  | 0,5 m |
|  | 1 m   |
|  | 1,2 m |
|  | 1,5 m |
|  | 2 m   |
|  | 3 m   |
|  | 5 m   |
|  | 10 m  |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LD0005M40W40-D | 1    | 1233160005 |
| IE-C6FP8LD0010M40W40-D | 1    | 1233160010 |
| IE-C6FP8LD0012M40W40-D | 1    | 1233160012 |
| IE-C6FP8LD0015M40W40-D | 1    | 1233160015 |
| IE-C6FP8LD0020M40W40-D | 1    | 1233160020 |
| IE-C6FP8LD0030M40W40-D | 1    | 1233160030 |
| IE-C6FP8LD0050M40W40-D | 1    | 1233160050 |
| IE-C6FP8LD0100M40W40-D | 1    | 1233160100 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C6FP8LD0005M40V40-D | 1    | 1248280005 |
| IE-C6FP8LD0010M40V40-D | 1    | 1248280010 |
| IE-C6FP8LD0012M40V40-D | 1    | 1248280012 |
| IE-C6FP8LD0015M40V40-D | 1    | 1248280015 |
| IE-C6FP8LD0020M40V40-D | 1    | 1248280020 |
| IE-C6FP8LD0030M40V40-D | 1    | 1248280030 |
| IE-C6FP8LD0050M40V40-D | 1    | 1248280050 |
| IE-C6FP8LD0100M40V40-D | 1    | 1248280100 |

|             |
|-------------|
| <b>Note</b> |
|-------------|

## Accessories

|                                       |
|---------------------------------------|
| <b>Sheathing stripper</b>             |
| For UTP and STP data cables           |
| For coaxial and round data cables     |
| <b>Markers</b>                        |
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |



## Copper cabling solutions

## Assembled cables

Cat. 5 patch cable, PROFINET  
dragline cable (type C)

## V14 RJ45 IP67



| RJ45 |        | RJ45 |
|------|--------|------|
| 1    | yellow | 1    |
| 2    | orange | 2    |
| 3    | white  | 3    |
| 6    | blue   | 6    |

## RJ45 IP20



| RJ45 |        | RJ45 |
|------|--------|------|
| 1    | yellow | 1    |
| 2    | orange | 2    |
| 3    | white  | 3    |
| 6    | blue   | 6    |

## Technical data

|                                                                  |
|------------------------------------------------------------------|
| Product type                                                     |
| Category                                                         |
| Shielding                                                        |
| Version connector left / Version connector right                 |
| Cross-section                                                    |
| Sheath diameter, max.                                            |
| Material sheath                                                  |
| Insulation cross-section                                         |
| Min. bending radius, repetitive / Min. bending radius, once only |
| Bending cycles                                                   |
| Speed                                                            |
| Acceleration                                                     |
| Pulling force                                                    |
| Ambient temperature (operational)                                |
| Installation temperature                                         |
| Storage temperature                                              |
| Abrasion resistance                                              |
| Halogen                                                          |
| Resistance to spread of flame                                    |
| Resistance to oils                                               |
| <b>Note</b>                                                      |

|                                                             |
|-------------------------------------------------------------|
| Dragline cable                                              |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)                  |
| SF/UTP                                                      |
| RJ45 IP67 PushPull V14 metal / RJ45 IP67 PushPull V14 metal |
| 4*AWG 22/7 - 0.36 mm <sup>2</sup>                           |
| 6.7 mm                                                      |
| PUR                                                         |
| 1.5 mm                                                      |
| 7.5 *diameter / 5 x conductor cross-section                 |
| 3 Mio                                                       |
| 180 m/min                                                   |
| 4 m/s <sup>2</sup>                                          |
| ≤ 150 N                                                     |
| -40 °C...+70 °C                                             |
| -20 °C...+60 °C                                             |
| -50 °C...+70 °C                                             |
| very good                                                   |
| to IEC 60754-2                                              |
| acc. to IEC 60332-1                                         |
| acc. to IEC 60811-2-1                                       |

|                                             |
|---------------------------------------------|
| Dragline cable                              |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)  |
| SF/UTP                                      |
| RJ45 IP20 / RJ45 IP 20                      |
| 4*AWG 22/7 - 0.36 mm <sup>2</sup>           |
| 6.7 mm                                      |
| PUR                                         |
| 1.5 mm                                      |
| 7.5 *diameter / 5 x conductor cross-section |
| 3 Mio                                       |
| 180 m/min                                   |
| 4 m/s <sup>2</sup>                          |
| ≤ 150 N                                     |
| -40 °C...+70 °C                             |
| -20 °C...+60 °C                             |
| -50 °C...+70 °C                             |
| very good                                   |
| to IEC 60754-2                              |
| acc. to IEC 60332-1                         |
| acc. to IEC 60811-2-1                       |

## Ordering data

|             |
|-------------|
| 0,5 m       |
| 1 m         |
| 2 m         |
| 3 m         |
| 5 m         |
| 10 m        |
| 15 m        |
| 20 m        |
| <b>Note</b> |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0010A2EA2E-X | 1    | 1119730010 |
| IE-C5DD4UG0020A2EA2E-X | 1    | 1119730020 |
| IE-C5DD4UG0030A2EA2E-X | 1    | 1119730030 |
| IE-C5DD4UG0050A2EA2E-X | 1    | 1119730050 |
| IE-C5DD4UG0100A2EA2E-X | 1    | 1119730100 |
| IE-C5DD4UG0150A2EA2E-X | 1    | 1119730150 |
| IE-C5DD4UG0200A2EA2E-X | 1    | 1119730200 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0005A20A20-E | 1    | 1173030005 |
| IE-C5DD4UG0010A20A20-E | 1    | 1173030010 |
| IE-C5DD4UG0020A20A20-E | 1    | 1173030020 |
| IE-C5DD4UG0030A20A20-E | 1    | 1173030030 |
| IE-C5DD4UG0050A20A20-E | 1    | 1173030050 |
| IE-C5DD4UG0100A20A20-E | 1    | 1173030100 |
| IE-C5DD4UG0150A20A20-E | 1    | 1173030150 |
| IE-C5DD4UG0200A20A20-E | 1    | 1173030200 |

## Accessories

|                                       |
|---------------------------------------|
| <b>Sheathing stripper</b>             |
| For UTP and STP data cables           |
| For coaxial and round data cables     |
| <b>Markers</b>                        |
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Assembled cables dragline cable M12

- Cat.5
- PUR
- D-coded
- PROFINET type C

### M12 - M12

plug / plug



| M12 |        | M12 |
|-----|--------|-----|
| 1   | yellow | 1   |
| 2   | white  | 2   |
| 3   | orange | 3   |
| 4   | blue   | 4   |

### M12 - M12

plug / socket



| M12 |        | M12 |
|-----|--------|-----|
| 1   | yellow | 1   |
| 2   | white  | 2   |
| 3   | orange | 3   |
| 4   | blue   | 4   |

## Technical data

|                                                  |                                                 |
|--------------------------------------------------|-------------------------------------------------|
| Product type                                     | Dragline cable                                  |
| Category                                         | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)      |
| Shielding                                        | SF/UTP                                          |
| Version connector left / Version connector right | M12 IP67 straight male / M12 IP67 straight male |
| Cross-section                                    | 4*AWG 22/7 - 0.36 mm²                           |
| Sheath diameter, max.                            | 6.7 mm                                          |
| Material sheath                                  | PUR                                             |
| Sheathing colour                                 | green (RAL 6018)                                |
| Insulation cross-section                         | 1.5 mm                                          |
| Min. bending radius, repetitive                  | 7.5 *diameter                                   |
| Min. bending radius, once only                   | 5 x conductor cross-section                     |
| Bending cycles                                   | 3 Mio                                           |
| Speed                                            | 180 m/min                                       |
| Acceleration                                     | 4 m/s²                                          |
| Pulling force                                    | ≤ 150 N                                         |
| Ambient temperature (operational)                | -40 °C...+70 °C                                 |
| Installation temperature                         | -20 °C...+60 °C                                 |
| Storage temperature                              | -50 °C...+70 °C                                 |
| Abrasion resistance                              | very good                                       |
| Halogen                                          | to IEC 60754-2                                  |
| Resistance to spread of flame                    | acc. to IEC 60332-1                             |
| Resistance to oils                               | acc. to IEC 60811-2-1                           |
| <b>Note</b>                                      |                                                 |

|                                                  |                                                 |
|--------------------------------------------------|-------------------------------------------------|
| Product type                                     | Dragline cable                                  |
| Category                                         | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)      |
| Shielding                                        | SF/UTP                                          |
| Version connector left / Version connector right | M12 IP67 straight male / M12 IP67 straight male |
| Cross-section                                    | 4*AWG 22/7 - 0.36 mm²                           |
| Sheath diameter, max.                            | 6.7 mm                                          |
| Material sheath                                  | PUR                                             |
| Sheathing colour                                 | green (RAL 6018)                                |
| Insulation cross-section                         | 1.5 mm                                          |
| Min. bending radius, repetitive                  | 7.5 *diameter                                   |
| Min. bending radius, once only                   | 5 x conductor cross-section                     |
| Bending cycles                                   | 3 Mio                                           |
| Speed                                            | 180 m/min                                       |
| Acceleration                                     | 4 m/s²                                          |
| Pulling force                                    | ≤ 150 N                                         |
| Ambient temperature (operational)                | -40 °C...+70 °C                                 |
| Installation temperature                         | -20 °C...+60 °C                                 |
| Storage temperature                              | -50 °C...+70 °C                                 |
| Abrasion resistance                              | very good                                       |
| Halogen                                          | to IEC 60754-2                                  |
| Resistance to spread of flame                    | acc. to IEC 60332-1                             |
| Resistance to oils                               | acc. to IEC 60811-2-1                           |
| <b>Note</b>                                      |                                                 |

|                                                  |                                                   |
|--------------------------------------------------|---------------------------------------------------|
| Product type                                     | Dragline cable                                    |
| Category                                         | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)        |
| Shielding                                        | SF/UTP                                            |
| Version connector left / Version connector right | M12 IP67 straight male / M12 IP67 straight socket |
| Cross-section                                    | 4*AWG 22/7 - 0.36 mm²                             |
| Sheath diameter, max.                            | 6.7 mm                                            |
| Material sheath                                  | PUR                                               |
| Sheathing colour                                 | green (RAL 6018)                                  |
| Insulation cross-section                         | 1.5 mm                                            |
| Min. bending radius, repetitive                  | 7.5 *diameter                                     |
| Min. bending radius, once only                   | 5 x conductor cross-section                       |
| Bending cycles                                   | 3 Mio                                             |
| Speed                                            | 180 m/min                                         |
| Acceleration                                     | 4 m/s²                                            |
| Pulling force                                    | ≤ 150 N                                           |
| Ambient temperature (operational)                | -40 °C...+70 °C                                   |
| Installation temperature                         | -20 °C...+60 °C                                   |
| Storage temperature                              | -50 °C...+70 °C                                   |
| Abrasion resistance                              | very good                                         |
| Halogen                                          | to IEC 60754-2                                    |
| Resistance to spread of flame                    | acc. to IEC 60332-1                               |
| Resistance to oils                               | acc. to IEC 60811-2-1                             |
| <b>Note</b>                                      |                                                   |

## Ordering data

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0005MCSMCS-E | 1    | 1025950005 |
| IE-C5DD4UG0015MCSMCS-E | 1    | 1025950015 |
| IE-C5DD4UG0030MCSMCS-E | 1    | 1025950030 |
| IE-C5DD4UG0050MCSMCS-E | 1    | 1025950050 |
| IE-C5DD4UG0100MCSMCS-E | 1    | 1025950100 |
| <b>Note</b>            |      |            |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0005MCSMCS-E | 1    | 1025950005 |
| IE-C5DD4UG0015MCSMCS-E | 1    | 1025950015 |
| IE-C5DD4UG0030MCSMCS-E | 1    | 1025950030 |
| IE-C5DD4UG0050MCSMCS-E | 1    | 1025950050 |
| IE-C5DD4UG0100MCSMCS-E | 1    | 1025950100 |
| <b>Note</b>            |      |            |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0015MSSMCS-E | 1    | 1059330015 |
| IE-C5DD4UG0030MSSMCS-E | 1    | 1059330030 |
| IE-C5DD4UG0050MSSMCS-E | 1    | 1059330050 |
| IE-C5DD4UG0100MSSMCS-E | 1    | 1059330100 |
| <b>Note</b>            |      |            |

## Accessories

| Sheathing stripper                    | Type                     | Qty. | Order No.  |
|---------------------------------------|--------------------------|------|------------|
| For UTP and STP data cables           | AM 12                    | 1    | 9030060000 |
| For coaxial and round data cables     | IE-CST                   | 1    | 9204350000 |
| <b>Markers</b>                        |                          |      |            |
| Insertion label, yellow, 12 mm        | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| Insertion label, yellow, 18 mm        | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| Transparent sleeves, 12-mm length     | TM 4/12 HF/HB            | 500  | 1719840000 |
| Transparent sleeves, 18-mm length     | TM 4/18 HF/HB            | 500  | 1719850000 |
| Wire and cable marker, ø 4,7 - 7,4 mm | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| Wire and cable marker, ø 5,8 - 7,8 mm | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Sheathing stripper                    | Type                     | Qty. | Order No.  |
|---------------------------------------|--------------------------|------|------------|
| For UTP and STP data cables           | AM 12                    | 1    | 9030060000 |
| For coaxial and round data cables     | IE-CST                   | 1    | 9204350000 |
| <b>Markers</b>                        |                          |      |            |
| Insertion label, yellow, 12 mm        | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| Insertion label, yellow, 18 mm        | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| Transparent sleeves, 12-mm length     | TM 4/12 HF/HB            | 500  | 1719840000 |
| Transparent sleeves, 18-mm length     | TM 4/18 HF/HB            | 500  | 1719850000 |
| Wire and cable marker, ø 4,7 - 7,4 mm | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| Wire and cable marker, ø 5,8 - 7,8 mm | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Sheathing stripper                    | Type                     | Qty. | Order No.  |
|---------------------------------------|--------------------------|------|------------|
| For UTP and STP data cables           | AM 12                    | 1    | 9030060000 |
| For coaxial and round data cables     | IE-CST                   | 1    | 9204350000 |
| <b>Markers</b>                        |                          |      |            |
| Insertion label, yellow, 12 mm        | TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| Insertion label, yellow, 18 mm        | TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| Transparent sleeves, 12-mm length     | TM 4/12 HF/HB            | 500  | 1719840000 |
| Transparent sleeves, 18-mm length     | TM 4/18 HF/HB            | 500  | 1719850000 |
| Wire and cable marker, ø 4,7 - 7,4 mm | VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| Wire and cable marker, ø 5,8 - 7,8 mm | VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Copper cabling solutions

Assembled cables  
dragline cable M12

- Cat.5
- PUR
- D-coded
- PROFINET type C

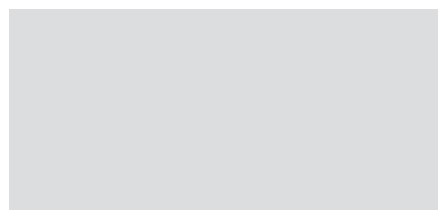
## M12 - open

plug / -



## M12 - RJ45

plug / plug



|        | M12 |
|--------|-----|
| yellow | 1   |
| white  | 2   |
| orange | 3   |
| blue   | 4   |

| RJ45 |        | M12 |
|------|--------|-----|
| 1    | yellow | 1   |
| 3    | white  | 2   |
| 2    | orange | 3   |
| 6    | blue   | 4   |

## Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Sheathing colour                                 |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Min. bending radius, once only                   |
| Bending cycles                                   |
| Speed                                            |
| Acceleration                                     |
| Pulling force                                    |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Abrasion resistance                              |
| Halogen                                          |
| Resistance to spread of flame                    |
| Resistance to oils                               |
| <b>Note</b>                                      |

|                                            |
|--------------------------------------------|
| Dragline cable                             |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| SF/UTP                                     |
| M12 IP67 straight male / Open              |
| 4*AWG 22/7 - 0.36 mm <sup>2</sup>          |
| 6.7 mm                                     |
| PUR                                        |
| green (RAL 6018)                           |
| 1.5 mm                                     |
| 7.5 *diameter                              |
| 5 x conductor cross-section                |
| 3 Mio                                      |
| 180 m/min                                  |
| 4 m/s <sup>2</sup>                         |
| ≤ 150 N                                    |
| -40 °C...+70 °C                            |
| -20 °C...+60 °C                            |
| -50 °C...+70 °C                            |
| very good                                  |
| to IEC 60754-2                             |
| acc. to IEC 60332-1                        |
| acc. to IEC 60811-2-1                      |

|                                            |
|--------------------------------------------|
| Dragline cable                             |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B) |
| SF/UTP                                     |
| M12 IP67 straight male / RJ45 IP 20        |
| 4*AWG 22/7 - 0.36 mm <sup>2</sup>          |
| 6.7 mm                                     |
| PUR                                        |
| green (RAL 6018)                           |
| 1.5 mm                                     |
| 7.5 *diameter                              |
| 5 x conductor cross-section                |
| 3 Mio                                      |
| 180 m/min                                  |
| 4 m/s <sup>2</sup>                         |
| ≤ 150 N                                    |
| -40 °C...+70 °C                            |
| -20 °C...+60 °C                            |
| -50 °C...+70 °C                            |
| very good                                  |
| to IEC 60754-2                             |
| acc. to IEC 60332-1                        |
| acc. to IEC 60811-2-1                      |

## Ordering data

|             |
|-------------|
|             |
| 1 m         |
| 1,5 m       |
| 3 m         |
| 5 m         |
| 10 m        |
| <b>Note</b> |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0015MCSXXX-X | 1    | 1025940015 |
| IE-C5DD4UG0030MCSXXX-X | 1    | 1025940030 |
| IE-C5DD4UG0050MCSXXX-X | 1    | 1025940050 |
| IE-C5DD4UG0100MCSXXX-X | 1    | 1025940100 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DD4UG0010MCSA20-E | 1    | 1044470010 |
| IE-C5DD4UG0015MCSA20-E | 1    | 1044470015 |
| IE-C5DD4UG0030MCSA20-E | 1    | 1044470030 |
| IE-C5DD4UG0050MCSA20-E | 1    | 1044470050 |
| IE-C5DD4UG0100MCSA20-E | 1    | 1044470100 |

## Accessories

|                                       |
|---------------------------------------|
| <b>Sheathing stripper</b>             |
| For UTP and STP data cables           |
| For coaxial and round data cables     |
| <b>Markers</b>                        |
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Assembled cables

### EtherNet/IP patch cable

- In PUR

#### V1 RJ45 IP67 - metal



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

#### V1 RJ45 IP67 - plastic



|      |   |               |   |      |
|------|---|---------------|---|------|
| RJ45 | 1 | white, orange | 1 | RJ45 |
|      | 2 | orange        | 2 |      |
|      | 3 | white, green  | 3 |      |
|      | 4 | blue          | 4 |      |
|      | 5 | white, blue   | 5 |      |
|      | 6 | green         | 6 |      |
|      | 7 | white, brown  | 7 |      |
|      | 8 | brown         | 8 |      |

### Technical data

Product type  
Category  
Shielding  
Version connector left / Version connector right

Cross-section  
Sheath diameter, max.  
Material sheath  
Sheathing colour  
Insulation cross-section  
Min. bending radius, repetitive  
Min. bending radius, once only  
Ambient temperature (operational)  
Installation temperature  
Storage temperature  
Abrasion resistance  
Halogen  
Resistance to spread of flame  
Resistance to oils

#### Note

System cable  
Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)  
SF/UTP  
RJ45 IP67 Baymo V01 metal / RJ45 IP67 Baymo V01 metal

4\*2\*AWG 26/7 - 4\*2\*0.128 mm<sup>2</sup>  
6.1 mm  
PUR  
green (RAL 6018)  
1 mm  
10 x conductor cross-section  
5 x conductor cross-section  
-40 °C...+80 °C  
-10 °C...+60 °C  
-40 °C...+80 °C  
very good  
to IEC 60754-2  
acc. to IEC 60332-1  
acc. to IEC 60811-2-1

System cable  
Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)  
SF/UTP  
RJ45 IP67 Baymo V01 plastic / RJ45 IP67 Baymo V01 plastic

4\*2\*AWG 26/7 - 4\*2\*0.128 mm<sup>2</sup>  
6.1 mm  
PUR  
green (RAL 6018)  
1 mm  
10 x conductor cross-section  
5 x conductor cross-section  
-40 °C...+80 °C  
-10 °C...+60 °C  
-40 °C...+80 °C  
very good  
to IEC 60754-2  
acc. to IEC 60332-1  
acc. to IEC 60811-2-1

### Ordering data

1 m  
2 m  
5 m  
10 m

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5ES8UG0010B41B41-E | 1    | 1066850000 |
| IE-C5ES8UG0020B41B41-E | 1    | 1066860000 |
| IE-C5ES8UG0050B41B41-E | 1    | 1066870000 |
| IE-C5ES8UG0100B41B41-E | 1    | 1066880000 |

#### Note

### Accessories

#### Sheathing stripper

For UTP and STP data cables  
For coaxial and round data cables

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

#### Markers

Insertion label, yellow, 12 mm  
Insertion label, yellow, 18 mm  
Transparent sleeves, 12-mm length  
Transparent sleeves, 18-mm length  
Wire and cable marker, ø 4,7 - 7,4 mm  
Wire and cable marker, ø 5,8 - 7,8 mm

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Copper cabling solutions

## Assembled cables

## M12 Railway cabling

- Cat.5
- Radox
- D-coded

## M12 - M12

plug / plug



## M12 - M12

plug / socket



| M12 |        | M12 |
|-----|--------|-----|
| 1   | yellow | 1   |
| 2   | white  | 2   |
| 3   | orange | 3   |
| 4   | blue   | 4   |

| M12 |        | M12 |
|-----|--------|-----|
| 1   | yellow | 1   |
| 2   | white  | 2   |
| 3   | orange | 3   |
| 4   | blue   | 4   |

## Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Sheathing colour                                 |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Abrasion resistance                              |
| Halogen                                          |
| Resistance to oils                               |
| Fire safety for railway vehicles                 |

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| System cable                                                                                       |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)                                                         |
| SF/UTP                                                                                             |
| M12 IP67 straight male / M12 IP67 straight male                                                    |
| 2*2*AWG 22/7 - 2*2*0.36 mm <sup>2</sup>                                                            |
| 7.55 mm                                                                                            |
| Radox GKW S                                                                                        |
| black                                                                                              |
| 1.95 mm                                                                                            |
| 6 x conductor cross-section                                                                        |
| -40 °C...+90 °C                                                                                    |
| -25 °C...+90 °C                                                                                    |
| -40 °C...+90 °C                                                                                    |
| very good                                                                                          |
| to IEC 60754-2                                                                                     |
| acc. EN 50306-3                                                                                    |
| According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| System cable                                                                                       |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)                                                         |
| SF/UTP                                                                                             |
| M12 IP67 straight male / M12 IP67 straight socket                                                  |
| 2*2*AWG 22/7 - 2*2*0.36 mm <sup>2</sup>                                                            |
| 7.55 mm                                                                                            |
| Radox GKW S                                                                                        |
| black                                                                                              |
| 1.95 mm                                                                                            |
| 6 x conductor cross-section                                                                        |
| -40 °C...+90 °C                                                                                    |
| -25 °C...+90 °C                                                                                    |
| -40 °C...+90 °C                                                                                    |
| very good                                                                                          |
| to IEC 60754-2                                                                                     |
| acc. EN 50306-3                                                                                    |
| According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

## Note

## Ordering data

| 1,5 m |  |
|-------|--|
| 3 m   |  |
| 5 m   |  |
| 10 m  |  |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DB4RE0015MCSMCS-E | 1    | 1010850015 |
| IE-C5DB4RE0030MCSMCS-E | 1    | 1010850030 |
| IE-C5DB4RE0050MCSMCS-E | 1    | 1010850050 |
| IE-C5DB4RE0100MCSMCS-E | 1    | 1010850100 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DB4RE0015MSSMCS-E | 1    | 1059340015 |
| IE-C5DB4RE0030MSSMCS-E | 1    | 1059340030 |
| IE-C5DB4RE0050MSSMCS-E | 1    | 1059340050 |
| IE-C5DB4RE0100MSSMCS-E | 1    | 1059340100 |

## Note

## Accessories

| Sheathing stripper                |  |
|-----------------------------------|--|
| For UTP and STP data cables       |  |
| For coaxial and round data cables |  |

| Markers                               |  |
|---------------------------------------|--|
| Insertion label, yellow, 12 mm        |  |
| Insertion label, yellow, 18 mm        |  |
| Transparent sleeves, 12-mm length     |  |
| Transparent sleeves, 18-mm length     |  |
| Wire and cable marker, ø 4,7 - 7,4 mm |  |
| Wire and cable marker, ø 5,8 - 7,8 mm |  |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

**Assembled cables****M12 Railway cabling**

- Cat.5
- Radox
- D-coded

**M12 - open**

plug / -



|        | M12 |
|--------|-----|
| yellow | 1   |
| white  | 2   |
| orange | 3   |
| blue   | 4   |

**Technical data**

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Sheathing colour                                 |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |
| Abrasion resistance                              |
| Halogen                                          |
| Resistance to oils                               |
| Fire safety for railway vehicles                 |

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| System cable                                                                                       |
| Cat.5 (ISO/IEC 11801) / Cat.5e (TIA 568-B)                                                         |
| SF/UTP                                                                                             |
| M12 IP67 straight male / Open                                                                      |
| 2*2*AWG 22/7 - 2*2*0.36 mm <sup>2</sup>                                                            |
| 7.55 mm                                                                                            |
| Radox GKW S                                                                                        |
| black                                                                                              |
| 1.95 mm                                                                                            |
| 6 x conductor cross-section                                                                        |
| -40 °C...+90 °C                                                                                    |
| -25 °C...+90 °C                                                                                    |
| -40 °C...+90 °C                                                                                    |
| very good                                                                                          |
| to IEC 60754-2                                                                                     |
| acc. EN 50306-3                                                                                    |
| According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

**Note****Ordering data**

|  |       |
|--|-------|
|  | 1,5 m |
|  | 3 m   |
|  | 5 m   |
|  | 10 m  |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DB4RE0015MCSXXX-X | 1    | 1010840015 |
| IE-C5DB4RE0030MCSXXX-X | 1    | 1010840030 |
| IE-C5DB4RE0050MCSXXX-X | 1    | 1010840050 |
| IE-C5DB4RE0100MCSXXX-X | 1    | 1010840100 |

**Note****Accessories****Sheathing stripper**

|                                   |
|-----------------------------------|
| For UTP and STP data cables       |
| For coaxial and round data cables |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| AM 12  | 1    | 9030060000 |
| IE-CST | 1    | 9204350000 |

**Markers**

|                                       |
|---------------------------------------|
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Copper cabling solutions

## Assembled cables

## Railway cabling RW M12

- Cat.5
- Radox
- D-coded
- RW (reduced wire): suitable for RJ45 connectors

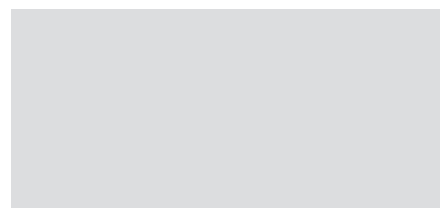
## M12 open

plug / -



## M12 - RJ45

plug / plug



|        | M12 |
|--------|-----|
| yellow | 1   |
| white  | 2   |
| orange | 3   |
| blue   | 4   |

| RJ45     | M12 |
|----------|-----|
| 1 yellow | 1   |
| 3 white  | 2   |
| 2 orange | 3   |
| 6 blue   | 4   |

## Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Category                                         |
| Shielding                                        |
| Version connector left / Version connector right |
| Cross-section                                    |
| Sheath diameter, max.                            |
| Material sheath                                  |
| Sheathing colour                                 |
| Insulation cross-section                         |
| Min. bending radius, repetitive                  |
| Ambient temperature (operational)                |
| Storage temperature                              |
| Abrasion resistance                              |
| Halogen                                          |
| Resistance to oils                               |
| Fire safety for railway vehicles                 |

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| System cable                                                                                       |
| Cat.5 (ISO/IEC 11801)                                                                              |
| SF/UTP                                                                                             |
| M12 IP67 straight male / Open                                                                      |
| 2*2*AWG 22/7 - 2*2*0.36 mm <sup>2</sup>                                                            |
| 7 mm                                                                                               |
| Radox GKW S                                                                                        |
| black                                                                                              |
| 1.58 mm                                                                                            |
| 6 x conductor cross-section                                                                        |
| -40 °C...+90 °C                                                                                    |
| -40 °C...+90 °C                                                                                    |
| very good                                                                                          |
| to IEC 60754-2                                                                                     |
| acc. EN 50306-3                                                                                    |
| According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| System cable                                                                                       |
| Cat.5 (ISO/IEC 11801)                                                                              |
| SF/UTP                                                                                             |
| M12 IP67 straight male / RJ45 IP20 no tools needed                                                 |
| 2*2*AWG 22/7 - 2*2*0.36 mm <sup>2</sup>                                                            |
| 7 mm                                                                                               |
| Radox GKW S                                                                                        |
| black                                                                                              |
| 1.58 mm                                                                                            |
| 6 x conductor cross-section                                                                        |
| -40 °C...+90 °C                                                                                    |
| -40 °C...+90 °C                                                                                    |
| very good                                                                                          |
| to IEC 60754-2                                                                                     |
| acc. EN 50306-3                                                                                    |
| According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

## Note

## Ordering data

|  |      |
|--|------|
|  | 4 m  |
|  | 5 m  |
|  | 10 m |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DB4WE0050MCSXXX-E | 1    | 1269740050 |
| IE-C5DB4WE0100MCSXXX-E | 1    | 1269740100 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-C5DB4WE0040MCSA20-E | 1    | 1220310040 |

## Note

## Accessories

|                                   |
|-----------------------------------|
| Sheathing stripper                |
| For UTP and STP data cables       |
| For coaxial and round data cables |

|                                       |
|---------------------------------------|
| Markers                               |
| Insertion label, yellow, 12 mm        |
| Insertion label, yellow, 18 mm        |
| Transparent sleeves, 12-mm length     |
| Transparent sleeves, 18-mm length     |
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| AM 12                    | 1    | 9030060000 |
| IE-CST                   | 1    | 9204350000 |
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |



# Overview – Fibre-optic cables (FO)

Fibre-optic cables are your best choice for working in harsh industrial environments - if you

- Need long transmission paths (up to 120 km!)
- Need to take account of EMC issues
- Must ensure electrical isolation in the case of potential differences

## D

### Raw cables

#### Industrial FO connecting cables



For flexible installations in and around machinery and plants – for harsh, industrial surroundings, dragline cable compatible

- Polymer optic fibre (POF)
- Multimode glass fibre
- Breakout cable
- Zipcord cable
- Cable by the metre for assembling your own connecting cables

### Assembled cables

#### Industrial FO patch cables



...for use in industrial switching cabinets or junction boxes

- Multimode glass fibre
- Zipcord cable

#### Industrial FO adapter cables



...for linking ST and SC connections

- Multimode glass fibre
- Zipcord cable

#### Industrial fibre-optic system cables



...for flexible installations in and around machinery and plants – for harsh, industrial surroundings, dragline cable compatible

- Multimode fibre-optic
- Breakout cable
- Pre-assembled cable

## Ordering data for Fibre-optic cables (FO)

| Type                            | Breakout/<br>Zipcord | Plug-in connector<br>left                      right |           | Length      |            |            |            |            |            |            |
|---------------------------------|----------------------|------------------------------------------------------|-----------|-------------|------------|------------|------------|------------|------------|------------|
| Industrial FO connecting cables |                      |                                                      |           | Metre goods | 1 m        | 3 m        | 5 m        | 10 m       | 50 m       | 100 m      |
| IE-FM5B2UE-MW                   | Breakout             | -                                                    | -         | 8946000000  |            |            |            |            |            |            |
| IE-FM6B2UE-MW                   | Breakout             | -                                                    | -         | 8956060000  |            |            |            |            |            |            |
| IE-FPOZ2EE-MW                   | Zipcord              | -                                                    | -         | 1242820000  |            |            |            |            |            |            |
| IE-FPOD2UE-MW                   | Breakout             | -                                                    | -         | 1172280000  |            |            |            |            |            |            |
| IE-FM5D2UExxxxMSD0SD0X          | Breakout             | SC Duplex                                            | SC Duplex |             | 8876430010 | 8876430030 | 8876430050 | 8876430100 |            |            |
| IE-FM6D2UExxxxMSD0SD0X          | Breakout             | SC Duplex                                            | SC Duplex |             | 8876440010 | 8876440030 | 8876430050 | 8876440100 |            |            |
| IE-FM5D2UExxxxMST0ST0X          | Breakout             | ST                                                   | ST        |             | 8876450010 | 8876450030 | 8876450050 | 8876450100 | 8876450500 | 8876451000 |
| IE-FM6D2UExxxxMST0ST0X          | Breakout             | ST                                                   | ST        |             | 8876460010 | 8876460030 | 8876460050 | 8876460100 |            |            |
| IE-FM5B2UExxxxMLD0LD0X          | Breakout             | LC Duplex                                            | LC Duplex |             |            |            |            | 8979020000 | 8979040000 | 8979030000 |
| IE-FM6B2UExxxxMLD0LD0X          | Breakout             | LC Duplex                                            | LC Duplex |             |            |            | 1220930000 | 1276680000 | 8993220000 |            |
| Industrial FO patch cables      |                      |                                                      |           | 1 m         | 2 m        | 3 m        | 5 m        | 10 m       |            |            |
| IE-FM5Z2VOxxxxMSD0SD0X          | Zipcord              | SC Duplex                                            | SC Duplex | 8813300000  | 8813310000 | 8813320000 | 8876350050 | 8876350100 |            |            |
| IE-FM6Z2VOxxxxMSD0SD0X          | Zipcord              | SC Duplex                                            | SC Duplex | 8813330000  | 8813340000 | 8813350000 | 8876360050 | 8876360100 |            |            |
| IE-FM5Z2VOxxxxMST0ST0X          | Zipcord              | ST                                                   | ST        | 8813240000  | 8813250000 | 8813260000 | 8876370050 | 8876370100 |            |            |
| IE-FM6Z2VOxxxxMST0ST0X          | Zipcord              | ST                                                   | ST        | 8813270000  | 8813280000 | 8813290000 | 8876380050 | 8876380100 |            |            |
| IE-FPOZ2EExxxxMSJ0SJ0-X         | Zipcord              | SCRJ                                                 | SCRJ      | 1273430010  |            | 1273430030 | 1273430050 | 1273430100 |            |            |
| Industrial FO adapter cables    |                      |                                                      |           | 2 m         |            |            |            |            |            |            |
| IE-FM5Z2VOxxxxMST0SD0X          | Zipcord              | SC Duplex                                            | ST        | 8813390000  |            |            |            |            |            |            |
| IE-FM6Z2VOxxxxMST0SD0X          | Zipcord              | SC Duplex                                            | ST        | 8813400000  |            |            |            |            |            |            |



# Product configurator – Fibre-optic cables

The cable configurator in Weidmüller's online catalogue makes it possible for you to create a fully-assembled cable adapted to your requirements and specifications.

You then have the choice of configuring a cable which is identical on both ends, or with two different mating profiles, or with one end left open.

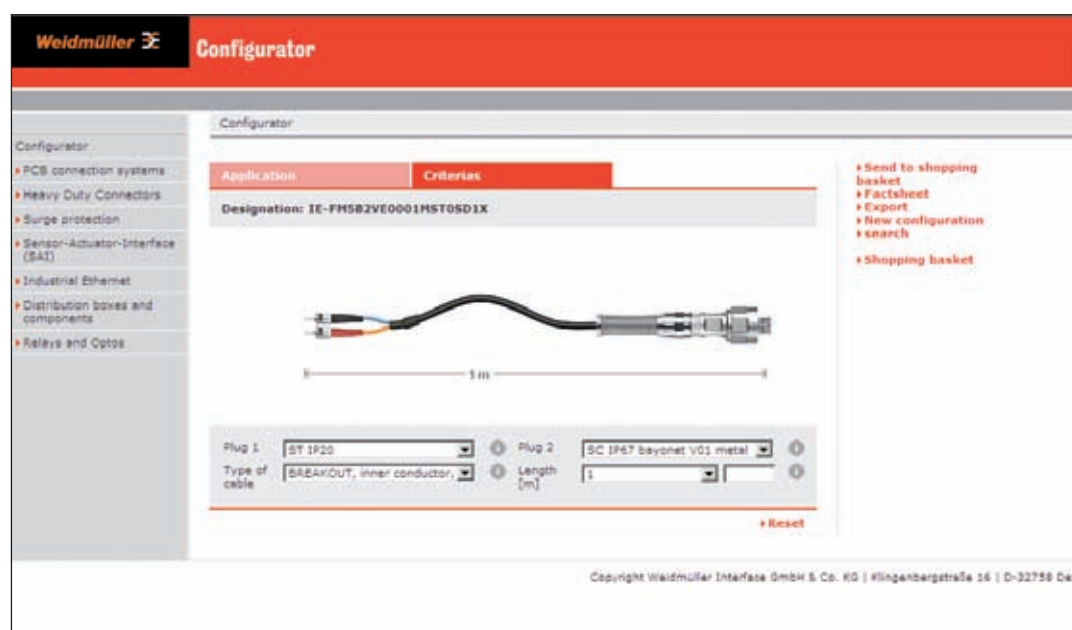
A variety of plug types in the following protective classes are available:

## IP 20

- SCRJ
- ST
- LC Duplex
- SC duplex

## IP 67

- Variant 1, metal with SC- or LC-Duplex plugs
- Variant 4, plastic with SC- or LC-Duplex plugs
- Additional housing variants to follow shortly.



When selecting the cable, the following types are available:

- Zipcord, interior wire G50 µm/125 µm and G62.5 µm/125 µm with PVC sheath
- Breakout, interior wire G50 µm/125 µm and G62.5 µm/125 µm with PVC sheath
- Breakout dragline cable, interior wire G50 µm/125 µm and G62.5 µm/125 µm with PUR sheath. The cable length can also be customised:

The cable length can also be customised:

- From 0.3 m to 9.9 m, in 0.1 m steps
- From 10 m to 9999 m, in 1 m steps

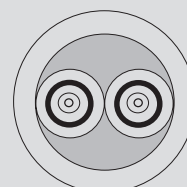
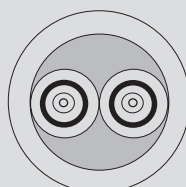
The cable configurator can also automatically create technical data sheets for all of your customised cable variants. All of your customised cable selections can be sent to Weidmüller using the „request list“. You will then quickly receive a price proposal for the cables from your local Weidmüller representative.

## Metre goods

- Multimode fibre-optic
- Customisable

## Connecting cables

## Dragline cable



## Technical data

|                                   |
|-----------------------------------|
| Product type                      |
| Cable layout                      |
| Sheath diameter                   |
| Material sheath                   |
| Sheathing colour                  |
| Ambient temperature (operational) |
| Installation temperature          |
| Storage temperature               |

### Note

|                 |
|-----------------|
| System cable    |
| BREAKOUT        |
| 6 mm            |
| PUR             |
| black           |
| -40 °C...+85 °C |
| -10 °C...+85 °C |
| -55 °C...+85 °C |

|                                 |
|---------------------------------|
| Dragline cable                  |
| BREAKOUT dragline cable G50/125 |
| 6 mm                            |
| PUR                             |
| black                           |
| -55 °C...+80 °C                 |
| -55 °C...+85 °C                 |
| -70 °C...+80 °C                 |

## Ordering data

|                     |                             |
|---------------------|-----------------------------|
| <b>Core 62,5 µm</b> |                             |
|                     | Bulk stock starting at 50 m |
| <b>Core 50 µm</b>   |                             |
|                     | Bulk stock starting at 50 m |

### Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-FM6D2UE-MW | 1    | 8956060000 |
| IE-FM5D2UE-MW | 1    | 8946000000 |

Order example, for bulk: 150 x „article number“ = 150 m on drum

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-FM6D2UE-MW | 1    | 8956050000 |
| IE-FM5D2UE-MW | 1    | 8956070000 |

Order example, for bulk: 150 x „article number“ = 150 m on drum

## Accessories

|                |                                       |
|----------------|---------------------------------------|
| <b>Markers</b> |                                       |
|                | Insertion label, yellow, 12 mm        |
|                | Insertion label, yellow, 18 mm        |
|                | Transparent sleeves, 12-mm length     |
|                | Transparent sleeves, 18-mm length     |
|                | Wire and cable marker, ø 4,7 - 7,4 mm |
|                | Wire and cable marker, ø 5,8 - 7,8 mm |

### Tools



|                        |
|------------------------|
| Crimping pliers GOF LC |
| Crimping pliers GOF SC |
| Fibre-optic tool case  |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

|                 |
|-----------------|
| IE-CT-LC-GOF    |
| IE-CT-SC-GOF    |
| IE-CTC-SCST-GOF |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

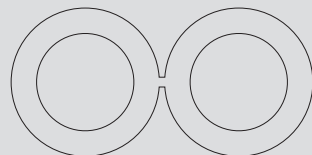
|                 |
|-----------------|
| IE-CT-LC-GOF    |
| IE-CT-SC-GOF    |
| IE-CTC-SCST-GOF |

## Fibre-optic cabling solutions

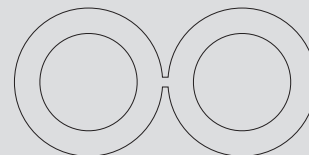
## Metre goods

- Polymer optical fibre
- Customisable

## Zipcord



## Breakout



## Technical data

Product type  
Cable layout  
Sheath diameter  
Material sheath  
Insulation  
Sheathing colour  
Ambient temperature (operational)  
Installation temperature  
Storage temperature  
Halogen

## Note

Connecting cables

2.2'4,5 mm

PE

-55 °C...+85 °C

-5 °C...+85 °C

-55 °C...+85 °C

No

Dragline cable

7,5 mm

PUR

-40 °C...+85 °C

-30 °C...+60 °C

-40 °C...+85 °C

No

## Ordering data

POF 980/1000 µm

Bulk stock starting at 50 m

## Note

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-FPOZ2EE-MW | 1    | 1242820000 |

Order example, for bulk: 150 x „article number“ = 150 m on drum

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| IE-FPOD2UE-MW | 1    | 1172280000 |

Order example, for bulk: 150 x „article number“ = 150 m on drum

## Accessories

## Markers

Insertion label, yellow, 12 mm  
Insertion label, yellow, 18 mm  
Transparent sleeves, 12-mm length  
Transparent sleeves, 18-mm length  
Wire and cable marker, ø 4,7 - 7,4 mm  
Wire and cable marker, ø 5,8 - 7,8 mm

## Tools

Crimping pliers POF  
POF tool set

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

|                 |   |            |
|-----------------|---|------------|
| HTX-IE-POF      | 1 | 1208870000 |
| TOOL SET IE-POF | 1 | 1208930000 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| TM-I 12 NEUTRAL GE       | 320  | 1718411687 |
| TM-I 18 NEUTRAL GE       | 320  | 1718431687 |
| TM 4/12 HF/HB            | 500  | 1719840000 |
| TM 4/18 HF/HB            | 500  | 1719850000 |
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

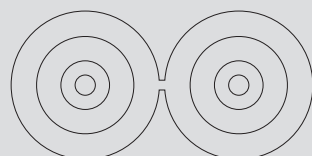
|                 |   |            |
|-----------------|---|------------|
| HTX-IE-POF      | 1 | 1208870000 |
| TOOL SET IE-POF | 1 | 1208930000 |

## Assembled cables

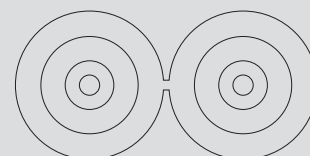
### Fibre-optic patch cable

- Multimode fibre-optic

## SC-Duplex / SC-Duplex



## ST / ST



### Technical data

|                                   |
|-----------------------------------|
| Product type                      |
| Cable layout                      |
| Sheath diameter                   |
| Material sheath                   |
| Sheathing colour                  |
| Ambient temperature (operational) |
| Installation temperature          |
| Storage temperature               |

#### Note

|                 |
|-----------------|
| Patch cable     |
| Zipcord         |
| 3*6 mm          |
| PVC             |
| orange          |
| -5 °C...+75 °C  |
| -5 °C...+50 °C  |
| -25 °C...+75 °C |

|                 |
|-----------------|
| Patch cable     |
| Zipcord         |
| 3*6 mm          |
| PVC             |
| orange          |
| -5 °C...+75 °C  |
| -5 °C...+50 °C  |
| -25 °C...+75 °C |

### Ordering data

| Core 62,5 µm |  |
|--------------|--|
| 1 m          |  |
| 2 m          |  |
| 3 m          |  |
| 5 m          |  |
| 10 m         |  |
| Core 50 µm   |  |
| 1 m          |  |
| 2 m          |  |
| 3 m          |  |
| 5 m          |  |
| 10 m         |  |

#### Note

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6Z2VO0001MSD0SD0X | 1    | 8813330000 |
| IE-FM6Z2VO0002MSD0SD0X | 1    | 8813340000 |
| IE-FM6Z2VO0003MSD0SD0X | 1    | 8813350000 |
| IE-FM6Z2VO0005MSD0SD0X | 1    | 8876360050 |
| IE-FM6Z2VO0010MSD0SD0X | 1    | 8876360100 |
| IE-FM5Z2VO0001MSD0SD0X | 1    | 8813300000 |
| IE-FM5Z2VO0002MSD0SD0X | 1    | 8813310000 |
| IE-FM5Z2VO0003MSD0SD0X | 1    | 8813320000 |
| IE-FM5Z2VO0005MSD0SD0X | 1    | 8876350050 |
| IE-FM5Z2VO0010MSD0SD0X | 1    | 8876350100 |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6Z2VO0001MST0ST0X | 1    | 8813270000 |
| IE-FM6Z2VO0002MST0ST0X | 1    | 8813280000 |
| IE-FM6Z2VO0003MST0ST0X | 1    | 8813290000 |
| IE-FM6Z2VO0005MST0ST0X | 1    | 8876380050 |
| IE-FM6Z2VO0010MST0ST0X | 1    | 8876380100 |
| IE-FM5Z2VO0001MST0ST0X | 1    | 8813240000 |
| IE-FM5Z2VO0002MST0ST0X | 1    | 8813250000 |
| IE-FM5Z2VO0003MST0ST0X | 1    | 8813260000 |
| IE-FM5Z2VO0005MST0ST0X | 1    | 8876370050 |
| IE-FM5Z2VO0010MST0ST0X | 1    | 8876370100 |

### Accessories

| Markers |                                       |
|---------|---------------------------------------|
|         | Wire and cable marker, ø 4,7 - 7,4 mm |
|         | Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

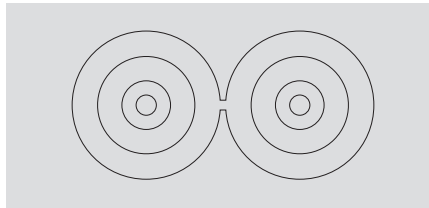
## Fibre-optic cabling solutions

## Assembled cables

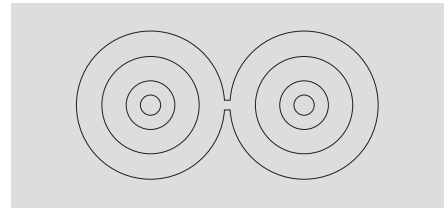
## Fibre-optic patch cable

- Multimode fibre-optic

## ST / SC-Duplex



## LC-Duplex / LC-Duplex



## Technical data

|                                   |
|-----------------------------------|
| Product type                      |
| Cable layout                      |
| Sheath diameter                   |
| Material sheath                   |
| Sheathing colour                  |
| Ambient temperature (operational) |
| Installation temperature          |
| Storage temperature               |

## Note

|                 |
|-----------------|
| Patch cable     |
| Zipcord         |
| 3*6 mm          |
| PVC             |
| orange          |
| -5 °C...+75 °C  |
| -5 °C...+50 °C  |
| -25 °C...+75 °C |

|                 |
|-----------------|
| Patch cable     |
| Zipcord         |
| 3*6 mm          |
| PVC             |
| orange          |
| -5 °C...+75 °C  |
| -5 °C...+50 °C  |
| -25 °C...+75 °C |

## Ordering data

|              |       |
|--------------|-------|
| Core 62,5 µm |       |
|              | 2 m   |
|              | 100 m |
| Core 50 µm   |       |
|              | 1 m   |
|              | 2 m   |
|              | 5 m   |
|              | 10 m  |

## Note

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6Z2VO0002MST0SD0X | 1    | 8813400000 |
|                        |      |            |
| IE-FM5Z2VO0002MST0SD0X | 1    | 8813390000 |
|                        |      |            |

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6Z2VO0002MLD0LD0X | 1    | 1062450000 |
| IE-FM6Z2VO0100MLD0LD0X | 1    | 8992990000 |
|                        |      |            |
| IE-FM5Z2VO0001MLD0LD0X | 1    | 1276880000 |
| IE-FM5Z2VO0002MLD0LD0X | 1    | 1062570000 |
| IE-FM5Z2VO0005MLD0LD0X | 1    | 1062550000 |
| IE-FM5Z2VO0010MLD0LD0X | 1    | 1062580000 |

## Accessories

|         |                                       |
|---------|---------------------------------------|
| Markers |                                       |
|         | Wire and cable marker, ø 4,7 - 7,4 mm |
|         | Wire and cable marker, ø 5,8 - 7,8 mm |

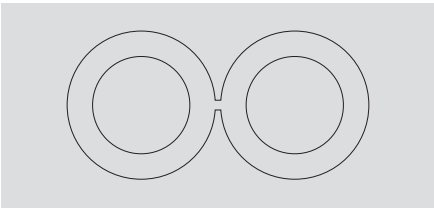
| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

Assembled cables  
Fibre-optic patch cable PROFINET

- Polymer optical fibre

SC-RJ / SC-RJ



Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Version connector left / Version connector right |
| Cable layout                                     |
| Sheath diameter                                  |
| Insulation                                       |
| Sheathing colour                                 |
| Ambient temperature (operational)                |
| Attenuation                                      |
| Bandwidth                                        |
| Halogen                                          |
| Note                                             |

|                        |
|------------------------|
| Connecting cables      |
| SCRJ IP 20 / SCRJ IP20 |
| Zipcord                |
| 2.2*4.5 mm             |
| PE                     |
| black                  |
| -20 °C...+80 °C        |
| ≤ 160 dB/km at 650 nm  |
| ≥ 10 MHz bei 650 nm    |
| No                     |

Ordering data

| POF 980/1000 µm |
|-----------------|
| 1 m             |
| 3 m             |
| 5 m             |
| 10 m            |
| Note            |

| Type                    | Qty. | Order No.  |
|-------------------------|------|------------|
| IE-FPOZ2EE0001MSJOSJ0-X | 1    | 1273430010 |
| IE-FPOZ2EE0003MSJOSJ0-X | 1    | 1273430030 |
| IE-FPOZ2EE0005MSJOSJ0-X | 1    | 1273430050 |
| IE-FPOZ2EE0010MSJOSJ0-X | 1    | 1273430100 |

Accessories

| Markers                               |
|---------------------------------------|
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

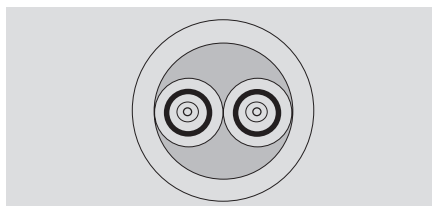
## Fibre-optic cabling solutions

### Assembled cables

#### Fibre-optic system cable

- Multimode fibre-optic

#### LC-Duplex / LC-Duplex



D

#### Technical data

|                                                  |
|--------------------------------------------------|
| Product type                                     |
| Version connector left / Version connector right |
| Cable layout                                     |
| Sheath diameter                                  |
| Material sheath                                  |
| Sheathing colour                                 |
| Ambient temperature (operational)                |
| Installation temperature                         |
| Storage temperature                              |

#### Note

|                                  |
|----------------------------------|
| System cable                     |
| LC-Duplex IP20 / LC-Duplex IP 20 |
| BREAKOUT                         |
| 6 mm                             |
| PUR                              |
| black                            |
| -40 °C...+85 °C                  |
| -10 °C...+85 °C                  |
| -55 °C...+85 °C                  |

#### Ordering data

|              |       |
|--------------|-------|
| Core 62,5 µm |       |
|              | 5 m   |
|              | 10 m  |
| Core 50 µm   |       |
|              | 10 m  |
|              | 100 m |

#### Note

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6D2UE0005MLD0LD0X | 1    | 1220930000 |
| IE-FM6D2UE0010MLD0LD0X | 1    | 1276680000 |
| IE-FM5D2UE0010MLD0LD0X | 1    | 8979020000 |
| IE-FM5D2UE0100MLD0LD0X | 1    | 8979030000 |

#### Accessories

| Markers |                                       |
|---------|---------------------------------------|
|         | Wire and cable marker, ø 4,7 - 7,4 mm |
|         | Wire and cable marker, ø 5,8 - 7,8 mm |

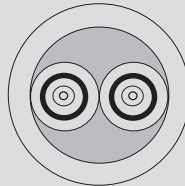
| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

## Assembled cables

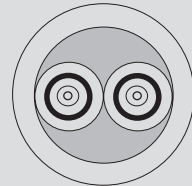
### Fibre-optic dragline cable

- Multimode fibre-optic

#### SC-Duplex / SC-Duplex



#### ST / ST



#### Technical data

|                                   |
|-----------------------------------|
| Product type                      |
| Cable layout                      |
| Sheath diameter                   |
| Material sheath                   |
| Sheathing colour                  |
| Ambient temperature (operational) |
| Installation temperature          |
| Storage temperature               |

##### Note

|                                   |
|-----------------------------------|
| Dragline cable                    |
| BREAKOUT dragline cable G62.5/125 |
| 6 mm                              |
| PUR                               |
| black                             |
| -55 °C...+80 °C                   |
| -55 °C...+85 °C                   |
| -70 °C...+80 °C                   |

|                                   |
|-----------------------------------|
| Dragline cable                    |
| BREAKOUT dragline cable G62.5/125 |
| 6 mm                              |
| PUR                               |
| black                             |
| -55 °C...+80 °C                   |
| -55 °C...+85 °C                   |
| -70 °C...+80 °C                   |

#### Ordering data

##### Core 62,5 µm

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6D2UE0001MSD0SD0X | 1    | 8876440010 |
| IE-FM6D2UE0003MSD0SD0X | 1    | 8876440030 |
| IE-FM6D2UE0005MSD0SD0X | 1    | 8876440050 |
| IE-FM6D2UE0010MSD0SD0X | 1    | 8876440100 |

##### Core 50 µm

|      |                        |   |            |
|------|------------------------|---|------------|
| 1 m  | IE-FM5D2UE0001MSD0SD0X | 1 | 8876430010 |
| 3 m  | IE-FM5D2UE0003MSD0SD0X | 1 | 8876430030 |
| 5 m  | IE-FM5D2UE0005MSD0SD0X | 1 | 8876430050 |
| 10 m | IE-FM5D2UE0010MSD0SD0X | 1 | 8876430100 |

##### Note

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| IE-FM6D2UE0001MST0ST0X | 1    | 8876460010 |
| IE-FM6D2UE0003MST0ST0X | 1    | 8876460030 |
| IE-FM6D2UE0005MST0ST0X | 1    | 8876460050 |
| IE-FM6D2UE0010MST0ST0X | 1    | 8876460100 |

|      |                        |   |            |
|------|------------------------|---|------------|
| 1 m  | IE-FM5D2UE0001MST0ST0X | 1 | 8876450010 |
| 3 m  | IE-FM5D2UE0003MST0ST0X | 1 | 8876450030 |
| 5 m  | IE-FM5D2UE0005MST0ST0X | 1 | 8876450050 |
| 10 m | IE-FM5D2UE0010MST0ST0X | 1 | 8876450100 |

#### Accessories

##### Markers

|                                       |
|---------------------------------------|
| Wire and cable marker, ø 4,7 - 7,4 mm |
| Wire and cable marker, ø 5,8 - 7,8 mm |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |

| Type                     | Qty. | Order No.  |
|--------------------------|------|------------|
| VT SF 5/21 NEUTRAL WS V0 | 160  | 1689470001 |
| VT SF 6/21 NEUTRAL WS V0 | 160  | 1730560001 |



# Accessories

Accessories

|                                          |      |
|------------------------------------------|------|
| Introduction                             | E.2  |
| Copper cabling tools                     | E.3  |
| Fibre-optic cabling tools                | E.9  |
| General tools                            | E.15 |
| Cabtite cable entry system               | E.17 |
| Protective caps / colour-coded rings     | E.18 |
| Inkjet printer                           | E.19 |
| Markers for cables and <b>STEADYTEC®</b> | E.20 |
| Electronics                              | E.21 |

# Overview of accessories

Like with other products from Weidmüller, choosing a Weidmüller accessory means you can obtain everything from one source.

## Copper cabling tools



For assembling

- RJ45 crimp
- Hybrid insert

for stripping  
to test the wiring

## Fibre-optic cabling tools



For assembling

- SC-GOF
- ST-GOF

## General tools



... for pressing conductors into  
IDC terminals and pressing RJ45  
contacts

- Indentation tool
- Pressing tool

## Cabtite



System-based cable entry

- Cable entry strips
- Cable grommets

## Protective caps



to protect all IE-LINE connectors with  
**STEADYTEC®** technology

## Marker



... for identifying conductors, plugs  
and devices

- Line markers
- Housing and plug marker

## Stripping tools

## IE-CST

### 1- and 2- step stripping in one operation



Stripping tool for round (shielded) data cables  
of 2.5...8 mm Ø

- Specially designed for Ethernet cables
- Strips sheathing and cuts shield in one operation
- Blue blade cartridge included in delivery

## AM12



- Cutting of UTP and STP data cables and other flexible copper cables with a diameter of up to 4 mm<sup>2</sup> (~AWG11)
- Stripping of the outer insulations of UTP and STP data cables and other round cables with  $\varnothing$  0.5 ... 12.5 mm
- No damage to the shielding or conductor due to adjustable stripping blade
- Length gauge for repeated stripping lengths

## Technical data

| Max. cutting performance copper cable |                 |
|---------------------------------------|-----------------|
| Cable model                           |                 |
| Conductor cross-section               | AWG             |
| Conductor diameter                    | mm              |
| Adjustable depth of cut               | mm              |
| Cutting performance                   |                 |
| Non-shielded & shielded data cables   | mm              |
| Flexible copper cable                 | mm <sup>2</sup> |
| Tool data                             |                 |
| Length                                | mm              |
| Weight                                | g               |

## Information

## Ordering data

Information

## Accessories

Information

|                             |
|-----------------------------|
| <b>CST</b>                  |
| coaxial & round data cables |
| 2.5 ... 8                   |
|                             |
|                             |
|                             |
| 100                         |
| 65                          |

## Information

## Ordering data

Information

## Accessories

Information

| Type   | Qty. | Order No.  |
|--------|------|------------|
| IE-CST | 1    | 9204350000 |
|        |      |            |
|        |      |            |

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| Spare cutter cassette | 1    | 9032020000 |
|                       |      |            |
|                       |      |            |

|                         |
|-------------------------|
| <b>AM12</b>             |
| UTP and STP data cables |
| AWG 20 ... AWG 11       |
| 0.5 ... 12.5            |
| adjustable              |
| 8                       |
| 4                       |
| 97                      |
| 36                      |

## Information

## Ordering data

Information

## Accessories

Information

| Type  | Qty. | Order No.  |
|-------|------|------------|
| AM 12 | 1    | 9030060000 |
|       |      |            |
|       |      |            |

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |
|      |      |           |
|      |      |           |

Copper cabling tools

Pressing tools

- Press (punch-down) tool for Ethernet connectors
- Ratchet for precise crimping.
- Release option in the event of incorrect operation

TT 8 RS MP 8



For 8-pole shielded RJ45 plug

AWG 27...24



Technical data

| Description of contact |    |
|------------------------|----|
| No. of poles           |    |
| Tool data              |    |
| Length                 | mm |
| Weight                 | g  |
| Note                   |    |

| TT 8 RS MP 8 |  |
|--------------|--|
| 8            |  |
| 255          |  |
| 1251         |  |
|              |  |

Ordering data

| Version |
|---------|
|---------|

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| TT 8 RS MP 8 | 1    | 9202800000 |

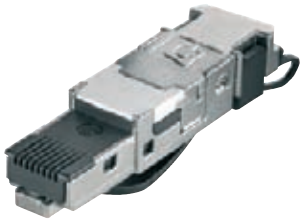
| Note |
|------|
|------|

|--|

Pressing tools

- Optional crimping tool for Ethernet connectors to facilitate the joining of the upper and lower parts of the plug.

PWZ RJ45



Technical data

| Tool data |   | PWZ RJ45 |  |
|-----------|---|----------|--|
| Weight    | g | 367      |  |

Note

Ordering data

| Version | Type     | Qty. | Order No.  |
|---------|----------|------|------------|
|         | PWZ RJ45 | 1    | 1118040000 |

Note

Copper cabling tools

Cable tester

LAN USB

IE-CT



Technical data

Functionality

- Error display play
- External voltage
- Testable cable lenght
- Supply tery
- Connection for core
- Weight basic device
- Dimensions basic device
- Remote box weight
- Remote box dimensions
- Weight testbox
- Dimensions testbox

Device for testing  
Ethernet cables for:  
line interruption  
core interruption  
short-circuits  
examination of the twist

LED display

max. 1000 m  
9V battery (Art. Nr.- 9004810000)  
RJ 45; USB TypA; USB TypB  
174 g  
65 x 135 x 27 mm  
30 g  
65 x 28 x 27 mm

Device for testing  
Ethernet cables for:  
interference voltage  
line interruption  
core interruption  
short-circuits  
crossed wires  
examination of the twist

7-segment display  
80 V AC / DC  
max. 1000 m  
9 V battery  
RJ45  
185 g  
70 x 140 x 36 mm

31 g  
30 x 68 x 23 mm

Ordering data

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| LAN USB TESTER | 1    | 9205400000 |

Battery, accessories and bag included in delivery

| Type  | Qty. | Order No.  |
|-------|------|------------|
| IE-CT | 1    | 8808420000 |

9 V battery included

Note

Cutting tools

- Cutting formation for different cable sizes increases the quality of the cuts for smaller cross-sections
- Not suitable for steel wires, steel-armoured cables, aluminium alloys and hard-drawn copper conductors!
- Cutting without deformation of the conductor



KT 8



-  max. 8 mm
-  max. 16 mm<sup>2</sup>
-  max. 16 mm<sup>2</sup>
-  max. 16 mm<sup>2</sup>

Technical data

| Max. cutting performance, copper cable       |                    |
|----------------------------------------------|--------------------|
| Solid (max. conductor cross-section)         | mm <sup>2</sup> /- |
| Stranded (max. conductor cross-section)      | mm <sup>2</sup> /- |
| Flexible (max. conductor cross-section)      | mm <sup>2</sup> /- |
| Flexible, stranded (max. conductor diameter) | mm                 |
| Max. cutting performance, aluminium cable    |                    |
| Stranded (max. conductor cross-section)      | mm <sup>2</sup> /- |
| Stranded (max. conductor diameter)           | mm                 |
| solid                                        | mm <sup>2</sup>    |
| Data / telephone / control cable             |                    |
| Max. outer diameter                          | mm                 |
| Tool data                                    |                    |
| Length / Width / Height                      | mm                 |
| Weight                                       | g                  |
| Note                                         |                    |

| KT8 |               |  |
|-----|---------------|--|
|     | 16 / 6        |  |
|     | 16 / 6        |  |
|     | 16 / 6        |  |
|     | 8             |  |
|     | 16 / 6        |  |
|     | 8             |  |
|     | 16            |  |
|     | 8             |  |
|     | 165 / 65 / 25 |  |
|     | 180           |  |
|     | Tool closed   |  |

Ordering data

| Version |
|---------|
|         |
| Note    |
|         |

| Type | Qty. | Order No.  |
|------|------|------------|
| KT 8 | 1    | 9002650000 |
|      |      |            |

## Copper cabling tools

## SEE ESD 120

## Electronic ESD diagonal-cutting pliers with pointed head

- Hard wire (spring wire or steel nails):  
0.4 mm/AWG 26
- Semi-hard wire (iron or nails):  
1.0 mm/AWG 18
- Soft wire (copper or aluminium):  
1.5 mm/AWG 15

## Ordering data

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| SEE ESD 120 | 1    | 9205130000 |

## Technical data

| Weight | 90 g |
|--------|------|
|--------|------|



## SEE ESD 125

## Electronic ESD diagonal-cutting pliers with oval head

- Semi-hard wire (iron or nails):  
0.8 mm/AWG 20
- Soft wire (copper or aluminium):  
1.5 mm/AWG 15

## Ordering data

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| SEE ESD 125 | 1    | 9204750000 |

## Technical data

| Weight | 90 g |
|--------|------|
|--------|------|



## FZE ESD 130

## Electronic ESD flat-nosed pliers

## Ordering data

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| FZE ESD 130 | 1    | 9204760000 |

## Technical data

| Weight | 90 g |
|--------|------|
|--------|------|



## SZE ESD 130

## Electronic ESD Snipe-nosed pliers

## Ordering data

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| SZE ESD 130 | 1    | 9204770000 |

## Technical data

| Weight | 90 g |
|--------|------|
|--------|------|



## SVSE ESD 130

## Electronic ESD angle -cutting pliers

- Hard wire (spring wire or steel nails):  
0.6 mm/AWG 22
- Semi-hard wire (iron or nails):  
1.0 mm/AWG 18
- Soft wire (copper or aluminium):  
1.2 mm/AWG 15

## Ordering data

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| SVSE ESD 130 | 1    | 9205140000 |

## Technical data

| Weight | 90 g |
|--------|------|
|--------|------|



## SUPER CUT

## Electronic diagonal-cutting pliers

- Soft wire (copper or aluminium):  
1.2 mm/AWG 15

## Ordering data

| Type      | Qty. | Order No.  |
|-----------|------|------------|
| SUPER CUT | 1    | 9205150000 |

## Technical data

| Weight | 78 g |
|--------|------|
|--------|------|



## KOF SET ESD

## Electronic ESD case set

Contents:

- Diagonal-cutting pliers
- Snipe-nosed pliers
- Flat-nose pliers
- Angle-cutting pliers

## Ordering data

| Type        | Qty. | Order No.  |
|-------------|------|------------|
| KOF SET ESD | 1    | 9205210000 |

## Technical data

| Weight | 547 g |
|--------|-------|
|--------|-------|



Crimping tools

For stripping, crimping and cutting of POF fibres and cables Tools for working with POF fibres in compliance with IEC 60793-2 A4A fibre (1000 µm/980 µm POF).

Tool-Set IE-POF



- **Contents:**  
Assortment kit PSC 80, shears for Aramid fibres, Kevlar scissors, multi-tool HTX-IE-POF, stripping tool multi-stripax® IE-POF
- Multi tool for POF fibres
- For working with duplex POF fibres
- Stripping tools for working with POF fibres and POF cables
- The new blade set for POF cables makes it easy to strip off the outer sheathing on POF fibres
- Cable shears are specially for Aramid fibres
- Only for cutting Aramid fibres (for strain relief on fibre-optic cables)

Technical data

| Tool data               |
|-------------------------|
| Width / Length / Height |
| Weight                  |
| Note                    |

| Tool-Set IE-POF  |
|------------------|
| 41 / 338 / 79 mm |
| 1800 g           |
|                  |

Ordering data

| Version |
|---------|
|---------|

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| Tool-Set IE-POF | 1    | 1208930000 |

| Note |
|------|
|------|

|--|

Accessories

|--|

| Type | Qty. | Order No. |
|------|------|-----------|
|------|------|-----------|

| Note |
|------|
|------|

|--|

## Fibre-optic cabling tools

### Crimping tools

- Ratchet mechanism for precise crimping
- Release option in the event of incorrect operation
- With end stop for exact positioning of the contacts

### HTX-IE-POF



- Only one tool needed for all SC-RJ plug processing steps
- For working with Duplex POF fibres
- For stripping Duplex POF fibres
- The plug is crimped and the POF fibres are separated in a single step.
- Cut surfaces do not need to be polished after the cut
- Locator for precise positioning of the SC-RJ plugs
- Ergonomic grip
- High repeat accuracy

The IP67 plug is ready in only three steps:

- 1) Strip the POF fibres
- 2) Crimp and separate
- 3) Crimp the strain relief

### Scissor Kevlar



- Cable shears are specially for Aramid fibres
- Only for cutting Aramid fibres (for strain relief on fibre-optic cables)
- Not suitable for other materials
- Special cutting shape
- Smoothed cut
- With serrated cutting edge
- Riveted joint
- Ergonomic, impact resistant plastic grip

### Technical data

| Tool data |
|-----------|
| Length    |
| Weight    |
| Note      |

| HTX-IE-POF |
|------------|
| 220 mm     |
| 450 g      |
|            |

| Kevlar scissors |
|-----------------|
| 147 mm          |
| 100 g           |
|                 |

### Ordering data

| Version |
|---------|
|         |
| Note    |

| Type       | Qty. | Order No.  |
|------------|------|------------|
| HTX-IE-POF | 1    | 1208870000 |

| Type           | Qty. | Order No.  |
|----------------|------|------------|
| Scissor Kevlar | 1    | 1208910000 |

### Accessories

| Note |
|------|

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |

Stripping tool for processing POF fibres and cables. The new set of blades for POF cables makes stripping the outer covering and the POF fibres simple.

Multi-stripax POF



- Excellent stripping quality for industrial applications
- Specially shaped blades enable stripping of special types of insulation and conductor configurations
- Stripping results reproduced accurately time and time again
- No damage to the conductor
- A long-lasting, reliable tool thanks to its robust design
- Integral cutting function

Technical data

|                         |                                                                                                                           |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Cable model             | Duplex stripping tool for quick processing of POF fibres and cables according to IEC 60793-2 A4A fibre (1000µm/980µm POF) |
| Length / Width / Height | 250 / 85 / 40 mm                                                                                                          |
| Weight                  | 250 g                                                                                                                     |
| Note                    |                                                                                                                           |

Ordering data

| Version | Type               | Qty. | Order No.  |
|---------|--------------------|------|------------|
|         | multi-stripax® POF | 1    | 1208880000 |

|      |
|------|
| Note |
|------|

Accessories

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| AIE multi-stripax® POF | 1    | 1212770000 |
| Note                   |      |            |



Assembly case for fibre-optic connectors

Our fibre-optic assembly case is an indispensable set for helping you to assemble fibre-optic cables on-site.

Contents:

- Crimping pliers for ST and SC plugs
- Kevlar shears
- Stripping tool for cable sheath and primary coating
- Stripping tool for secondary coating
- Fluorescent light with pluggable adapter
- Polishing and cleaning fluid
- Cleaning cloths
- Cleaning rod
- Polishing base support for pre-polishing and surface finishing
- Polishing foils
- Sapphire stylus
- Microscope, 100X magnification

Ordering data

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| IE-CTC-SCST-GOF | 1    | 1032030000 |
|                 |      |            |
|                 |      |            |

Accessories

| Type                           |                  | Qty. | Order No.  |
|--------------------------------|------------------|------|------------|
| Accessory set for LC plugs     | IE-CTC-AS-LC-GOF | 1    | 1033350000 |
| Accessory set for SC-POF plugs | IE-CTC-AS-SC-POF | 1    | 1033360000 |
|                                |                  |      |            |

Crimping tools for other contacts

- Ratchet for precise crimping.
- Release option in the event of incorrect operation

IE-CT-LC-GOF

Crimping tools for IP 67 plugs



- For fibre-optic 0.9 mm LC and IP 67 connectors

IE-CT-SC-GOF

Crimping tools for IP 67 plugs



- For fibre-optic 0.9 mm, PROFINET, Mobil cable SC/ST and IP 67 connectors



Technical data

| Tool data |
|-----------|
| Length    |
| Weight    |
| Note      |

| IE-CT-LC-GOF |
|--------------|
| 250          |
| 730          |
|              |

| IE-CT-SC-GOF |
|--------------|
| 250          |
| 730          |
|              |

Ordering data

| Version |
|---------|
|         |
| Note    |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-CT-LC-GOF | 1    | 9205330000 |
|              |      |            |

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| IE-CT-SC-GOF | 1    | 9205320000 |
|              |      |            |

Accessories

| Note |
|------|

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |
|      |      |           |

Fibre-optic cabling tools

Special stripping tools

- Quick and accurate stripping
- No need to adjust cutting depth
- No damage to inner conductors

LWL-stripax



Stripping and cutting tool for plastic fibre-optic cables with 1-mm diameter inner conductor

- Stripping length adjustable via end stop
- Automatic opening of the clamping jaws after stripping

Technical data

| Max. stripping performance |    |
|----------------------------|----|
| Cable type                 |    |
| Conductor diameter         | -  |
| Stripping length, max.     | -  |
| Tool data                  |    |
| Length                     | mm |
| Weight                     | g  |
| Note                       |    |

| M-D-STRIPAX LWL                                 |  |
|-------------------------------------------------|--|
| POF conductor with an inner conductor of 1 mm Ø |  |
| ...1                                            |  |
| 7.5                                             |  |
| 135                                             |  |
| 110                                             |  |
| POF: polymer optical fibre                      |  |

Ordering data

| Version |
|---------|
|---------|

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| M-D-STRIPAX LWL | 1    | 9003750000 |

| Note |
|------|
|------|

| Note |
|------|
|------|

Accessories

| Note |
|------|
|------|

| Type                   | Qty. | Order No.  |
|------------------------|------|------------|
| Spare stripping blades | 1    | 9003760000 |

### Insertion tool for twisted-pair cable

For connecting twisted-pair cable to terminal rails with IDC contacts e. g. in main and floor distributors, and in modular wall junction boxes for structured building cabling.

### PDT



The punch-down tool has the following features:

- Mechanics made from metal components
- Adjustable pressing force for conductor sizes AWG 20 to AWG 28
- Different blades for connector blocks of type 110 from AT&T, type 66, type LSA Plus from Krone (Standard and scissors cutting function) as well as for telephone outlets 630A6
- Incision blades with 2 functions: incision or incision with cutting off of remaining conductor
- Storage compartment for one blade



- A = PD blade 110  
 B = PD blade 66  
 C = PD blade 630  
 D = PD blade Krone LSA (standard)  
 E = PD blade Krone LSA (scissor)

### IE-FISP-V4



Fastening tool for the hexagon cap nut from **STEADYTEC®** V4 flange and FrontCom® Micro.

### Technical data

|                         |    |
|-------------------------|----|
| Length / Width / Height | mm |
| Weight                  | g  |
| Note                    |    |

### Ordering data

| Version |
|---------|
|         |
| Note    |

### Accessories

|      |
|------|
|      |
| Note |

### PUNCH DOWN TOOL PDT

160 / 37 / 29  
 142

| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| PUNCH DOWN TOOL PDT | 1    | 9013970000 |

(without blade)

| Type                               | Qty. | Order No.  |
|------------------------------------|------|------------|
| PD blade Krone LSA Plus (scissor)  | 1    | 9014050000 |
| PD blade 110                       | 1    | 9013960000 |
| PD blade 630                       | 1    | 9013990000 |
| PD blade 66                        | 1    | 9013980000 |
| PD blade Krone LSA Plus (standard) | 1    | 9014000000 |

### Fixing tool

115 / 28 / 28  
 21

| Type       | Qty. | Order No.  |
|------------|------|------------|
| IE-FISP-V4 | 2    | 9204370000 |

| Type | Qty. | Order No. |
|------|------|-----------|
|      |      |           |

General tools

Hydraulic hole punch

IE-KO-HAT



- Pressure-relief valve protects against overload
- Cylinder head angled 90°
- Angled head, 360° turnable
- Ergonomic handle springs back by itself
- Waste pieces no longer become jammed thanks to the three-way splitting
- Hydraulic punch made from high-strength aluminium (approx. 40 % weight savings)

Technical data

| Maximum steel-sheet punching performance           |             |
|----------------------------------------------------|-------------|
| Round holes up to                                  | Ø 85 mm     |
| Round holes up to                                  | Ø 64 mm     |
| Square holes up to                                 | 68 x 68 mm  |
| Rectangular holes up to                            | 36 x 112 mm |
| Maximum stainless-steel-sheet punching performance |             |
| Round holes up to                                  | Ø 64 mm     |
| Tool data                                          |             |
| Length / width / height                            | mm          |
| Weight                                             | kg          |
| Punching force                                     | kN          |
| Max. operating pressure                            | bar         |
| Including accessories (contents)                   |             |

| IE-KO-HAT                        |  |
|----------------------------------|--|
| 2.0 mm F = 370 N/mm <sup>2</sup> |  |
| 3.0 mm F = 370 N/mm <sup>2</sup> |  |
| 2.0 mm F = 370 N/mm <sup>2</sup> |  |
| 2.0 mm F = 370 N/mm <sup>2</sup> |  |
| 2.5 mm F = 600 N/mm <sup>2</sup> |  |
| 290/120/70                       |  |
| 1.9                              |  |
| 75                               |  |
| 650                              |  |
| 1 hydraulic screw Ø 19 mm        |  |
| 1 hydraulic screw Ø 19 x 9.5 mm  |  |
| 1 HSS pre-drill Ø 10 mm          |  |
| 1 spacer nut set (3-part)        |  |
| 1 bridge                         |  |

| Information |
|-------------|
|-------------|

Ordering data

| Version     |
|-------------|
|             |
| Information |

| Type      | Qty. | Order No.  |
|-----------|------|------------|
| IE-KO-HAT | 1    | 1966810000 |

Custom stamp for Industrial Ethernet connections



| Type      | Description                            | Dimensions                       | Qty. | Order No.  |
|-----------|----------------------------------------|----------------------------------|------|------------|
| IE-KOK-V1 | Custom shape for Bajonet 01 metal      | Ø 27 mm x single-sided 25.9 mm   | 1    | 1966780000 |
| IE-KOK-V4 | Custom shape for Push Pull V04 plastic | Ø 23.2 mm x double-sided 20.2 mm | 1    | 1966790000 |
| IE-KOK-V5 | Custom shape for RockStar® V05 metal   | 22.0 x 22.0 mm                   | 1    | 9204790000 |

**HDC KT ...****Cable grommets, small****Technical data**

|                           |                                               |
|---------------------------|-----------------------------------------------|
| Material, grey            | free from elastomers, halogens and silicone   |
| Material, black           | elastomers with very high chemical resistance |
| Temperature range         | -20 °C ... 80 °C                              |
| UL 94 flammability rating | V0                                            |

**Ordering data**

| Type                         | Clamping range [mm] | Qty. | Order No.<br>grey | Order No.<br>black |
|------------------------------|---------------------|------|-------------------|--------------------|
| HDC KT 5                     | 5-6                 | 10   | 1826480000        | 1827810000         |
| HDC KT 6                     | 6-7                 | 10   | 1826490000        | 1827830000         |
| HDC KT 7                     | 7-8                 | 10   | 1826500000        | 1827840000         |
| HDC KT 8                     | 8-9                 | 10   | 1826510000        | 1827850000         |
| <b>Blanking plugs, small</b> |                     |      |                   |                    |
| HDC BTK                      |                     | 10   | 1828170000        | 1828200000         |

**KVT 32****KVT 32 and locknut for D-Sub 9**

KVT 32

Locknut for D-Sub 9  
KGM-SUB-D9**Technical data**

|                           |                                                  |
|---------------------------|--------------------------------------------------|
| Material                  | Polyamide, free from halogens and silicone       |
| Class of protection       | IP54, when the correct cable grommet is selected |
| Temperature range         | -5 °C ... 70 °C                                  |
| UL 94 flammability rating | V0                                               |

**Ordering data**

| Type                       | Thread     | For grommet<br>small large | Qty. | Order No.<br>white | Order No.<br>black |
|----------------------------|------------|----------------------------|------|--------------------|--------------------|
| HDC KVT 32                 | M 32 x 1.5 | 1 -                        | 10   | 1826670000         | 1828270000         |
| <b>Locknut for D-Sub 9</b> |            |                            |      |                    |                    |
| KGM-SUB-D9                 | M 32 x 1.5 |                            | 10   | 1828250000         | 1828300000         |

**Note:** Please refer to catalogue 5 for the complete range.

**HDC KEL 16****Cable entry strip**

KEL 16/8 with 8 small grommets



KEL 16/4 with closed half-shell for  
4 small grommets



Snap frame  
KEL 16 SNAP

**Technical data**

|                           |                                           |
|---------------------------|-------------------------------------------|
| Material                  | Polyamide, halogenfree, siliconfree       |
| Colour                    | black                                     |
| Temperature range         | -20 °C ... 80 °C                          |
| Ingress protection class  | IP 54, when correct cable grommet is used |
| UL 94 flammability rating | V0                                        |

**Ordering data**

| Type                         | No. of grommet positions |       | Qty. | Order No.<br>black |
|------------------------------|--------------------------|-------|------|--------------------|
|                              | small                    | large |      |                    |
| HDC KEL 16/8                 | 8                        | -     | 10   | 1825910000         |
| HDC KEL 16/4                 | 4                        | -     | 10   | 1825900000         |
| <b>Blanking plugs, small</b> |                          |       |      |                    |
| HDC KEL 16 SNAP              |                          |       | 10   | 1827770000         |

Protective caps / colour-coded rings

Staubschutzstecker zum Schutz un belegter Ports

- RJ45
- **STEADYTEC®** Varianten

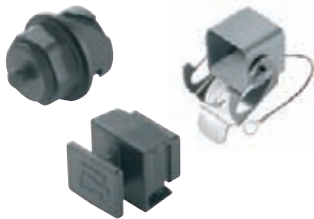
IE-DPC

Dust Cap RJ45



- Dust cap RJ45 with finger grip

IE Line with **STEADYTEC®**



- Protective caps for all **STEADYTEC®** variants

Ordering data

| Type   | Qty. | Order No.  |
|--------|------|------------|
| IE-DPC | 100  | 8813490000 |
| Note   |      |            |

| Type   | Qty. | Order No.  |
|--------|------|------------|
| IE-DPC | 100  | 8813490000 |

| Type                  | Qty. | Order No.  |
|-----------------------|------|------------|
| V1 Bayonet plug       | 10   | 1965690000 |
| V1 Bayonet flange     | 10   | 1965700000 |
| V4 PushPull plug      | 10   | 1963890000 |
| V4 PushPull flange    | 10   | 1963900000 |
| V5 HDC plug           | 10   | 1968920000 |
| V5 HDC flange         | 10   | 1968930000 |
| V14 PushPull plug     | 10   | 1058280000 |
| V14 PushPull flange   | 10   | 1058310000 |
| PushPull Power flange | 10   | 1068930000 |

colour-coded rings

For variant 1, 4 and 14 plugs

IE-CR



Ordering data

| Type   | Qty. | Order No.  |
|--------|------|------------|
| blue   | 10   | 1963020000 |
| orange | 10   | 1963010000 |
| green  | 10   | 1963040000 |
| grey   | 10   | 1963000000 |
| white  | 10   | 1962990000 |
| yellow | 10   | 1963030000 |
| Note   |      |            |

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| IE-CR-IP67-WS20-BU | 10   | 1963020000 |
| IE-CR-IP67-WS20-OG | 10   | 1963010000 |
| IE-CR-IP67-WS20-GN | 10   | 1963040000 |
| IE-CR-IP67-WS20-GY | 10   | 1963000000 |
| IE-CR-IP67-WS20-WH | 10   | 1962990000 |
| IE-CR-IP67-WS20-YE | 10   | 1963030000 |

## PrintJet PRO

The **PrintJet PRO** inkjet printer prints markers for electric connectivity. These markers can be used for clear equipment identification on devices, cables and connectors. The labelling makes servicing, maintenance and troubleshooting much easier. Water-based ink is used for the black or spot colour printing. The print is crystal clear and resistant to environmental influences.

The **PrintJet PRO** prints plastic markers in **MultiCard** format. In combination with the user-friendly **M-Print® PRO** software and the attached loader, the printer becomes an essential part of the production. The inkjet process being used, the subsequent fusing, as well as the printer cartridge and ink have all been specially adapted by Weidmüller for industrial use. The printer has excellent long-term use capabilities, thanks to its integrated loader.

- Top-quality, resistant printing
- Spot colour print
- Perfect for constant use
- Integrated loader for 20 MultiCards
- Ideal for large quantities
- The display shows all relevant information
- Flexible connection options, from LAN ports to USB ports



### Technical data

| PrintJet PRO           |                                                                                                                         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Type                   | PrintJet PRO                                                                                                            |
| Application            | Prints MultiCard markers                                                                                                |
| Technology             | Inkjet process                                                                                                          |
| Print quality          | 600 / 1.200 dpi                                                                                                         |
| Printer drivers        | Windows® 2000/XP/VISTA/7                                                                                                |
| Print software         | M-Print® PRO                                                                                                            |
| System requirements    | Windows® 2000/XP/VISTA/7                                                                                                |
| Feed                   | Integrated loader                                                                                                       |
| Fusing                 | Thermal fusing                                                                                                          |
| Interface              | USB, LAN                                                                                                                |
| Power supply           | AC 230 V or AC 115 V                                                                                                    |
| Location               | Office conditions                                                                                                       |
| Ambient temperature    | 20° to 35 °C                                                                                                            |
| Dimensions (L x W x H) | 1060 x 500 x 310 mm                                                                                                     |
| Weight                 | 33 kg                                                                                                                   |
| Cartridge system       | Ink cartridge, CMYK (up to 1.000.000 characters, Arial font size 6)                                                     |
| Scope of supply        | PrintJet PRO, power cable, printer drivers, manuals (CD), Ink tank starter set colour, USB cable, M-Print® PRO software |

### Ordering data

### PrintJet PRO

| Type                    | Order No.                               |
|-------------------------|-----------------------------------------|
| PrintJet PRO 115V       | 1024050000                              |
| PrintJet PRO 230V       | 1001180001                              |
| Accessories             |                                         |
| PJ PRO TNTK INK SET COL | Ink tank starter set, colour 1027110000 |
| PJ PRO TNTK INK K       | ● Ink tank Black 1027040000             |
| PJ PRO TNTK INK C       | ● Ink tank Cyan 1027050000              |
| PJ PRO TNTK INK M       | ● Ink tank Magenta 1027060000           |
| PJ PRO TNTK INK Y       | ● Ink tank Yellow 1027070000            |
| PJ PRO TNAW             | waste pad 1024140000                    |
| Ink tank PrintJet II    | 1858920000                              |
| Clean Unit PrintJet II  | 1858950000                              |
| Ink tank PrintJet       | 1797460000                              |
| Clean Unit PrintJet     | 4062150000                              |

Markers for cables and **STEADYTEC®**

## Markers for cables and wires



SlimFix V0 for cables and wires

- Ø 4.7 to 6.8 mm SF5/21
- Ø 5.8 to 8.5 mm SF6/21

## Ordering data

| Type                   | Qty. | Order No.         |
|------------------------|------|-------------------|
| VT SF 5/21 BLANK WS V0 | 160  | <b>1689470001</b> |
| VT SF 6/21 BLANK WS V0 | 160  | <b>1730560001</b> |

**Note:** Can be printed with PrintJet PRO.

Markers for IE-Line **STEADYTEC®**MultiCard ESG 9/11 K for IE-Line **STEADYTEC®**

- 9 x 11 mms
- White

## Ordering data

| Type               | Qty. | Order No.         |
|--------------------|------|-------------------|
| ESG 9/11K MC white | 200  | <b>1857440000</b> |

**Note:** Can be printed with PrintJet PRO.

## TM-I for pre-assembled M12 cables



MultiCard markers for labelling transparent M12 TM-I sleeves

- Tag length: 18 mm
- Tag length: 4 mm

## Ordering data

| Type               | Qty. | Order No.         |
|--------------------|------|-------------------|
| TM-I 18 BLANK WS   | 320  | <b>1718431044</b> |
| TM-I 18 NEUTRAL GE | 320  | <b>1718431687</b> |

**Note**

## Accessories

| Type          | Qty. | Order No.         |
|---------------|------|-------------------|
| TM 4/12 HF/HB | 500  | <b>1719840000</b> |
| TM 4/18 HF/HB | 500  | <b>1719850000</b> |

**Note:** Can be printed with PrintJet PRO.

LM MT DIN A5 for IE-Line **STEADYTEC®**

Cable labels made from polyester:

- With a special coating for laser printers
- Abrasion-resistant
- 168 labels/sheet
- 1 shipping unit = 10 sheets
- In six colours

## Ordering data

| Type                        | Qty. | Order No.         |
|-----------------------------|------|-------------------|
| white LM MT DIN A5 9/11 WS  | 10   | <b>1964070000</b> |
| grey LM MT DIN A5 9/11 GR   | 10   | <b>1964080000</b> |
| orange LM MT DIN A5 9/11 OR | 10   | <b>1964090000</b> |
| blue LM MT DIN A5 9/11 BL   | 10   | <b>1964100000</b> |
| yellow LM MT DIN A5 9/11 GE | 10   | <b>1964110000</b> |
| green LM MT DIN A5 9/11 GN  | 10   | <b>1964120000</b> |

**Note**

## Accessories

| Type                     | Qty. | Order No.         |
|--------------------------|------|-------------------|
| Marking pen STI-Stift SW | 10   | <b>0508401694</b> |

**Note:** self-adhesive, for labelling or printing

# Electronics



## Analogue Signal Conditioning

Order number: 1203510000

- Product overview analogue signal conditioning
- Intrinsically safe signal converter
- Signal converters and monitoring components
- Trip amplifier for monitoring AC/DC circuits
- Signal converters and monitoring components in 6 mm width
- Process monitoring
- Process-value display and counters
- Interface converter, AD/DA converter
- Analogue signal processing accessories
- Fieldbus distributor



## Relays and Optos

Order number: 1282330000

- Relay modules and opto modules in 6 mm width
- Industrial relay modules and opto modules
- Power electronics
- Timer
- JACKPAC® (IP67) / functional components



## Surge protection

Order number: 1271290000

- The basics of surge protection
- Surge protection News 2010/2011
- Surge protection for low-voltage supplies
- Surge protection for instrumentation and control equipment
- Surge protection for data interfaces
- Surge protection for photovoltaic systems
- Things worth knowing about surge protection



## Power Supplies

Order number: 1282390000

- Switch-mode power supplies
- Unregulated power supplies
- UPS control unit
- Fuse protection for 24 V DC circuits
- IP 65 switched-mode power supply / electrical-cabinet socket outlet



## Interface units and PLC solutions

Order number: 1252080000

- Interface units
- Card holders
- PLC interfaces – H-, R- and S-system
- Byte precabling solution



# Technical appendix

|                    |                          |     |
|--------------------|--------------------------|-----|
| Technical appendix | Online services          | W.2 |
|                    | Cable configurator       | W.5 |
|                    | Service and certificates | W.6 |
|                    | Glossary                 | W.8 |

# Network infrastructure micro-site

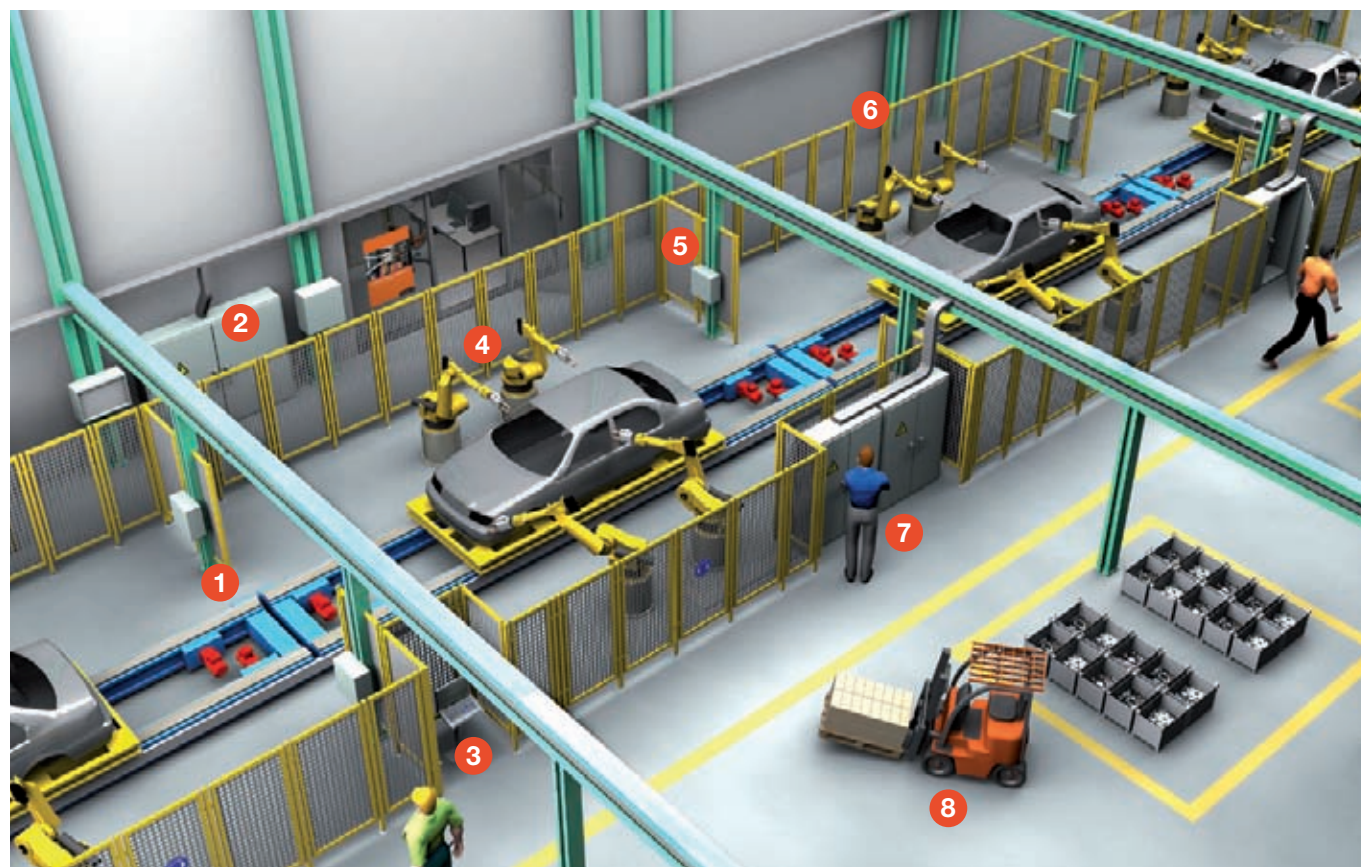
Visit our network infrastructure micro-site at  
<http://networkcomponents.weidmueller.com>

- Videos on applications for network components
- Downloading current product brochures
- The Weidmüller screen saver
- Audio podcasts
- Current schedules
- Direct contact form

The micro-site is updated continuously and is available in German, English and Spanish. We look forward to your mouse click!

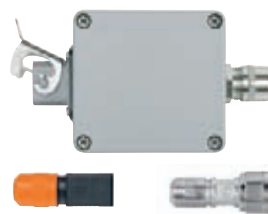
## 3D factory workshop

Our factory workshop is found at our micro-site. Click on the various sections of the assembly line to learn more about the application fields for our products. The 3D factory workshop is an interactive experience, with 3-D product animations, drawings and films.



**1 Materials handling**

- IE-line connector line, in IP67 with **STEADYTEC®** technology

**5 Sub-distribution board**

- Sturdy junction boxes in die-cast aluminium housing, for implementing Ethernet in the harshest IP67 industrial environments.

**2 Switchgear cabinet in the facility / Power distribution**

- FrontCom® Micro IP 65 service interface
- Managed switches with fast ring redundancy and multiple connection options (copper and fibre-optic)

**6 Cable conduit**

- Cabling of machine workshops, with installation or connection conductors using copper or fibre-optic cable

**3 Human Machine Interface**

- Rugged unmanaged switches with Fast Ethernet and Gigabit Ethernet ports

**7 Robotics switchgear cabinet**

- Reliable connection for your installation cable with mounting-rail outlets
- RJ45 Gigabit connector

**4 Robots**

- Sturdy connection with the M12 connection system

**8 Forklift**

- Industrial Wireless access point / Client / Bridge to connect mobile devices into Ethernet networks.

# Online product catalogue

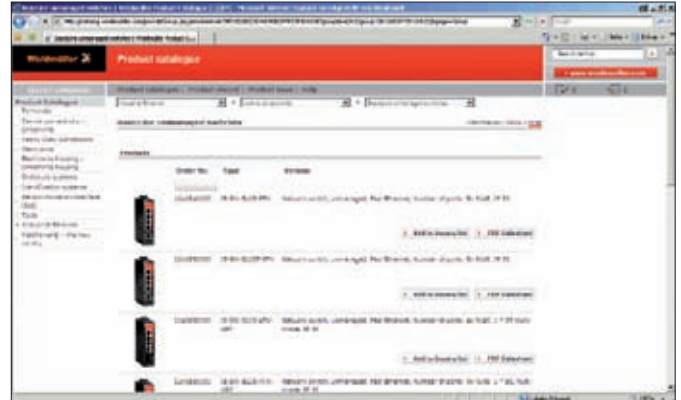
If you have questions about the specifications and details of our products, perhaps even outside normal business hours,

then our online catalogue at

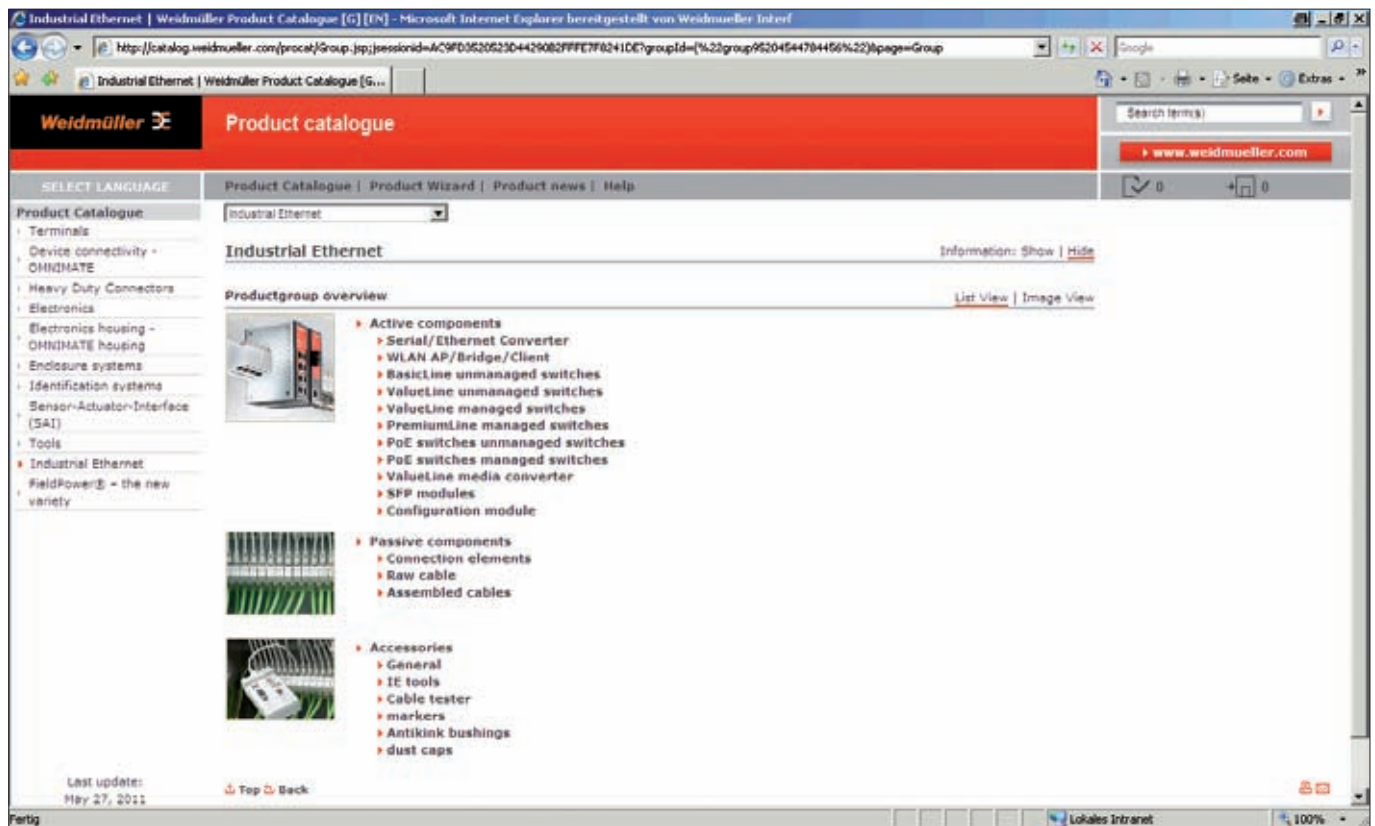
<http://catalog.weidmueller.com>

– open 24 hours a day, 365 days a year – is the perfect source of information. Besides product features and part numbers, it contains extensive additional information on all product groups. For further information, offers and your personal contact, simply consult the Weidmüller website at

[www.weidmueller.com](http://www.weidmueller.com)



With one-click selection for the product data sheet of your choice.



# Cable configurator

The cable configurator allows you to configure your specific cable with comfort, speed and simplicity. Just select, request order – and ready.

Make your selection from the list of available cables (material for cable sheathing, category, colour, ...). Then choose the connector for the right and left cable end. Then choose the cable length. Configurations which are not possible are marked in red, so that it is not possible to create an unsupported or wrong configuration.

A variety of cables and connectors are available from our Industrial Ethernet product line. These selections include category 5 or 7 cable, with PVC sheathing, in PUR, and of course PROFINET-specific cable. A number of versions are available on the plug side of the RJ45, including: IP20, an extra-strong IP67 PushPull (V4) versions, bayonet (V1) and RockStar® HDC (V5). The fibre-optic cable is configured similarly: simply choose the fibre-optic (MM/SM) and the desired connector in order to build your customised cable. IP67 versions are also available here.

After you have made your selection, there are several available options:

- Bring up the data sheet for the assembled cable
- Export the information in Excel or CSV format
- Save the configuration
- Create additional cables or load previous cables
- Place the assembled cable in the shopping cart for a request for quote or order.



**The cable configurator is your quickest path to finding the specific industrial Ethernet cable which you need.**



**Whether you are looking for a fibre-optic or copper cable, the configurator will find it for you.**

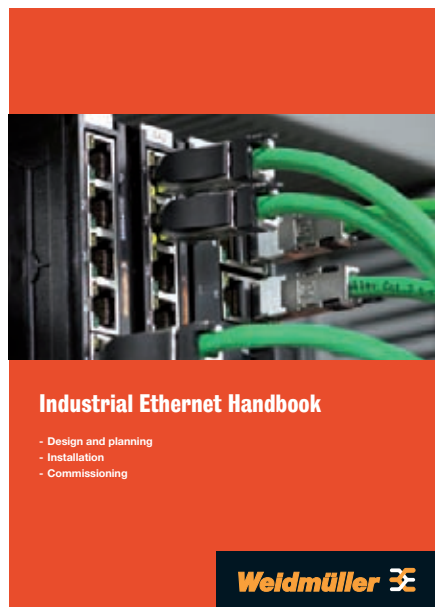
# Best service

## Practical Guidelines for Industrial Ethernet

Are you an electrical engineer, installer or contractor in search of assistance, tricks and checklists for working on Industrial Ethernet? Our practical guidelines provide detailed descriptions for the installation and implementation of industrial networks.

- You'll find helpful tips and recommendations for selecting the proper components and for documenting your network
- Real-world practical advice for assembling copper and fibre-optic cables
- Pointers to the current standards and regulations in the industrial networking sector
- Simple network implementation, including tips for operation and security
- Maintenance tips for preventing crashes
- ...and much more!

Please ask your personal sales representative about these practical guidelines.



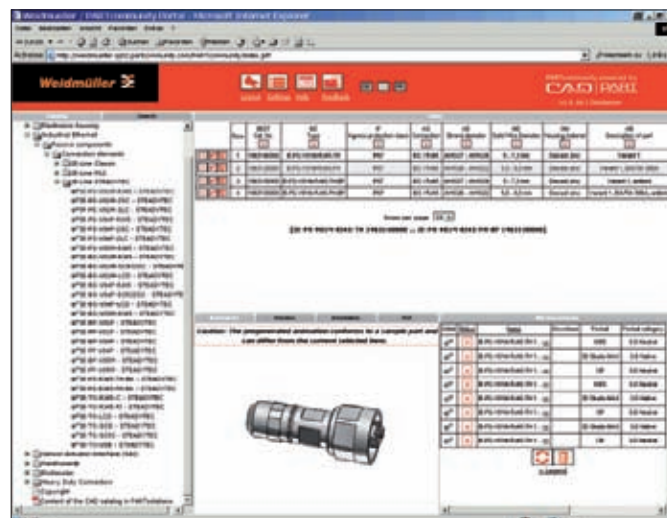
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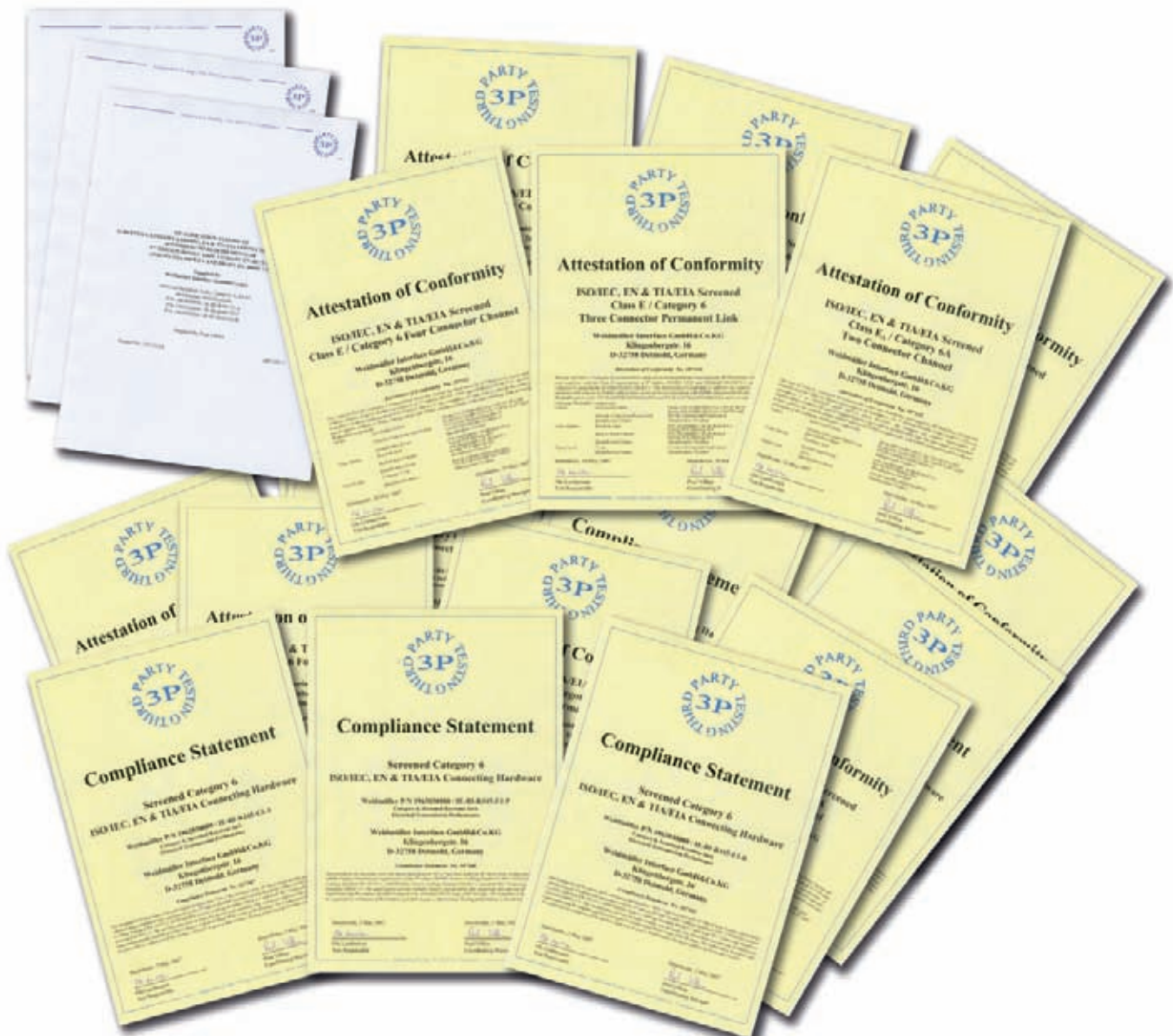
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# Glossary

Interest in Industrial Ethernet has produced an entirely new dictionary with specialist terms. Some of the most important terms are briefly explained here.

## 4B/5B

A block encoding system for FDDI and ATM. In 4B/5B encoding, all data is divided into 4-bit units (a nibble) and converted to 5-bit units (symbols) by reference to a matrix.

## 100BaseFX

100 Mbps Fast Ethernet, based on 4B/5B encoding with fibre optics.

## 100BaseSX

100 Mbps Fast Ethernet system, identical to operations in the 100BaseFx, but 850 nm fibre-optic technology is used.

## 100BaseTX

100 Mbps Fast Ethernet system based on 4B/5B encoding and transmission via two copper cables.

## 100BaseX

This term is used to describe Fast Ethernet technologies based on the 4B/5B encoding. Includes 100BaseTX and 100BaseFX systems.

## 802.3.IEEE

The CSMA/CD group is the oldest working group in the 802 project. It defines the norms according to the CSMA/CD access procedures proposed by the DIX-group. This working group focuses on discussing high-speed protocols.

## AUI

Stands for "Attachment Unit Interface". Interface between the transceiver and the network board.

## Auto-negotiation

Auto-negotiation means automatic recognition of the opposite end's functions. By using RJ45 plugs for the different protocols, from 10Base-T to 100Base-T, a compatibility problem occurs which is solved due automatic recognition of the opposite end. Using the auto-negotiation procedure, repeaters or terminal equipment can determine what functions the other end has, so that different devices can be configured automatically.

## Bandwidth

Bandwidth states how much information can flow within a set period from one location to the other. Units: Bps, Kbps, Mbps, Gbps.

## Baud

Baud is the unit of step speed. A step always lasts for a pre-set time e. g. 1 bit, 1\_character. If you multiply the number of bits per state with the baud rate you obtain the transmission speed. Only if the number of states is exactly two (i.e. encoding was carried out at a state of exactly 1 bit), is the baud rate exactly the same as the bit rate.

## Bit

Bit is an artificial word made up of binary and digit and constitutes the smallest unit of digital information, either a 0 or a 1.

## Bitrate

Bitrate is also referred to as transmission speed, transmission rate or data rate. It is the number of bits that are transmitted per unit of time (typically one second). The bitrate is stated in Bps (bits per second) or in the appropriate powers of 10 as Kbps, Mbps and Gbps. In American English the abbreviation Bps is used.

## Blowfish

In the digital information age, the handling of sensitive data is becoming ever more important. Therefore, we have incorporated Blowfish, a symmetrical encryption algorithm, into the software of our routers in order to guarantee a secure link between a pair of Weidmüller routers.

## Bridge

According to their OSI definition, bridges connect sub-network protocols on layer 2 of the OSI reference model.

## Broadcast

A broadcast transmission is a simultaneous transmission from one point to all network stations.

## Bus

Buses are connection systems for electronic and electrical components. The topology of a bus is always a physical medium which the individual components are connected to and which is terminated at both ends. Transmission on a bus can be done bit or byte parallel, as in the PC-bus, or serially, as for networks in bus topology.

**Category 5**

Signifies compliance to features specified in EIA/TIA-568-5. With category 5 (cat. 5) components, networks can be set up that are suitable for all twisted-pair cable Ethernet transmission systems up to 100 Mbps, including 10Base-T and 100Base-TX.

**Category 5e**

The cat. 5e-cable is an extended version of cat. 5 for use in 1000-Base-T networks or for long-distance 100-Base-T network connections (350 m, compared with 100 m for cat. 5). It must fulfil the EIA/TIA 568A-5 specification.

**Category 6**

A Cat.6 twisted-pair cable is sufficient for Gigabit Ethernet, with a 250-MHz performance. This is an extension of the CAT5e cable.

**Category 7**

Cat.7 cable is suitable for operating frequencies up to 600 MHz. It is made with four individually-shielded core pairs, all within another shielding.

**Collision**

Collision is when two or more stations transmit at the same time in a joint data channel – e.g. a semi-duplex Ethernet or a shared Ethernet. This means that the data transmitted are worthless because they overlay. By overlaying both signals, the signal level increases to what is known as the collision level. This aborts the transmission to both stations.

**Collision domain**

A collision domain is a segment of a CSMA/CD network. In 802.3 Ethernet networks all terminal equipment is on a physical Ethernet segment, also including equipment that is interconnected via a repeater, on the same collision domain. In contrast to repeaters that do not affect the collision domain, bridges and routers separate the collision domains.

**CRC**

CRC is an error correction method that creates checksums based on binary numbers by calculating the sums of data groups prior to transmission. CRC is based on the division of polynomials. The principal is that during cyclical block checking, the bits to be monitored are successively fed into a feedback shift register. The length and the number and position of the feedback from the register are stated according to each procedure. The checksum procedure detects individual errors reliably and multiple errors with a high degree of probability.

**Crossover-cable**

A crossover-cable is a special patch cable where the transmitter and receiver lines at one end have been swapped. Crossover-cables are used to connect two pieces of terminal equipment (computers) or two infrastructure components (switches). Modern switches, because of their auto-crossing function, make connecting normal patch cables with one another possible.

**CSMA/CD**

An access procedure where several network stations have access to the transmission medium. In the CSMA-system the transmitting station listens to the channel (carrier sensing) before it transmits. A station can then only transmit if the transmission medium has not yet been occupied by another station. If the transmission medium is occupied, the station waits till it is free and can transmit. Because of the signalling times it is still possible for two devices to transmit at the same time. To avoid data loss in this type of collision, both transmitters have to detect the collision (collision detect) and after a randomly-selected waiting time send each of their data packets again. CSMA/CD is a widespread standard process in 10-MBit-networks with hubs. In Industrial Ethernet networks the CSMA/CD system is only used rarely nowadays, because of high demands on network performance.

**DCE**

(Data Communication Equipment)

Any facility that can relay data between data terminal equipment. DCEs are part of the infrastructure and not terminal equipment.

**DHCP**

DHCP (Dynamic Host Configuration Protocol) enables a specially configured server to allocate dynamic IP addresses and other network parameters to the computers in a network.

### DNS Server

On the Internet, computers are addressed using their numeric IP address (e.g., 211.163.5.38). The DNS server maintains the structure of the domain name system (DNS). It administers and updates the logical names which are associated with the IP addresses. The name server converts less-accessible dotted-decimal-notation numbers into domain addresses. It then makes this information available to DNS clients on request. A network may include an unlimited number of name servers. Since DNS servers must have built-in redundancy, a server implementation consists of two servers: the primary (PNS) and secondary (SNS) name server. If the primary name server is down, the secondary name server, running in parallel, takes over.

### DTE

(Data Terminal Equipment) data terminal unit: Every device in the network where a communications route starts or finishes. A station (computer or host) in the network that can transmit or receive data.

### DynDNS

DynDNS stands for dynamic domain name system. DNS is responsible for resolving host names to IP addresses. Services such as DynDNS were developed for users using a DSL connection with dynamic IP addresses. DynDNS enables the registration of a dynamic (changeable) IP address to a host name. For this to work, a DSL router must support it or a DynDNS client must be installed on a PC.

### Error Detection

The error detection code is a detection code (CRC or checksum) used where errors are identified but not corrected as in ECC.

### Ethernet

Ethernet is computer networking technology for local networks (LANs). It refers to cable types and signalling for the bit transfer layer (physical layer), packet formats and protocols for checking media access (media access control, MAC) / link layer of the OSI model. Ethernet is standardised to a large extent in the IEEE norm 802.3.

### Fast Ethernet

Nowadays a very widespread version of the Ethernet with 100 Mbps over twisted pair cable according to category 5 or higher. The maximum range is 100 m.

### Fibre-optic cables

A type of cable with fibre-optics or plastic core that transmits digital signals in the form of light pulses. (Wave lengths 850 nm in 10BaseFL and 100BaseSX or 1300 nm in 100BaseFX).

### Flow Control

This is a function to modify transmission to the capacity of the receiver. Flow control regulates transmission between the transmitter and receiver by causing the transmitter only to send as much data as the receiver can deal with. The different types of Ethernet have different flow control systems. In credit systems (FO cable) the receiver relays to the transmitter the number of data packets that can be transmitted without confirmation. Duplex connections use the PAUSE signal for flow control and back pressure is used in semi-duplex systems to control the data rate.

### Forwarding

The process whereby frames are relayed from one port to another in the switch.

### Frame

A frame is a data transmission frame on the link layer (layer 2 in the OSI model), which includes the header and trailer information that the bits transmission layer requires for transmission. All frame formats together form the start delimiter of a frame, the destination and source address (destination and source address), the data itself of course and an errorchecking device (a frame check sequence). A maximum of 1500 bytes, with VPN-information of 1524 bytes of payload data per packet are possible in the Ethernet.

### Full Duplex Operation

In full duplex operation or duplex operation both communications partners can communicate bi-directionally at the same time.

### Gigabit Ethernet

A version of the Ethernet operating at a data transmission rate of 1000 Mbps.

### Hub

A hub is data communications facility (DCE) that makes it possible to connect three or more devices in a star topology. Modern Ethernet installations hardly use hubs any more but use switches for this purpose because of the higher network output that occurs as a result and the probable transmission times.

**IEEE**

Association of American Engineers dealing with norm issues.

**IGMP snooping**

A switch equipped with IGMP (Internet Group Multicast Protocol) snooping can check whether join requests for a multicast group occur behind the ports. If this is the case, the port concerned is accepted in the forward table for this group. This reduces the load on the network because the switch does not flood all ports with multicast traffic.

**Jabber**

The jabber messaging protocol is a method in Ethernet networks that prevents a station from occupying the transmission medium for longer than permitted. The jabber function is an element of the IEEE 802.3 standard and provides an interrupt mechanism with which a MAU (Medium Attachment Unit) is interrupted during the transmission process when this transmits data on the cable for longer than 30 ms, or the standard defined packet length of 1518 bytes is exceeded. SQE (Signal Quality Error) signals are sent to the terminal equipment at the same time as the interruption and these cause the terminal equipment to terminate the data transfer. An error function in which a network component continuously sends meaningless signals to the network is also known as a jabber.

**LAN**

(Local Area Network) local network e.g. within a building.

**Link Integrity Test**

This test ensures that the Ethernet link is connected properly and that the signals are transmitted correctly. This is a helpful extra but does not guarantee that the link functions perfectly.

**Link Layer**

The link layer in the OSI reference model.

**Link Pulse**

The NLP pulse is a recognition pulse that is transmitted from 10Base-T-stations to 100Base-T stations for auto-negotiation. The NLP is a periodic pulse with an interval of 16 +/- 8ms.

**LLDP - Link Layer Discovery Protocol**

LLDP is a layer-2 protocol in compliance with the IEEE-802.1AB standard. It defines the possibilities for exchanging information with neighbouring devices. Information is periodically sent from supported devices to all devices on the network. Neighbouring devices which support LLDP are then able to receive this data independently.

**M12 d-coded**

M12, d-coded is a 4-pole plug-in connector variation for Industrial Ethernet according to ISO IEC 61076-2-101. It carries out data transmissions according to Cat.5 and guarantees class of protection IP 67.

**MAC Address**

The MAC address is the six byte long hardware address that uniquely identifies a node in the network. The MAC address is hard-coded onto a chip and cannot be manipulated. MAC addresses are assigned according to a particular key that includes unique adapter recognition, identification of the manufacturer and an ID for operating and managing.

**Manchester Encoding**

Signal encoding where the binary information is shown by the sign of a change in voltage within the bit time. This means that transmitters and receivers are very easy to synchronise, as the transfer in the middle of the bit time produces a reliable frequency. The first half of the bit time includes representing the complementary bit value to be transmitted, the second half represents the bit value (specified for IEEE 802.3 Ethernet and used in 10 Mbit networks).

**MDI**

The Physical Medium Attachment (PMA) and the Medium Dependent Interface (MDI) both form the actual transceiver (MAU) for the 802.3 standard. The MDI is the physical (electrical, optical) and mechanical interface up to the medium. In the different 802.3-types the interface has a different structure.

## MDI-X

MDI stands for Medium Dependent Interface and refers to an Ethernet connection. Auto MDI/MDIX (autocrossing) makes the automatic modification of the transmitting and receiving line of a port possible, i.e. the connected Ethernet cable (crossed/uncrossed) and the configuration of the opposite station (MDI/MDIX) are recognised automatically and its own port is configured appropriately. So all auto MDI/MDIX ports can be used as uplink port.

## Media converters

Media converters connect different types of cable to one another and the structure and maintain the functions of the network. In its simplest form a media converter is a quadrupole in the form of a box or network adapter card with a power supply. It modifies different cables – coaxial cables, TP-cables and FO cables – and different plugs to fit one another. In this way media converters can for example be used to modify 100Base-TX to 100Base-FX or to convert monomode fibres to multimode fibres. By using media converters the boundaries of network extension can be increased for example by using fibre-optic routes, on the other hand existing networks can be inexpensively integrated into new network concepts. The Weidmüller range includes media converters on copper-based 10Base-T or 100Base-TX on fibre-optic transmission and vice versa.

## Multicast

Multicast is a type of transmission from a single point to several subscribers at the same time (group).

## NIC

A network adapter board is a circuit board or another hardware component that connects the network directly with the terminal equipment. It can be a plug-in board for the bus system in the terminal equipment. The network adapter board is the physical interface to the communications network. It includes the appropriate jacks for connection to the physical medium.

## OLE

Object Linking and Embedding (OLE) is an interface developed by Microsoft to link and embed data across different applications. In this way external, but OLE-compatible, texts, graphics or tables can be embedded in other OLE applications. Linking OLE-compatible data is carried out via a link to the appropriate file. The original file remains untouched. During embedding, a copy of the file is inserted into the document.

## OSI

OSI are internationally-agreed standards which open systems should work with and define the rules for implementing these norms. Communications systems are a combination of network hardware and network and systems software in a group of networked devices that permit free exchange of information between these devices on the basis of joint protocol agreements and interfaces, independently of the type of these devices or how they are equipped. Systems that implement OSI protocols are an example of this. The OSI standards are freely available and not protected by licences.

## Packet

A data packet is a defined arrangement of characters as part of the data network, that are treated as a unit in transmission services with data packet transmission. As well as the payload data, data packets also include control information for addressing, sequence of transmission, flow control and error adjustment at all protocol levels. A data packet can be of a predetermined or variable length, but a maximum length is specified. If the whole destination address is included in each data packet, it is called a datagramme. On the other hand in a virtual connection only the first data packet has the whole address, whereas in the following data packets an assignment is made to the appropriate connection.

## Patch cable

In the floor distribution point the patch cable creates a flexible connection between floor distribution point and the horizontal wiring. Patch cables are FO cables or copper cables and are also called jumper cords. Patch cables should be very flexible, have a tight bending radius and if possible should max the fixed cable. Patch cables are taken into account in the ISO/IEC 11801 and EN 50173 standards, but are not included in the transmission features specified for the link classes. This should be changed when the cable standards are revised. The patch cable should then, at a length of up to 5 m, be part of a new definition, the channel specification and included in all the transmission features. The jumper cord and a connection cable, also 5 m long, will then be taken into account in this specification.

## PAUSE

A single frame is sent via the full-duplex mode to the available stations, to signify that transmissions are to be reduced.

**PHY**

Physical Layer device. This term is mostly used for a transceiver in Fast and Gigabit Ethernet.

**Physical Layer**

The Physical Layer (PHY) is the top sublayer or physical layer consisting of the PMD-sublayer and the PHY-sublayer. The PHY-sublayer is underneath the MAC layer and encodes, decodes and synchronises the station with the transmission frequency and the regeneration of the transmission frequency.

**Point-to-Point Technology**

A type of connection where a connection is generated between two pieces of terminal equipment. Point-to-Point connections occur in the networked environment, in radio broadcasting in beam radio and in the service area. In networks, where point-to-point connections are concerned, instead of a user network interface, an interface to a central facility in the network can also be operated. The connection permanent or on demand.

**Port**

Connector on a hardware unit. Usually an input/output channel on the computer or other hardware unit such as modem, router, hub or multiplexer.

**Port Mirroring**

Port mirroring means that the data traffic of a switch port can be mirrored, in order to detect errors or to measure throughput, onto another port to which a management station can be connected.

**PPPoE**

The PPoE (Point to Point Protocol over Ethernet) was developed in order to connect components and LANs to the Internet. It takes advantage of the divided Ethernet environment together with the trusted and secure dialup-access user model from PPP. It allows individual PCs to establish PPP sessions to various target networks simultaneously. A LAN and multiple components can also establish multiple simultaneous PPP sessions for connection to various target networks.

**Promiscuous Mode**

The Promiscuous Mode is a particular receiver mode for network equipment. In this mode the device reads all the incoming data traffic sent to the network interface that has been switched to this mode and transmits the data to be processed to the operating system. Normally this device would only process packets directed to itself, which is done for example in Ethernet networks by evaluating the MAC address.

**Propagation Delay**

The delay is the time that the signal requires to go from one point in a transmission channel to another. Depending on the transmission medium, the delay is the speed of light, as in satellite transmission, or less when transmitting in data cables and FO cables. It does not depend on the speed of light and depends mostly on the dielectric constant of the medium or in FO cables on the refraction.

**Protocol**

A data transmission protocol establishes the rules for the exchange of information in the form of a directory. This includes all formats, parameters and specifications for a complete, perfect and effective transmission of data. Protocols include conventions on data formats, times and how errors are treated when exchanging data between computers. A protocol is a convention on setting up connections, monitoring connections and terminating connections. Different protocols are necessary in a data connection. Protocols can be assigned to each layer of the reference model. There are communication protocols for the bottom four layers of the reference model and higher protocols for control and data provisioning and its application.

**Quality of Service (QoS)**

QoS are all procedures that influence the flow of data in LANs and WANs so that the service arrives at the receiver in a particular quality. The ITU has developed a hierarchical QoS model, which takes both the technical aspects of the service into account and the availability and handling of the terminal equipment. The ITU defined three QoS classes on this basis.

### Rapid Spanning Tree

The IEEE Standard Rapid Spanning Tree protocol (RSTP, IEEE 802.3w) is – apart from RapidRing™ – another option to provide redundancy in a network. The RSTP makes a structure similar to the network possible. In this way multi-redundancy can be achieved. Using RSTP in a network is not as simple as using RapidRing™, but RSTP does have a lot of interesting options.

### Remote Management

Remote Management of a switch from every network station equipped with Telnet or web browsers. Remote Management assumes that each switch has its own IP address.

### RJ45

The advantages of the RJ45 slot system are its compactness and simplicity. It is using for horizontal wiring and wiring work places. The RJ45 slot system is an eight pole miniature slot system for use in connections with SDP and UTP cables. The plug's eight contacts have serial numbers and are protected from corrosion and mechanical stress with a thin gold layer. The contact points are situated between guide rails the cable is connected with insulation piercing. On the side opposite to the contact side, the RJ45 plug has a fluke that locks the slot when sticking it into a RJ45 jack.

### SC-plug-in connection

The SC-plug is a small polarised push/pull plug with high packing density. This LWL-plug is square and can be used for multimode fibres and monomode fibres. Typical insertion loss is at 0.2 dB to 0.4 dB, operating loss in monomode fibres at 50 dB and multimode fibres at least 40 dB. If monomode fibres with skew angle coupler are used instead of oval coupler, the operating loss increases to at least 70 dB. In the duplex type, as a SC-Duplex plug, the plug must be used where there is fibre-optic wiring to the terminal equipment. It is also increasingly used in new installations and in FCS and ATM applications.

### Segment

The term segment has many meanings. In networks a segment is a network section delimited by bridges, routers or switches. Where LANs are concerned, a LAN segment or a collision domain is referred to. In token ring networks the transmission section between two neighbouring data stations is meant. In the TCP specifications, a segment describes a single information unit on the communication network.

### Semi-duplex operation

The semi-duplex procedure allows bidirectional use of a single transmission line. The interfaces however can only either transmit or receive at any given time.

### Slot time

This is an important Ethernet value. The slot time is twice the speed of the signal propagation time between the two networks that are farthest away from one another and the minimum packet length of 64 bytes or 512 bits. At a frequency clock speed of 10 Mbps, or a frequency clock cycle of a 100 ns, this produces a slot time of 51.2 µs. At 100 Mbps the frequency is 10 ns, so therefore the slot time for the same packet length is 51.2 µs. The greater the slot time, the poorer the Ethernet performance.

### SNMP

The SNMP protocol means that central network management for many network components is possible. SNMP's main objectives are to decrease the complexity of the management functions, to extend the protocol and to be independent of any network components. The SNMP protocol supports monitoring, controlling and administration of networks. According to the SNMP architecture model a network is divided into network management stations (NMS) and network components. The network management stations carry out applications to monitor and control the network components. The network components have management agents, which carry out management functions.

### Spanning Tree Protocol

-> see Rapid Spanning Tree.

### ST connector

This LWL-plug (IEC-SC 86B) specified by AT&T is suitable for both monomode fibres and multimode fibres. The ST-plug is a commonly-available plug, used in LANs. It uses a bayonet lock as its locking system. In this LWL-plug the FO cables is guided through a ceramic or metal ferrule with a pin diameter of 2.5 mm and is prevented from twisting by a metal pin. The ceramic ferrule has been grounded to make its contact area convex. A spring means that there is constant contact to the front of the fibres to be connected.

**Star topology**

In star topology the transmission stations are connected in a star shape to a central node. Star topologies can only exchange data indirectly via the central node. There is a difference between active and passive star systems. In the former, the middle node is a computer that takes over relaying the messages. Its capacity determines the performance of the network. For example: private exchanges. Passive systems only have one node in the middle that combines the routes. This node does not have any exchange role, its purpose is signal regeneration. Passive star systems can for example be operated with TDMA, CSMA/CD or token access procedures.

**Straight-through**

A type of cable where the cable connections at both ends are the same. This type of cable is mostly used to connect devices such as switches with the station. Straight-through is the normal way of wiring cables – in contrast to crossover cables.

**Station**

Each hardware component in a network and the terminal equipment connected to the network. Server, router, telephone, fax machine etc and all communication devices connected with a network adapter (NIC).

**Switching Hub**

Switches are network components that have switching functions. These switching functions can also take place as exchange functions in long-distance networks and in local networks. In long-distance networks the local exchanges have local switches and the remote exchanges have central switches.

**Topology**

The configuration of the network nodes and connections is called the physical topology. The logical connections of network nodes possible are referred to as the logical topology. This states which node pairs can communicate with one another and whether they have a direct physical connection. The physical and logical topology does not have to be identical in networks. As a rule network topologies can be divided into two classes, where in the first class connections from one node to the next one are set up and in the second class all network nodes are directly connected to the transmission medium. The most well-known network topologies are ring topology, bus topology, tree topology and star topology. There is also meshed topology in long-distance networks

**Transceiver**

Transceiver is a compound word made up of transmitter and receiver and signifying a transmitting/receiving device. The transceiver implements network access of a station to the Ethernet and is sometimes called a MAU.

**Trunking**

The term trunking occurs in Ethernet networks but also in private exchanges and in mobile communication. In large Ethernet networks trunking is the parallel switching of several Ethernet links. The transmission via the parallel links is used to scale the bandwidth and is activated by the spanning tree algorithm. As the spanning tree protocol is unsuitable for granular bandwidth scaling, this technology has been standardised in the IEEE 802.3ad working group and called "Aggregation of multiple link segments".

**Twisted-Pair Cable**

A twisted-pair cable is a symmetrical copper cable consisting of two wires that are twisted together. The conductors consist of insulated copper conductors. In contrast to asymmetrical cables, such as coaxial cables, symmetrical cables do not have reference potential. The advantage is that wires can be arranged to prevent interference between the lines.

**VLAN**

Virtual networks or virtual LANs (VLAN) are a technological concept for implementing logical work groups within a network. This type of network is implemented using LAN-switching or virtual routing on the link layer or on the network layer.

**Webserver**

A web server is a server programme that provides files via HTTP protocol. These files are usually websites, pictures and style sheets. It makes no difference to the webserver what type of files it supplies. Each time a web site is requested (for example by clicking a link), the browser sends an HTTP query to a web server. This web server can then send the site requested back. The standard ports for the web server are 80 HTTP protocol and 443 for HTTPS, the encrypted HTTP (for example with SSL). Usually all page requests are saved in a log file, from where - by using log file analysis - different statistics on access can be generated. However these do not give the full picture, as HTTP is a connectionless protocol.







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| IE-50C4x2xAWG24/1-PUR  | 8813160000 | D.6  |
| IE-50C4x2xAWG24/1-PVC  | 8813150000 | D.6  |
| IE-5TCA2x2xAWG26/7-PUR | 8813210000 | D.11 |
| IE-70C4x2xAWG26/7-PUR  | 8813180000 | D.9  |
| IE-70C4x2xAWG26/7-PVC  | 8813170000 | D.9  |
| IE-70C4x2xAWG23/1-PUR  | 8813140000 | D.7  |
| IE-70C4x2xAWG23/1-PVC  | 8813130000 | D.7  |
| IE-C7FS8LD-305M        | 1273090000 | D.10 |
| IE-BHC-V14M-RJA        | 1047950000 | C.29 |
| IE-BHD-V01M-SCA        | 1221030000 | C.37 |
| IE-BHD-V14M            | 1047940000 | C.29 |
| IE-BHD-V14M            | 1047940000 | C.37 |
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| IE-BHS-V14M-RJA        | 1011540000 | C.29 |
| IE-BHS-V14M-RJA        | 1011540000 | C.31 |
| IE-BH-V01M             | 1963540000 | C.35 |
| IE-BH-V01M             | 1963540000 | C.39 |
| IE-BH-V01P             | 1016960000 | C.41 |
| IE-BH-V04P             | 1963520000 | C.45 |
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| IE-BH-V05M             | 1963530000 | C.53 |
| IE-BIC-HYB-P-0,2-300   | 1135160000 | C.31 |
| IE-BIC-HYB-P-0,5-300   | 1096150000 | C.31 |
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| IE-BI-HYB-10P          | 1069010000 | C.64 |
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| IE-BI-LCD-SM-C         | 1962880000 | C.69 |
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| IE-BI-RJ45-FJ-B        | 1963840000 | C.62 |
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| IE-BI-SCRJ2SC-MM-C     | 1964430000 | C.67 |
| IE-BI-SCRJ2SC-SM-C     | 1962870000 | C.67 |
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| IE-BI-USB-A            | 1019570000 | C.65 |
| IE-BI-USB-AB           | 1131380000 | C.66 |
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| IE-BP-V04P             | 1963900000 | E.18 |
| IE-BP-V05M             | 1968930000 | E.18 |
| IE-BP-V14P             | 1058310000 | E.18 |
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| IE-BSC-V14M-LCD-MM-C   | 1062610000 | C.33 |
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| IE-BSC-V14M-RJ45-C     | 1058250000 | C.29 |
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| IE-BSC-V14M-SCRJ-MM-C  | 1062590000 | C.33 |
| IE-BSC-V14M-SCRJ-SM-C  | 1062600000 | C.33 |
| IE-BSS-V14M-HYB-10P-FJ | 1072900000 | C.31 |

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| IE-BSS-V14M-RJ45-C      | 1012310000 | C.29 |
| IE-BSS-V14M-RJ45-FJ-P   | 1085260000 | C.29 |
| IE-BSS-V14M-SCRJ-MM-C   | 1058120000 | C.33 |
| IE-BSS-V14M-SCRJ-SM-C   | 1058140000 | C.33 |
| IE-BSS-VAPM-24V         | 1069030000 | C.71 |
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| IE-BS-V01M-SCRJ-MM      | 1221010000 | C.37 |
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| IE-BS-V01P-RJ45-C       | 1012370000 | C.41 |
| IE-BS-V01P-RJ45-FJ-A    | 1012380000 | C.41 |
| IE-BS-V04P-LCD-MM-C     | 1964460000 | C.51 |
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| IE-C5AS4VG-MW           | 8955960000 | D.12 |
| IE-C5CS8UG-MW           | 8944310000 | D.6  |
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| IE-C5DB4RE0015MCSMCS-E  | 1010850015 | D.24 |
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| IE-C5DB4RE0015MSSMCS-E  | 1059340015 | D.24 |
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| IE-C5DB4WE0050MCSXXX-E  | 1269740050 | D.26 |
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| IE-C5DD4UG0030MSSMCS-E  | 1059330030 | D.21 |
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| IE-C5ES8UG0020B41B41-E  | 1066860000 | D.23 |
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| 1067410000        | IE-PI-SCRJ-POF            | C.66 |
| 1068820000        | IE-CD-V14MRJ/VAPM24V-C-MA | C.73 |
| 1068830000        | IE-CD-V14MRJ/VAPM24V-FJ   | C.72 |
| 1068850000        | IE-CD-V14MHYB-10P-FJ      | C.74 |
| 1068870000        | IE-CD-V14MRJ-C-MA         | C.73 |
| 1068880000        | IE-CD-V14MRJ-FJ           | C.72 |
| 1068910000        | IE-PS-VAPM-24V            | C.70 |
| 1068920000        | IE-BHD-VAPM               | C.71 |
| 1068930000        | IE-BP-VAPP                | C.71 |
| 1068950000        | IE-PIC-HYB-S-0,75-300     | C.30 |
| 1068970000        | IE-BIC-HYB-P-0,75-300     | C.31 |
| 1068990000        | IE-PI-HYB-10P             | C.63 |
| 1069010000        | IE-BI-HYB-10P             | C.64 |
| 1069030000        | IE-BSS-VAPM-24V           | C.71 |

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| <b>1070000000</b> |                        |      |
| 1072900000        | IE-BSS-V14M-HYB-10P-FJ | C.31 |
| 1072910000        | IE-PS-V14M-HYB-10P     | C.30 |
| 1077300000        | IE-PS-V05M-A-RJ45-FH   | C.52 |

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| <b>1080000000</b> |                       |      |
| 1085260000        | IE-BSS-V14M-RJ45-FJ-P | C.29 |

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| <b>1090000000</b> |                      |      |
| 1096150000        | IE-BIC-HYB-P-0,5-300 | C.31 |
| 1096180000        | IE-PIC-HYB-S-0,5-300 | C.30 |

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| <b>1100000000</b> |                        |      |
| 1106010000        | IE-C5ES8UG0010P41P41-E | D.23 |
| 1106020000        | IE-C5ES8UG0020P41P41-E | D.23 |
| 1106030000        | IE-C5ES8UG0050P41P41-E | D.23 |
| 1106040000        | IE-C5ES8UG0100P41P41-E | D.23 |

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| <b>1110000000</b> |                        |      |
| 1118040000        | PWZ RJ45               | E.5  |
| 1119580000        | HTF HYB                | C.30 |
| 1119580000        | HTF HYB                | C.31 |
| 1119730010        | IE-C5DD4UG0010A2EA2E-X | D.20 |
| 1119730020        | IE-C5DD4UG0020A2EA2E-X | D.20 |
| 1119730030        | IE-C5DD4UG0030A2EA2E-X | D.20 |
| 1119730050        | IE-C5DD4UG0050A2EA2E-X | D.20 |
| 1119730100        | IE-C5DD4UG0100A2EA2E-X | D.20 |
| 1119730150        | IE-C5DD4UG0150A2EA2E-X | D.20 |
| 1119730200        | IE-C5DD4UG0200A2EA2E-X | D.20 |

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| <b>1120000000</b> |                   |      |
| 1122710000        | IE-CD-V04PRJ-C-MA | C.78 |

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| <b>1130000000</b> |                      |      |
| 1131380000        | IE-BI-USB-AB         | C.65 |
| 1132010000        | IE-PI-RJ45-FH-A      | C.61 |
| 1132020000        | IE-PI-RJ45-FH-B      | C.61 |
| 1132030000        | IE-PI-RJ45-FH-P      | C.61 |
| 1132040000        | IE-PS-RJ45-FH-BK-A   | C.16 |
| 1132050000        | IE-PS-RJ45-FH-BK-B   | C.16 |
| 1132060000        | IE-PS-RJ45-FH-BK-P   | C.16 |
| 1135150000        | IE-PIC-HYB-S-0,2-300 | C.30 |
| 1135160000        | IE-BIC-HYB-P-0,2-300 | C.31 |

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| <b>1160000000</b> |                        |      |
| 1165900005        | IE-C6FP8LB0005M40M40-B | D.15 |
| 1165900010        | IE-C6FP8LB0010M40M40-B | D.15 |
| 1165900015        | IE-C6FP8LB0015M40M40-B | D.15 |
| 1165900020        | IE-C6FP8LB0020M40M40-B | D.15 |
| 1165900030        | IE-C6FP8LB0030M40M40-B | D.15 |
| 1165900050        | IE-C6FP8LB0050M40M40-B | D.15 |
| 1165900100        | IE-C6FP8LB0100M40M40-B | D.15 |

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| <b>1165900000</b> |                        |      |
| 1165900150        | IE-C6FP8LB0150M40M40-B | D.15 |
| 1165900200        | IE-C6FP8LB0200M40M40-B | D.15 |
| 1165900250        | IE-C6FP8LB0250M40M40-B | D.15 |
| 1165940005        | IE-C6FP8LD0005M40M40-D | D.15 |
| 1165940010        | IE-C6FP8LD0010M40M40-D | D.15 |
| 1165940015        | IE-C6FP8LD0015M40M40-D | D.15 |
| 1165940020        | IE-C6FP8LD0020M40M40-D | D.15 |
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| 1165940050        | IE-C6FP8LD0050M40M40-D | D.15 |
| 1165940075        | IE-C6FP8LD0075M40M40-D | D.15 |
| 1165940100        | IE-C6FP8LD0100M40M40-D | D.15 |
| 1165940150        | IE-C6FP8LD0150M40M40-D | D.15 |
| 1165940200        | IE-C6FP8LD0200M40M40-D | D.15 |
| 1165940250        | IE-C6FP8LD0250M40M40-D | D.15 |
| 1166000005        | IE-C5ES8UG0005M40M40-G | D.19 |
| 1166000010        | IE-C5ES8UG0010M40M40-G | D.19 |
| 1166000015        | IE-C5ES8UG0015M40M40-G | D.19 |
| 1166000020        | IE-C5ES8UG0020M40M40-G | D.19 |
| 1166000030        | IE-C5ES8UG0030M40M40-G | D.19 |
| 1166000050        | IE-C5ES8UG0050M40M40-G | D.19 |
| 1166000100        | IE-C5ES8UG0100M40M40-G | D.19 |
| 1166000150        | IE-C5ES8UG0150M40M40-G | D.19 |
| 1166020005        | IE-C5ES8VG0005M40M40-G | D.19 |
| 1166020010        | IE-C5ES8VG0010M40M40-G | D.19 |
| 1166020015        | IE-C5ES8VG0015M40M40-G | D.19 |
| 1166020020        | IE-C5ES8VG0020M40M40-G | D.19 |
| 1166020030        | IE-C5ES8VG0030M40M40-G | D.19 |
| 1166020050        | IE-C5ES8VG0050M40M40-G | D.19 |
| 1166020100        | IE-C5ES8VG0100M40M40-G | D.19 |
| 1166020150        | IE-C5ES8VG0150M40M40-G | D.19 |
| 1166020200        | IE-C5ES8VG0200M40M40-G | D.19 |
| 1166030005        | IE-C6FP8LR0005M40M40-R | D.17 |
| 1166030010        | IE-C6FP8LR0010M40M40-R | D.17 |
| 1166030015        | IE-C6FP8LR0015M40M40-R | D.17 |
| 1166030020        | IE-C6FP8LR0020M40M40-R | D.17 |
| 1166030050        | IE-C6FP8LR0050M40M40-R | D.17 |
| 1166030100        | IE-C6FP8LR0100M40M40-R | D.17 |
| 1166030150        | IE-C6FP8LR0150M40M40-R | D.17 |
| 1166030200        | IE-C6FP8LR0200M40M40-R | D.17 |
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| <b>1170000000</b> |                        |      |
| 1172250000        | IE-C5DHAG-MW           | D.14 |
| 1172280000        | IE-FPOD2UE-MW          | D.32 |
| 1173030005        | IE-C5DD4UG0005A20A20-E | D.20 |
| 1173030010        | IE-C5DD4UG0010A20A20-E | D.20 |
| 1173030020        | IE-C5DD4UG0020A20A20-E | D.20 |
| 1173030030        | IE-C5DD4UG0030A20A20-E | D.20 |
| 1173030050        | IE-C5DD4UG0050A20A20-E | D.20 |
| 1173030100        | IE-C5DD4UG0100A20A20-E | D.20 |
| 1173030150        | IE-C5DD4UG0150A20A20-E | D.20 |
| 1173030200        | IE-C5DD4UG0200A20A20-E | D.20 |

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| <b>1200000000</b> |                        |      |
| 1201270005        | IE-C6FP8LM0005M40M40-M | D.17 |
| 1201270010        | IE-C6FP8LM0010M40M40-M | D.17 |
| 1201270015        | IE-C6FP8LM0015M40M40-M | D.17 |
| 1201270020        | IE-C6FP8LM0020M40M40-M | D.17 |
| 1201270030        | IE-C6FP8LM0030M40M40-M | D.17 |
| 1201270050        | IE-C6FP8LM0050M40M40-M | D.17 |
| 1201270100        | IE-C6FP8LM0100M40M40-M | D.17 |
| 1201270150        | IE-C6FP8LM0150M40M40-M | D.17 |
| 1201270200        | IE-C6FP8LM0200M40M40-M | D.17 |
| 1206720000        | IE-PS-SCRJ1-POF        | C.18 |
| 1206730000        | IE-PS-SCRJ1-MM         | C.18 |
| 1206740000        | IE-PS-SCRJ1-SM         | C.18 |
| 1206870000        | HTX-IE-POF             | E.10 |
| 1208880000        | MULTI-STRIPAX IE-POF   | E.11 |
| 1208910000        | SCISSORS KEVLAR        | E.10 |
| 1208930000        | TOOL SET IE-POF        | E.9  |

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| <b>1210000000</b> |                       |      |
| 1212770000        | AIE MULTI-STRIPAX POF | E.11 |

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| <b>1220000000</b> |                        |      |
| 1220310040        | IE-C5DB4WE0040MCSA20-E | D.26 |
| 1220930000        | IE-FM6B2UE0005MLDOLD0X | D.36 |
| 1221010000        | IE-BS-V01M-SCRJ-MM     | C.37 |
| 1221020000        | IE-BS-V01M-SCRJ-SM     | C.37 |
| 1221030000        | IE-BHD-V01M-SCA        | C.37 |
| 1222550000        | IE-FCM-USB-AB          | C.71 |

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| 1230000000 |                        |      |
| 1233160005 | IE-C6FP8LD0005M40W40-D | D.18 |
| 1233160010 | IE-C6FP8LD0010M40W40-D | D.18 |
| 1233160012 | IE-C6FP8LD0012M40W40-D | D.18 |
| 1233160015 | IE-C6FP8LD0015M40W40-D | D.18 |
| 1233160020 | IE-C6FP8LD0020M40W40-D | D.18 |
| 1233160030 | IE-C6FP8LD0030M40W40-D | D.18 |
| 1233160050 | IE-C6FP8LD0050M40W40-D | D.18 |
| 1233160100 | IE-C6FP8LD0100M40W40-D | D.18 |

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| 1251590050 | IE-C6FP8LG0050M40M40-G | D.16 |
| 1251590100 | IE-C6FP8LG0100M40M40-G | D.16 |
| 1251590150 | IE-C6FP8LG0150M40M40-G | D.16 |
| 1251590200 | IE-C6FP8LG0200M40M40-G | D.16 |
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| 1251610005 | IE-C6FP8LE0005M40M40-E | D.16 |
| 1251610010 | IE-C6FP8LE0010M40M40-E | D.16 |
| 1251610015 | IE-C6FP8LE0015M40M40-E | D.16 |
| 1251610020 | IE-C6FP8LE0020M40M40-E | D.16 |
| 1251610030 | IE-C6FP8LE0030M40M40-E | D.16 |
| 1251610050 | IE-C6FP8LE0050M40M40-E | D.16 |
| 1251610100 | IE-C6FP8LE0100M40M40-E | D.16 |
| 1251610150 | IE-C6FP8LE0150M40M40-E | D.16 |
| 1251610200 | IE-C6FP8LE0200M40M40-E | D.16 |
| 1251610250 | IE-C6FP8LE0250M40M40-E | D.16 |
| 1253240000 | IE-CDR-V14MSCPOF/APM-C | C.75 |

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| 1269740050 | IE-C5DB4WE0050MCSXXX-E | D.26 |
| 1269740100 | IE-C5DB4WE0100MCSXXX-E | D.26 |

## 1270000000

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| 1271240000 | IE-PS-V04P-RJ45-FH-B    | C.44 |
| 1271250000 | IE-PS-V05M-RJ45-FH-B    | C.52 |
| 1273090000 | IE-C7FS8LD-305M         | D.10 |
| 1273430010 | IE-FPOZ2EE0001MSJOSJO-X | D.35 |
| 1273430030 | IE-FPOZ2EE0003MSJOSJO-X | D.35 |
| 1273430050 | IE-FPOZ2EE0005MSJOSJO-X | D.35 |
| 1273430100 | IE-FPOZ2EE0010MSJOSJO-X | D.35 |
| 1276680000 | IE-FM6B2UE0010MLDOLDX   | D.36 |
| 1276880000 | IE-FM5Z2V00001MLDOLDX   | D.34 |

## 1680000000

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| 1689470001 | VT SF 5/21 NEUTRAL WS V0 | E.20 |
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## 1690000000

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| 1699860000 | SM 27/18 NEUTRAL WS | C.26 |
| 1699860000 | SM 27/18 NEUTRAL WS | C.27 |

## 1710000000

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| 1716630000 | SM-H 27/18 SW      | C.26 |
| 1716630000 | SM-H 27/18 SW      | C.27 |
| 1718411687 | TM-I 12 NEUTRAL GE | E.20 |
| 1718431044 | TM-I 18 NEUTRAL WS | E.20 |
| 1719840000 | TM 4/12 HF/HB      | E.20 |
| 1719850000 | TM 4/18 HF/HB      | E.20 |

## 1730000000

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| 1730560001 | VT SF 6/21 NEUTRAL WS V0 | E.20 |
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## 1790000000

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| 1797460000 | Tintenpatrone PrintJet | E.19 |
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## 1800000000

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| 1803930001 | SAISW-4/8S-M12 4P D-ZF | C.58 |
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## 1820000000

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| 1825900000 | Cabttie KEL 16/4    | E.17 |
| 1825910000 | Cabttie KEL 16/8    | E.17 |
| 1826480000 | Cabttie KT 5        | E.17 |
| 1826490000 | Cabttie KT 6        | E.17 |
| 1826500000 | Cabttie KT 7        | E.17 |
| 1826510000 | Cabttie KT 8        | E.17 |
| 1826670000 | Cabttie KVT 32      | E.17 |
| 1827770000 | Cabttie KEL SNAP 16 | E.17 |
| 1827810000 | Cabttie KT 5 b      | E.17 |
| 1827830000 | Cabttie KT 6 b      | E.17 |
| 1827840000 | Cabttie KT 7 b      | E.17 |
| 1827850000 | Cabttie KT 8 b      | E.17 |
| 1828170000 | Cabttie BTK         | E.17 |
| 1828200000 | Cabttie KT BTK b    | E.17 |
| 1828250000 | Cabttie SUBD9       | E.17 |
| 1828270000 | Cabttie KVT 32 b    | E.17 |
| 1828300000 | Cabttie SUBD9 b     | E.17 |

## 1850000000

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| 1857440000 | ESG 9/11K MC NEUTRAL   | E.20 |
| 1858920000 | Tintentank PrintJet II | E.19 |
| 1858950000 | CleanUnit PrintJet II  | E.19 |

## 1890000000

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| 1892120000 | SAISM-4/8S-M12-4P D-COD | C.58 |
| 1892120001 | SAISM-4/8S-M12 4P D-ZF  | C.58 |
| 1892130000 | SAIBM-4/8S-M12-4P D-COD | C.58 |
| 1892130001 | SAIBM-4/8S-M12 4P D-ZF  | C.58 |

## 1960000000

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| 1962430000 | IE-PH-RJ45-TH-WH | C.17 |
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| 1962450000 | IE-PH-RJ45-TH-OG        | C.17 |
| 1962470000 | IE-PH-RJ45-TH-BU        | C.17 |
| 1962480000 | IE-PH-RJ45-TH-YE        | C.17 |
| 1962490000 | IE-PH-RJ45-TH-GN        | C.17 |
| 1962500000 | IE-PH-RJ45-TH-BK        | C.17 |
| 1962520000 | IE-PH-V04P              | C.44 |
| 1962520000 | IE-PH-V04P              | C.48 |
| 1962520000 | IE-PH-V04P              | C.50 |
| 1962530000 | IE-PH-V04P-BP           | C.44 |
| 1962530000 | IE-PH-V04P-BP           | C.48 |
| 1962530000 | IE-PH-V04P-BP           | C.50 |
| 1962540000 | IE-PH-V05M              | C.52 |
| 1962550000 | IE-PH-V01M              | C.34 |
| 1962550000 | IE-PH-V01M              | C.36 |
| 1962550000 | IE-PH-V01M              | C.38 |
| 1962560000 | IE-PH-V01M-BP           | C.34 |
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| 1962560000 | IE-PH-V01M-BP           | C.38 |
| 1962720000 | IE-PI-RJ45-TH           | C.61 |
| 1962730000 | IE-PI-RJ45-FH           | C.61 |
| 1962780000 | IE-PI-2LC-MM            | C.68 |
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| 1962840000 | IE-BI-RJ45-C            | C.62 |
| 1962850000 | IE-BI-RJ45-FJ-A         | C.62 |
| 1962870000 | IE-BI-SCRJ2SC-SM-C      | C.67 |
| 1962880000 | IE-BI-LCD-SM-C          | C.69 |
| 1962900000 | IE-PB-SCD-MM            | C.19 |
| 1962970000 | IE-PS-LCD-MM            | C.19 |
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| 1962990000 | IE-CR-IP67-WS20-WH      | E.18 |
| 1963000000 | IE-CR-IP67-WS20-GY      | E.18 |
| 1963010000 | IE-CR-IP67-WS20-OG      | E.18 |
| 1963020000 | IE-CR-IP67-WS20-BU      | E.18 |
| 1963030000 | IE-CR-IP67-WS20-YE      | E.18 |
| 1963040000 | IE-CR-IP67-WS20-GN      | E.18 |
| 1963050000 | IE-CR-IP20-RJ45-FH-WH   | C.16 |
| 1963060000 | IE-CR-IP20-RJ45-FH-GY   | C.16 |
| 1963070000 | IE-CR-IP20-RJ45-FH-OG   | C.16 |
| 1963080000 | IE-CR-IP20-RJ45-FH-BU   | C.16 |
| 1963090000 | IE-CR-IP20-RJ45-FH-YE   | C.16 |
| 1963100000 | IE-CR-IP20-RJ45-FH-GN   | C.16 |
| 1963110000 | IE-PS-V05M-RJ45-TH      | C.52 |
| 1963120000 | IE-PS-V01M-RJ45-FH      | C.34 |
| 1963130000 | IE-PS-V01M-RJ45-FH-BP   | C.34 |
| 1963140000 | IE-PS-V01M-RJ45-TH      | C.34 |
| 1963150000 | IE-PS-V01M-RJ45-TH-BP   | C.34 |
| 1963160000 | IE-PS-V04P-RJ45-FH      | C.44 |
| 1963170000 | IE-PS-V04P-RJ45-FH-BP   | C.44 |
| 1963180000 | IE-PS-V04P-RJ45-TH      | C.44 |
| 1963190000 | IE-PS-V04P-RJ45-TH-BP   | C.44 |
| 1963200000 | IE-PS-V05M-RJ45-FH      | C.52 |
| 1963220000 | IE-PS-V01M-2LC-MM       | C.38 |
| 1963230000 | IE-PS-V01M-2LC-MM-BP    | C.38 |
| 1963240000 | IE-PS-V01M-2LC-SM       | C.38 |
| 1963250000 | IE-PS-V01M-2LC-SM-BP    | C.38 |
| 1963260000 | IE-PS-V01M-2SC-MM       | C.36 |
| 1963270000 | IE-PS-V01M-2SC-MM-BP    | C.36 |
| 1963280000 | IE-PS-V01M-2SC-POF      | C.36 |
| 1963290000 | IE-PS-V01M-2SC-POF-BP   | C.36 |
| 1963300000 | IE-PS-V01M-2SC-SM       | C.36 |
| 1963310000 | IE-PS-V01M-2SC-SM-BP    | C.36 |
| 1963320000 | IE-PS-V04P-2LC-MM       | C.50 |
| 1963330000 | IE-PS-V04P-2LC-MM-BP    | C.50 |
| 1963340000 | IE-PS-V04P-2LC-SM       | C.50 |
| 1963350000 | IE-PS-V04P-2LC-SM-BP    | C.50 |
| 1963360000 | IE-PS-V04P-2SC-MM       | C.48 |
| 1963370000 | IE-PS-V04P-2SC-MM-BP    | C.48 |
| 1963380000 | IE-PS-V04P-2SC-POF      | C.48 |
| 1963390000 | IE-PS-V04P-2SC-POF-BP   | C.48 |
| 1963400000 | IE-PS-V04P-2SC-SM       | C.48 |
| 1963410000 | IE-PS-V04P-2SC-SM-BP    | C.48 |
| 1963420000 | IE-BS-V04P-SCRJ2SC-SM-C | C.49 |
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| 1963470000 | IE-BS-V01M-RJ45-C       | C.35 |
| 1963480000 | IE-BS-V01M-RJ45-FJ-A    | C.35 |
| 1963490000 | IE-BS-V04P-RJ45-C       | C.45 |
| 1963500000 | IE-BS-V04P-RJ45-FJ-A    | C.45 |
| 1963510000 | IE-BS-V05M-RJ45-C       | C.53 |
| 1963520000 | IE-BH-V04P              | C.45 |
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| 1963520000 | IE-BH-V04P              | C.51 |
| 1963530000 | IE-BH-V05M              | C.53 |
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| 1963540000 | IE-BH-V01M              | C.39 |
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| 1968920000 | IE-PP-V05M              | E.18 |
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| 8813150000 | IE-5IC4x2xAWG24/1-PVC  | D.6  |
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| 8813170000 | IE-7CC4x2xAWG26/7-PVC  | D.9  |
| 8813180000 | IE-7CC4x2xAWG26/7-PUR  | D.9  |
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| 8829450000 | IE-XM-6D-RJ45/RJ45-IP67 | C.55 |

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| 8876360100 | IE-FM6Z2V00001MSDSDOX  | D.33 |
| 8876370050 | IE-FM5Z2V00005MSTOSTOX | D.33 |
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| 8876430010 | IE-FM5D2UE0001MSDSDOX  | D.37 |
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| 8876430050 | IE-FM5D2UE0005MSDSDOX  | D.37 |
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| 8876440010 | IE-FM6D2UE0001MSDSDOX  | D.37 |
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