# Industrial Ethernet Catalogue 2014/2015

Let's connect.

Industrial data communication

Weidmüller

# Dear Customers,

The PDF versions of our catalogues offer practical additional functions, helping you to find your way around our product range and simplifying the ordering process.

In addition to the catalogue, the PDF also contains:
- Internal page links
- Links to the online catalogue

Try it out for yourself. Click the order number to obtain more detailed information and close-up images via you web browser. The links in the PDF file also enable you to go directly to the next desired catalogue page.

## Further Weidmüller product catalogues can be accessed by clicking the following:

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## Solutions for industrial data communications

# Active components
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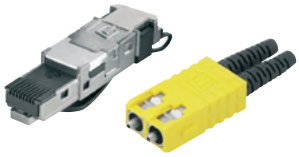

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# Passive components
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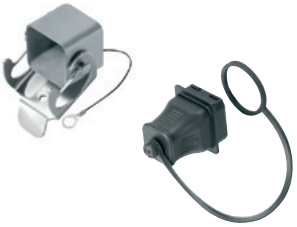

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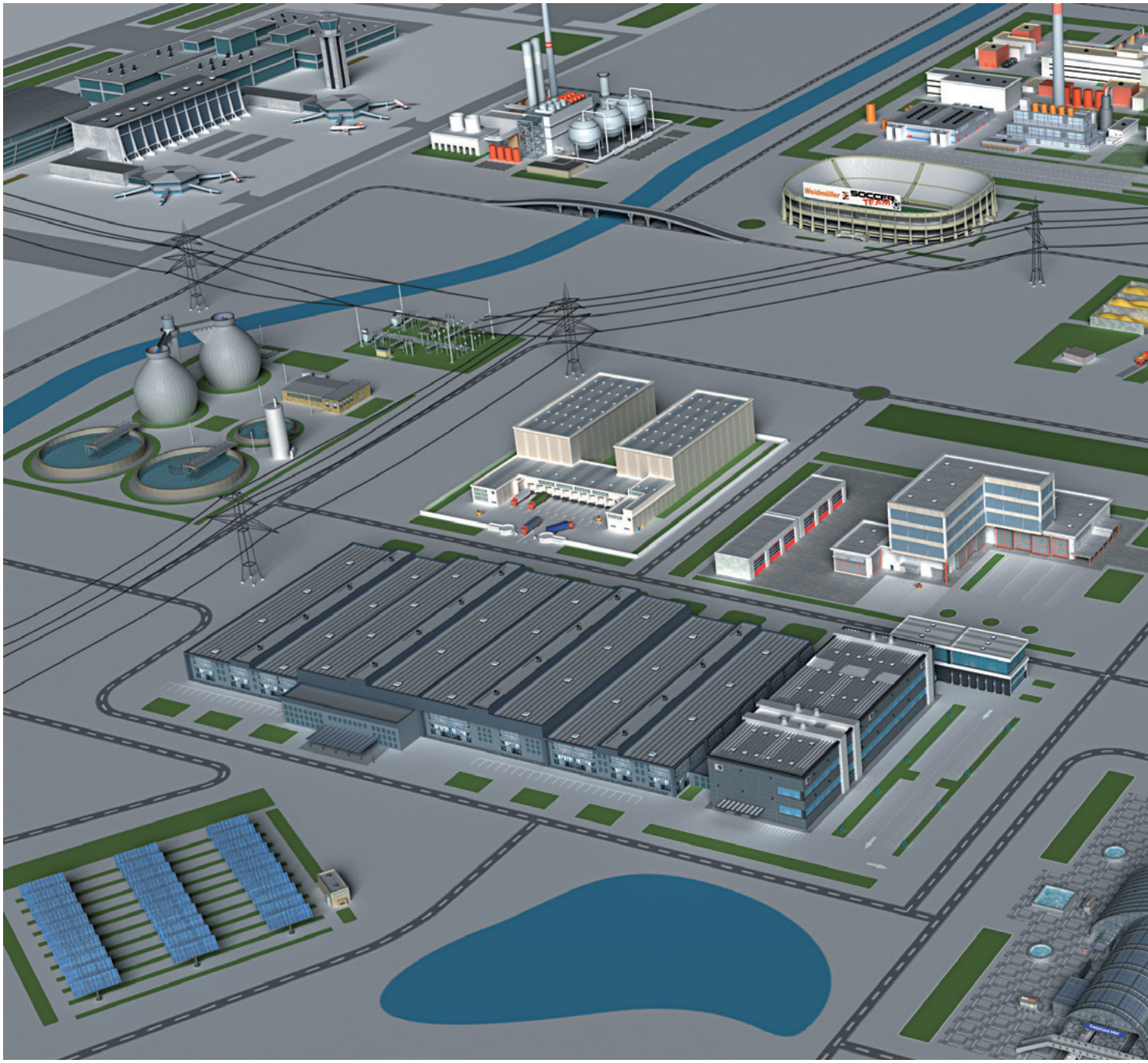
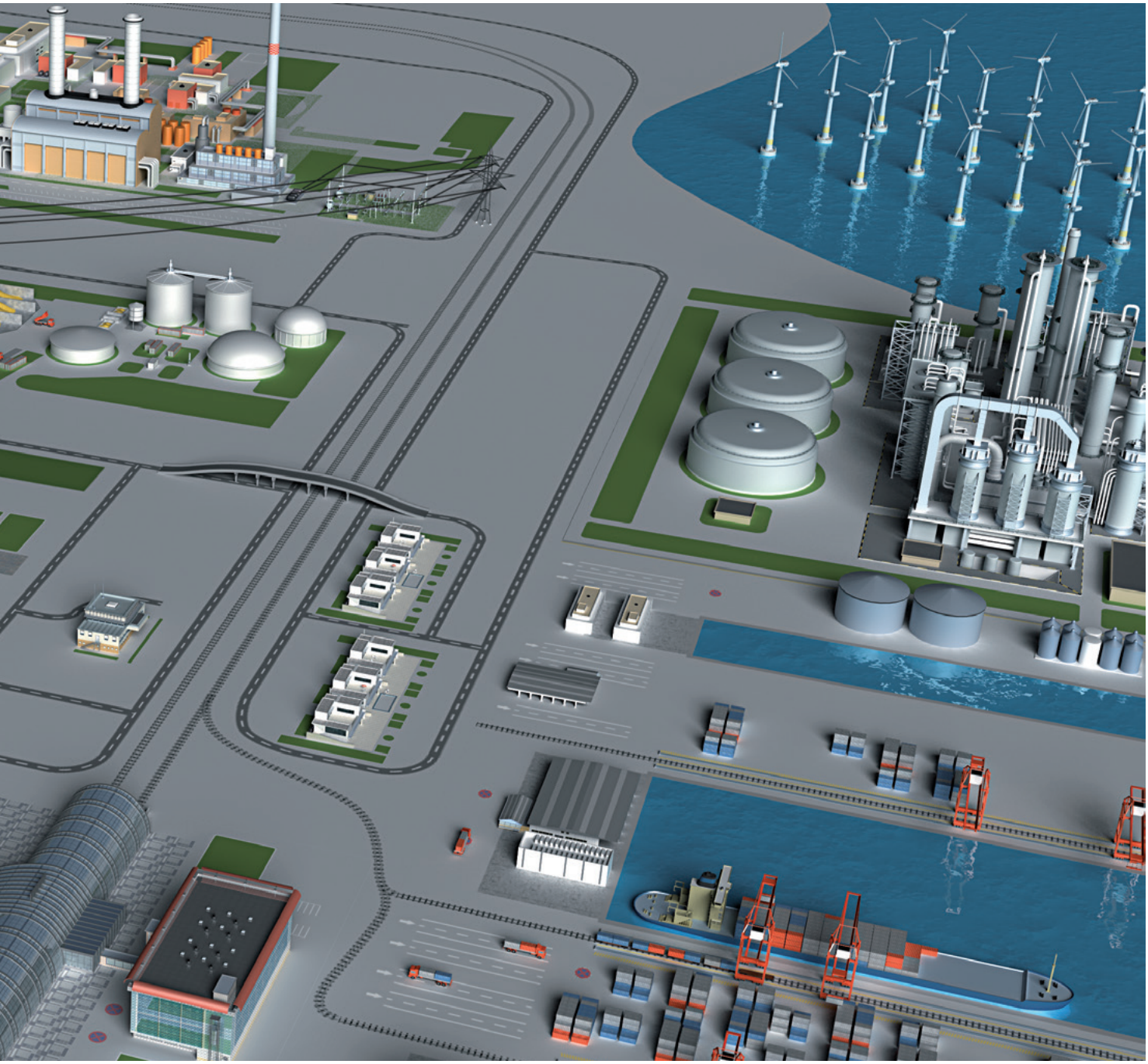
# Intended use for Industrial Ethernet

## A complete range of products for industrial communications infrastructure



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; including automotive, general machine construction, process industry, transportation and energy. The requirements of these differ in terms of protocols, environmental conditions, certifications and standards. As well as being a leading provider of industrial connection and network products, Weidmüller embraces solutions for these differing requirements with a comprehensive and high-quality product range of active and passive components for Ethernet communications.



The basic requirements of these industrial markets are high reliability, availability and safeguarding against failure. These are met by extremely high MTBF times of our network components. Using Weidmüller's high-quality ***STEADY****TEC*® connector system means that maximum reliability and simple operation is ensured.

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

# Automotive

## Robust and secure from the control layer to the robot

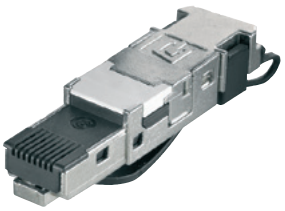
Car manufacturers in AIDA (the German car manufacturers' automation initiative) are the driver behind the use of Industrial Ethernet in the manufacturing sector, as they clearly prefer the use of PROFINET for communication between machines and equipment parts. To make the most savings in modern communications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

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
## High-performance solutions, simply integrated



Important aspects 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.

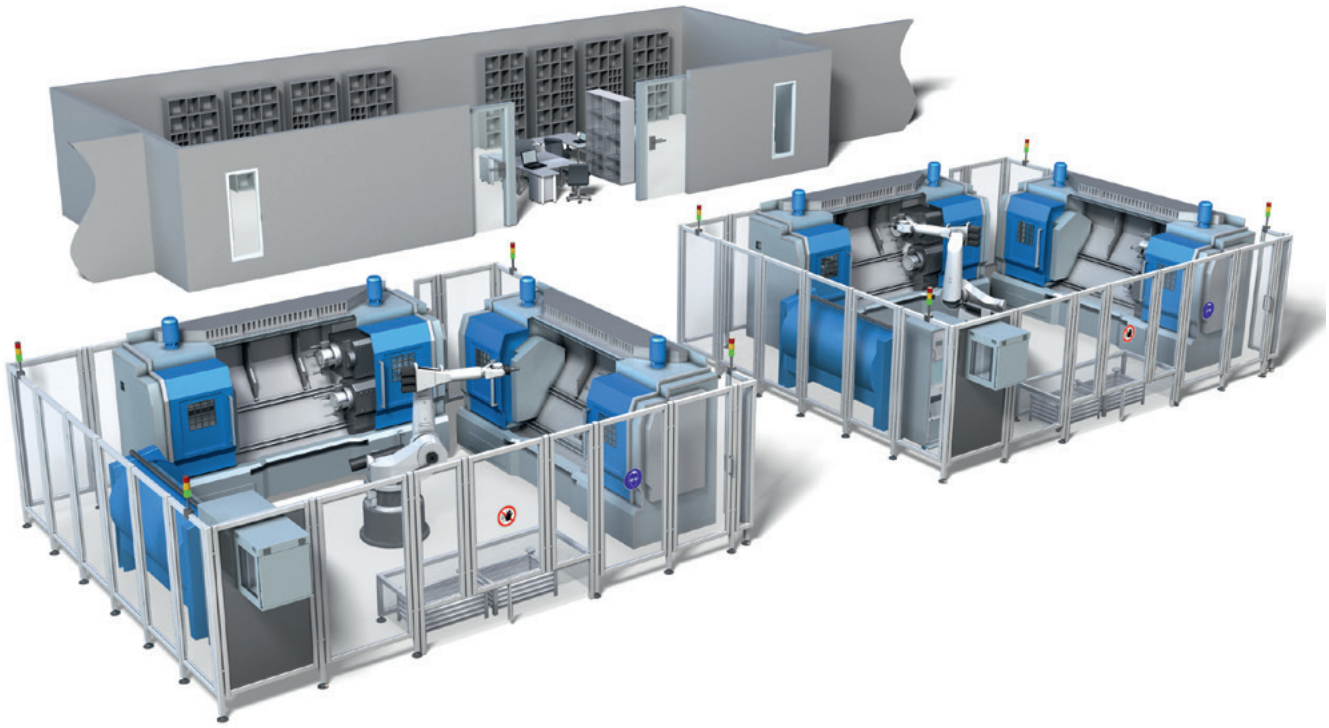
The volume of data in networks is steadily rising with the applications used, for example with camera-based quality control. Weidmüller easily meets these increased demands with its product range of high-performance Gigabit switches and plug-in connectors capable of 10 Gigabit transfer.

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.

# Machinery - in detail

## Your robots are always in action
## We enable them to let you know what they are up to
## Let's connect.

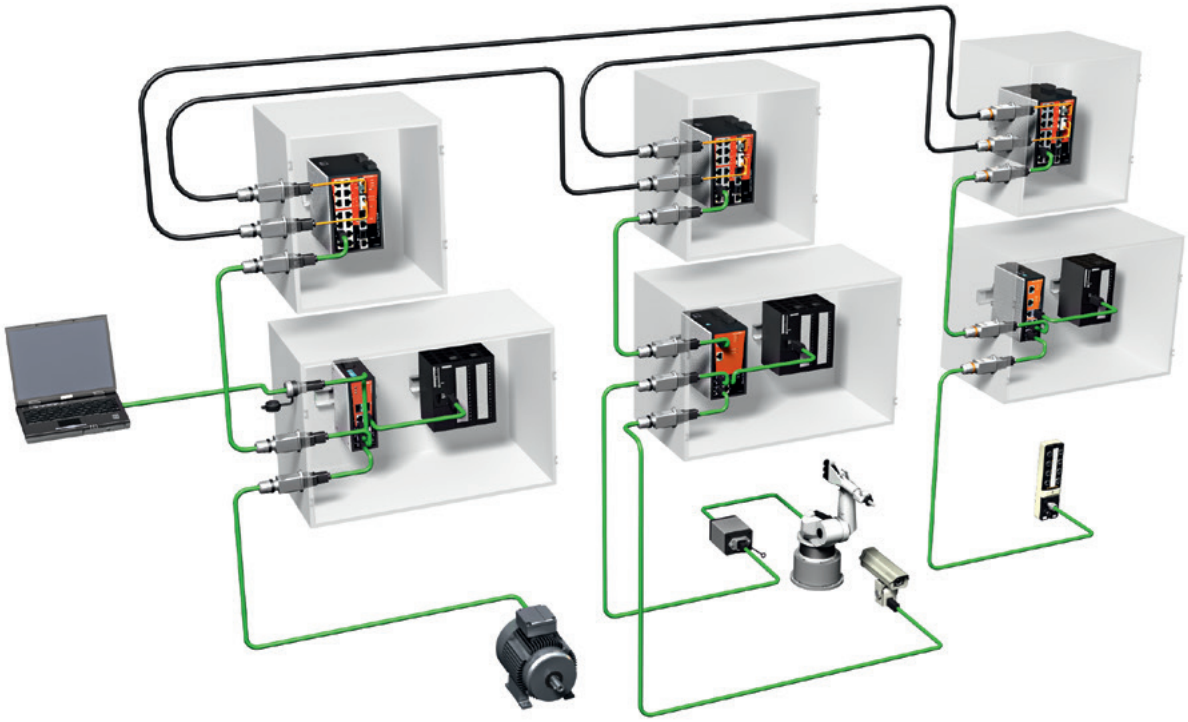


You require a seamless flow of information to optimise the output and efficiency of your production cells – from networking the communication between machine segments, to the exchange of information with higher-level office networks. In this way you can constantly monitor the activities of your robots.

To provide you with seamless communication without media disruption, we offer you a comprehensive Industrial Ethernet product portfolio from field to control level – with significant advantages. Thanks to the innovative ***STEADY****TEC*® technology used, our plug-in connectors create the basis for reliable and standardised connection solutions in data communication, both in the office and in harsh production environments. With functions such as high-speed ring redundancy or redundant power supply, our active Industrial Ethernet components guarantee uninterrupted operation of your production network.
Extensive network management functions effectively handle your data traffic. Our Power-over-Ethernet switches supply the operating voltage to the cameras that monitor your manufacturing processes, in parallel to data traffic.

With these and many other functions, our multifaceted Industrial Ethernet portfolio supports your communication at control, infrastructure and machine levels. This means that channels of communication with your robots are always open.

Let's connect.



### Plug-in connectors and cabling system

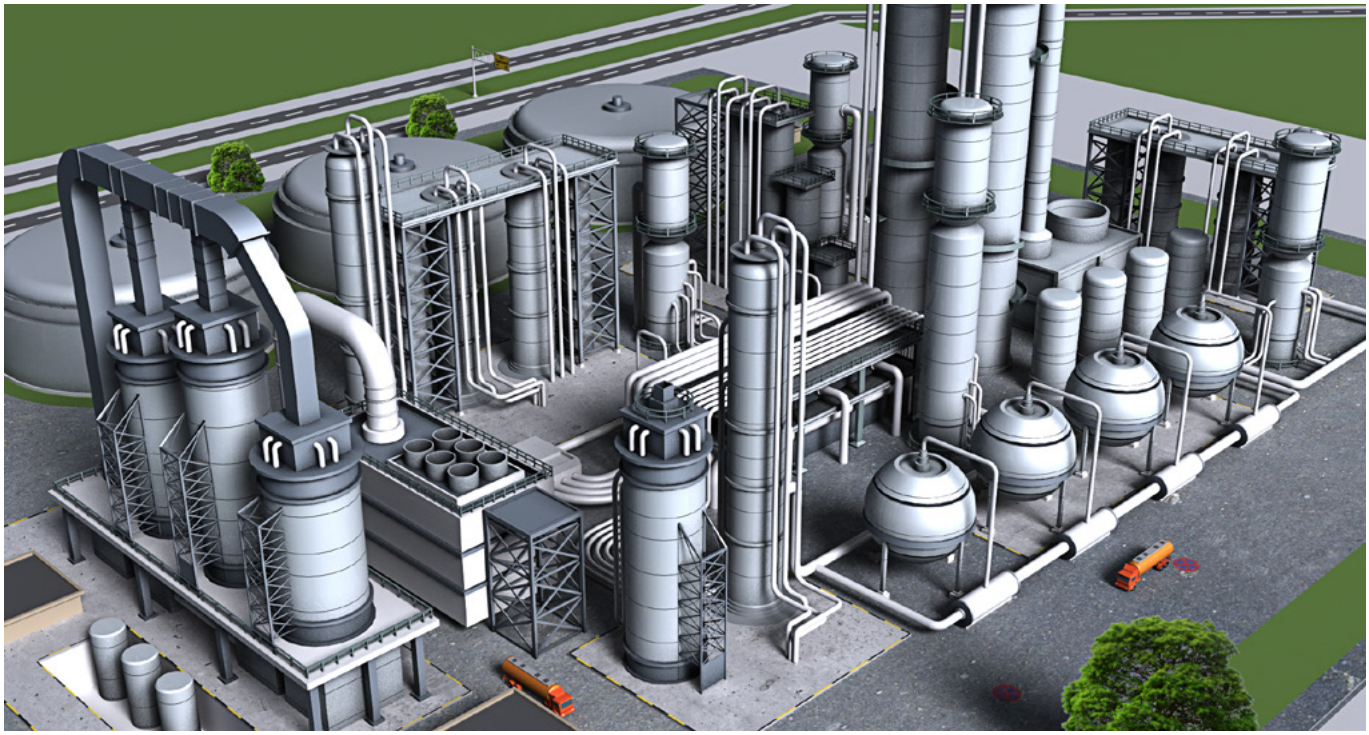
- IEC-standardised connector, in variants 1, 4, 5 , 6 and 14
- All in Cat. $6_A$ and with ***STEADY****TEC*® technology
- Cables pre-assembled and sold by the metre
- Copper and fibre-optic cables
- IP 20 and IP 67
- All relevant Industrial Ethernet industrial connections
- Comprehensive range of accessories

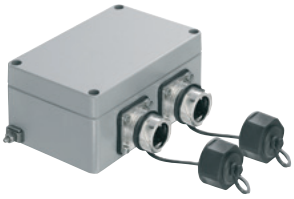
### Active Industrial Ethernet components

- Unmanaged switches (Fast Ethernet, Gigabit Ethernet)
- Managed switches (Fast Ethernet, Gigabit Ethernet)
- Power-over-Ethernet switches (unmanaged, managed)
- Media converters (copper, fibre-optic cables)
- Serial/Ethernet converters
- Industrial wireless components
- Industrial security routers

# Process

## Secure communication, even over large distances





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 like high protection class when you use components in the field. The harsh environments in process plants are characterised by high temperature variations, vibrations, rain and dust, as well as electromagnetic influences. Weidmüller's active and passive Ethernet components are well able to withstand these influences.

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

This means that the devices form a secure and efficient communications bridge to the office, from the plant to the controller and then out to the wider IT network.

# Active components
## Introduction

# Active components
## Solutions for global industrial use

Ethernet technology is an established standard in office communication and has existed for many years. Without it, effective communications between equipment such as PCs, printers, data servers, etc. would not 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 the networking of 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. In addition, there are normally much higher demands placed on the communication devices in the industrial setting. These include:

- Installation conditions
- Environmental conditions
- Protocols
- Approvals

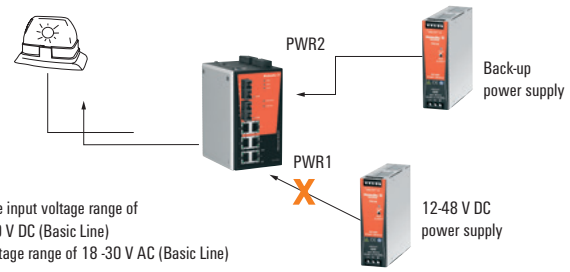
Weidmüller's Industrial Ethernet components meet all of these requirements as they have the properties listed below:

- 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.

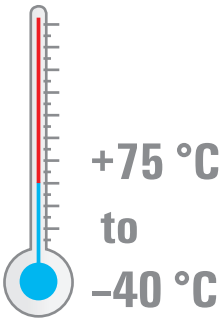
**Stable and versatile power supply inputs for industrial applications**

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. For instance, with a rated 48 V DC input, a fluctuation of +20 % is acceptable and yet, in one of 12 V DC, a voltage drop of up to 20 % presents no problems for the attached devices.



**Suitable for use in extreme temperature environments**

Industrial environments often experience extreme temperature conditions. This means that devices are needed which can operate flawlessly with the vast temperature fluctuations. All of our 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 robust 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**

An extensive range of certifications confirm the reliability of Weidmüller's Industrial Ethernet components

- UL 508 and UL 60950-1
- Class I, Division2 / ATEX Zone 2 for safe use in hazardous 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 service life and this can be seen from the high MTBF value. Weidmüller also guarantees its Industrial Ethernet components for a period of five years.

# The ideal solution, whatever your needs
## Our Basic, Value and Premium Line product ranges

### Basic Line

Weidmüller's Basic Line series consists of unmanaged Plug & Play switches in a rugged IP 30 rated aluminium housing. The devices are available with Fast Ethernet and Gigabit Ethernet and provide an economical solution for Industrial Ethernet 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 internationally available for different applications.

- Plug & Play switches in a rugged aluminium housing (IP 30)
- 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 IP 30 rated metal housing. The devices are available with Fast Ethernet and Gigabit Ethernet ports. Value Line managed switches 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 (IP 30)
- 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

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, ie. 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 ≤ 20 ms), these devices increase the reliability and availability of your industrial network. The option to use SFP transceivers offer a high degree of flexibility and the Gigabit variants also allow their use in networks with high traffic loads.

- Managed Fast Ethernet variants in a high quality metal housing (IP 30)
- 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 ≤ 20 ms) for increased reliability in network ring structures
- Approvals: cULus, Class I Div. 2 / Atex, DNV / GL

## Switches – quick-finder

| Order No. | Type | Ports total | 5 | | 6 | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Ports copper | 5 | 4 | 6 | 8 | 5 | 6 | 6 | 7 |
| | | Ports fibre | | 1 | | | 3 | 2 | | 1 |
| | | Ports SFP | | | | | | | 2 | |
| **Industrial Ethernet Switches** | | | | | | | | | | |
| 1240840000 | IE-SW-BL05-5TX | | ● | | | | | | | |
| 1240850000 | IE-SW-BL05T-5TX | | ● | | | | | | | |
| 1240870000 | IE-SW-BL05-4TX-1SCS | | | ● | | | | | | |
| 1286530000 | IE-SW-BL05T-4TX-1SCS | | | ● | | | | | | |
| 1240880000 | IE-SW-BL05-4TX-1ST | | | ● | | | | | | |
| 1286540000 | IE-SW-BL05T-4TX-1ST | | | ● | | | | | | |
| 1240890000 | IE-SW-BL05-4TX-1SC | | | ● | | | | | | |
| 1286550000 | IE-SW-BL05T-4TX-1SC | | | ● | | | | | | |
| 1240900000 | IE-SW-BL08-8TX | | | | | ● | | | | |
| 1286560000 | IE-SW-BL08T-8TX | | | | | ● | | | | |
| 1240910000 | IE-SW-BL08-6TX-2SC | | | | | | | ● | | |
| 1240920000 | IE-SW-BL08T-6TX-2SC | | | | | | | ● | | |
| 1240930000 | IE-SW-BL08-6TX-2ST | | | | | | | ● | | |
| 1286570000 | IE-SW-BL08T-6TX-2ST | | | | | | | ● | | |
| 1412070000 | IE-SW-BL08-7TX-1SC | | | | | | | | | ● |
| 1412080000 | IE-SW-BL08T-7TX-1SC | | | | | | | | | ● |
| 1412090000 | IE-SW-BL08-7TX-1ST | | | | | | | | | ● |
| 1412100000 | IE-SW-BL08T-7TX-1ST | | | | | | | | | ● |
| 1240950000 | IE-SW-BL08-7TX-1SCS | | | | | | | | | ● |
| 1286580000 | IE-SW-BL08T-7TX-1SCS | | | | | | | | | ● |
| 1412110000 | IE-SW-BL08-6TX-2SCS | | | | | | | ● | | |
| 1412120000 | IE-SW-BL08T-6TX-2SCS | | | | | | | ● | | |
| 1241250000 | IE-SW-BL05-5GT | 5 GE | | | | | | | | |
| 1286850000 | IE-SW-BL05T-5GT | 5 GE | | | | | | | | |
| 1241270000 | IE-SW-VL08-8GT | | | | | 8 GE | | | | |
| 1286860000 | IE-SW-VL08T-8GT | | | | | 8 GE | | | | |
| 1241280000 | IE-SW-VL08-6GT-2GS | | | | | | | | 6 GE<br>2 GEC | |
| 1286870000 | IE-SW-VL08T-6GT-2GS | | | | | | | | 6 GE<br>2 GEC | |
| 1240980000 | IE-SW-VL09T-6TX-3SC | | | | | | | | | |
| 1241000000 | IE-SW-VL16-16TX | | | | | | | | | |
| 1286590000 | IE-SW-VL16T-16TX | | | | | | | | | |
| 1241030000 | IE-SW-VL16-14TX-2SC | | | | | | | | | |
| 1286610000 | IE-SW-VL16T-14TX-2SC | | | | | | | | | |
| 1241050000 | IE-SW-VL16-14TX-2ST | | | | | | | | | |
| 1286620000 | IE-SW-VL16T-14TX-2ST | | | | | | | | | |
| 1240940000 | IE-SW-VL08MT-8TX | | | | | ● | | | | |
| 1240970000 | IE-SW-VL08MT-5TX-3SC | | | | | | ● | | | |
| 1345240000 | IE-SW-VL08MT-5TX-1SC-2SCS | | | | | | ● | | | |
| 1344770000 | IE-SW-VL08MT-6TX-2SC | | | | | | | ● | | |
| 1240990000 | IE-SW-VL08MT-6TX-2ST | | | | | | | ● | | |
| 1241020000 | IE-SW-VL08MT-6TX-2SCS | | | | | | | ● | | |

FE = Fast Ethernet
GE = Gigabit-Ethernet
GEC = Gigabit-Ethernet Combo-Ports
PoE+ = Power-over-Ethernet+

| 9 | | 10 | | 16 | | 18 | | Unmanaged | Managed | Temperature | Fibre-optic interface | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 4 | 10 | 8 | 16 | 14 | 16 | 14 | | | | | |
| 3 | | | | | 2 | | 2 | | | | | |
| | 5 | | 2 | | | 2 | 2 | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | ● | | -10 ... +60 °C | | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | SC-Singlemode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | SC-Singlemode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | ST-Multimode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | ST-Multimode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | SC-Multimode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | SC-Multimode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | SC-Multimode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | SC-Multimode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | ST-Multimode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | ST-Multimode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | SC-Multimode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | SC-Multimode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | ST-Multimode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | ST-Multimode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | SC-Singlemode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | SC-Singlemode | B.3 |
| | | | | | | | | ● | | -10 ... +60 °C | SC-Singlemode | B.3 |
| | | | | | | | | ● | | -40 ... +75 °C | SC-Singlemode | B.3 |
| | | | | | | | | ● | | 0 ... +60 °C | | B.5 |
| | | | | | | | | ● | | -40 ... +75 °C | | B.5 |
| | | | | | | | | ● | | 0 ... +60 °C | | B.5 |
| | | | | | | | | ● | | -40 ... +75 °C | | B.5 |
| | | | | | | | | ● | | 0 ... +60 °C | SFP-Slot | B.5 |
| | | | | | | | | ● | | -40 ... +75 °C | SFP-Slot | B.5 |
| ● | | | | | | | | ● | | -40 ... +75 °C | SC-Multimode | B.4 |
| | | | | ● | | | | ● | | 0 ... +60 °C | | B.4 |
| | | | | ● | | | | ● | | -40 ... +75 °C | | B.4 |
| | | | | | ● | | | ● | | 0 ... +60 °C | SC-Multimode | B.4 |
| | | | | | ● | | | ● | | -40 ... +75 °C | SC-Multimode | B.4 |
| | | | | | ● | | | ● | | 0 ... +60 °C | ST-Multimode | B.4 |
| | | | | | ● | | | ● | | -40 ... +75 °C | ST-Multimode | B.4 |
| | | | | | | | | | ● | -40 ... +75 °C | | B.11 |
| | | | | | | | | | ● | -40 ... +75 °C | SC-Multimode | B.11 |
| | | | | | | | | | ● | -40 ... +75 °C | SC-Multimode/SC-Singlemode | B.11 |
| | | | | | | | | | ● | -40 ... +75 °C | SC-Multimode | B.11 |
| | | | | | | | | | ● | -40 ... +75 °C | ST-Multimode | B.11 |
| | | | | | | | | | ● | -40 ... +75 °C | SC-Singlemode | B.11 |

## Switches – quick-finder

| Order No. | Type | Ports total | 5 | | 6 | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Ports copper | 5 | 4 | 6 | 8 | 5 | 6 | 6 | 7 |
| | | Ports fibre | | 1 | | | 3 | 2 | | 1 |
| | | Ports SFP | | | | | | | 2 | |
| **Industrial Ethernet Switches** | | | | | | | | | | |
| **1241040000** | IE-SW-PL08M-8TX | | | | | ● | | | | |
| **1286780000** | IE-SW-PL08MT-8TX | | | | | ● | | | | |
| **1241070000** | IE-SW-PL08M-6TX-2SC | | | | | | | ● | | |
| **1286790000** | IE-SW-PL08MT-6TX-2SC | | | | | | | ● | | |
| **1241080000** | IE-SW-PL08M-6TX-2ST | | | | | | | ● | | |
| **1286800000** | IE-SW-PL08MT-6TX-2ST | | | | | | | ● | | |
| **1241090000** | IE-SW-PL08M-6TX-2SCS | | | | | | | ● | | |
| **1286810000** | IE-SW-PL08MT-6TX-2SCS | | | | | | | ● | | |
| **1241100000** | IE-SW-PL16M-16TX | | | | | | | | | |
| **1286820000** | IE-SW-PL16MT-16TX | | | | | | | | | |
| **1241120000** | IE-SW-PL16M-14TX-2SC | | | | | | | | | |
| **1286830000** | IE-SW-PL16MT-14TX-2SC | | | | | | | | | |
| **1241130000** | IE-SW-PL16M-14TX-2ST | | | | | | | | | |
| **1286840000** | IE-SW-PL16MT-14TX-2ST | | | | | | | | | |
| **1241290000** | IE-SW-PL10M-3GT-7TX | | | | | | | | | |
| **1286930000** | IE-SW-PL10MT-3GT-7TX | | | | | | | | | |
| **1241300000** | IE-SW-PL10M-1GT-2GS-7TX | | | | | | | | | |
| **1286940000** | IE-SW-PL10MT-1GT-2GS-7TX | | | | | | | | | |
| **1241320000** | IE-SW-PL18M-2GC-16TX | | | | | | | | | |
| **1286970000** | IE-SW-PL18MT-2GC-16TX | | | | | | | | | |
| **1241330000** | IE-SW-PL18M-2GC-14TX2SC | | | | | | | | | |
| **1286990000** | IE-SW-PL18MT-2GC14TX2SC | | | | | | | | | |
| **1241340000** | IE-SW-PL18M-2GC14TX2ST | | | | | | | | | |
| **1287000000** | IE-SW-PL18MT-2GC14TX2ST | | | | | | | | | |
| **1241350000** | IE-SW-PL18M-2GC14TX2SCS | | | | | | | | | |
| **1287010000** | IE-SW-PL18MT-2GC14TX2SCS | | | | | | | | | |
| **1241370000** | IE-SW-PL09M-5GC-4GT | | | | | | | | | |
| **1287020000** | IE-SW-PL09MT-5GC-4GT | | | | | | | | | |
| **Power over Ethernet Switches** | | | | | | | | | | |
| **1241380000** | IE-SW-BL06-2TX-4PoE | | | | 2 FE<br>4 PoE+ | | | | | |
| **1286920000** | IE-SW-BL06T-2TX-4PoE | | | | 2 FE<br>4 PoE+ | | | | | |
| **1241390000** | IE-SW-PL06M-2TX-4PoE | | | | 2 FE<br>4 PoE+ | | | | | |
| **1286910000** | IE-SW-PL06MT-2TX-4PoE | | | | 2 FE<br>4 PoE+ | | | | | |

FE = Fast Ethernet
GE = Gigabit-Ethernet
GEC = Gigabit-Ethernet Combo-Ports
PoE+ = Power-over-Ethernet+

| 9 | | 10 | | 16 | | 18 | | Unmanaged | Managed | Temperature | Fibre-optic interface | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 4 | 10 | 8 | 16 | 14 | 16 | 14 | | | | | |
| 3 | | | | | 2 | | 2 | | | | | |
| | 5 | | 2 | | | 2 | 2 | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | ● | 0 ... +60 °C | | B.12 |
| | | | | | | | | | ● | -40 ... +75 °C | | B.12 |
| | | | | | | | | | ● | 0 ... +60 °C | SC-Multimode | B.12 |
| | | | | | | | | | ● | -40 ... +75 °C | SC-Multimode | B.12 |
| | | | | | | | | | ● | 0 ... +60 °C | ST-Multimode | B.12 |
| | | | | | | | | | ● | -40 ... +75 °C | ST-Multimode | B.12 |
| | | | | | | | | | ● | 0 ... +60 °C | SC-Singlemode | B.12 |
| | | | | | | | | | ● | -40 ... +75 °C | SC-Singlemode | B.12 |
| | | | | ● | | | | | ● | 0 ... +60 °C | | B.12 |
| | | | | ● | | | | | ● | -40 ... +75 °C | | B.12 |
| | | | | | ● | | | | ● | 0 ... +60 °C | SC-Multimode | B.12 |
| | | | | | ● | | | | ● | -40 ... +75 °C | SC-Multimode | B.12 |
| | | | | | ● | | | | ● | 0 ... +60 °C | ST-Multimode | B.12 |
| | | | | | ● | | | | ● | -40 ... +75 °C | ST-Multimode | B.12 |
| | | 3 GE<br>7 FE | | | | | | | ● | 0 ... +60 °C | | B.13 |
| | | 3 GE<br>7 FE | | | | | | | ● | -40 ... +75 °C | | B.13 |
| | | | 1GE<br>2 GEC<br>7 FE | | | | | | ● | 0 ... +60 °C | SFP-Slot | B.13 |
| | | | 1GE<br>2 GEC<br>7 FE | | | | | | ● | -40 ... +75 °C | SFP-Slot | B.13 |
| | | | | | | 2 GEC<br>16 FE | | | ● | 0 ... +60 °C | SFP-Slot | B.14 |
| | | | | | | 2 GEC<br>16 FE | | | ● | -40 ... +75 °C | SFP-Slot | B.14 |
| | | | | | | | 2 GEC<br>14 FE | | ● | 0 ... +60 °C | SC-Multimode / SFP-Slot | B.14 |
| | | | | | | | 2 GEC<br>14 FE | | ● | -40 ... +75 °C | SC-Multimode / SFP-Slot | B.14 |
| | | | | | | | 2 GEC<br>14 FE | | ● | 0 ... +60 °C | ST-Multimode / SFP-Slot | B.14 |
| | | | | | | | 2 GEC<br>14 FE | | ● | -40 ... +75 °C | ST-Multimode / SFP-Slot | B.14 |
| | | | | | | | 2 GEC<br>14 FE | | ● | 0 ... +60 °C | SC-Singlemode / SFP-Slot | B.14 |
| | | | | | | | 2 GEC<br>14 FE | | ● | -40 ... +75 °C | SC-Singlemode / SFP-Slot | B.14 |
| | 5 GEC<br>4 GE | | | | | | | | ● | 0 ... +60 °C | SFP-Slot | B.15 |
| | 5 GEC<br>4 GE | | | | | | | | ● | -40 ... +75 °C | SFP-Slot | B.15 |
| | | | | | | | | | | | | |
| | | | | | | | | ● | | 0 ... +60 °C | | B.17 |
| | | | | | | | | ● | | -40 ... +75 °C | | B.17 |
| | | | | | | | | | ● | 0 ... +60 °C | | B.18 |
| | | | | | | | | | ● | -40 ... +75 °C | | B.18 |

# Industrial Ethernet Switches
## Overview

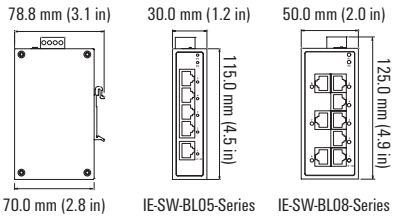
# Unmanaged Switches
## Adaptable and universal

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, such as 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
- IP 30 aluminum housing
- Rugged hardware design well suited for hazardous locations (Class I Div. 2 /ATEX) and maritime environments (DNV/GL)
- –40 °C 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** | | |
| Fibre 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 (fibre port) | |
| **Optical Fibre** | | |
| | 100BaseFX | |
| | multimode | singlemode |
| Wavelength | 1300 nm | 1310 nm |
| Max. Transmit power | -10 dBm | 0 dBm |
| Min. Transmit power | -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 1SC/1ST/1SCS: 0.11 A @ 24 V<br>IE SW BL08 8TX: 0.13 A @ 24 V<br>IE SW BL08 2SC/2ST/2SCS: 0.22 A @ 24 V<br>IE SW BL08 1SC/1ST/1SCS: 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, IP 30 protection | |
| Dimensions (W x H x D) | IIE-SW-BL05-Series:<br>30 x 115 x 70 mm (1.18 x 4.52 x 2.76 in)<br>IE-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 (32 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 | UL 508, UL 60950-1 |
| 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 |
| EMC | 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 (not for 1412110000, 1412120000, 1412070000, 1412080000, 1412090000, 1412100000) |
| Shock | IEC 60068-2-27 |
| Freefall | IEC 60068-2-32 |
| Vibration | IEC 60068-2-6 |
| **MTBF (meantime between failures)** | |
| Time | IE-SW-BL05-Series: 3,040,784 hrs<br>IE-SW-BL08-Series: 2,428,212 hrs |
| Database | Telcordia (Bellcore), GB |
| **Warranty** | |
| Warranty Period | 5 years |

### Ordering Information

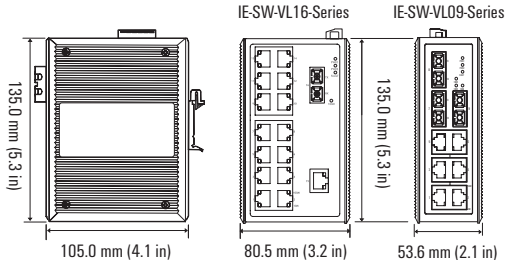
| Port Variants | Model Type | Operating Temperature | Order No. |
|---|---|---|---|
| 5 * RJ45 | IE-SW-BL05-5TX | -10 to +60 °C | 1240840000 |
| | IE-SW-BL05T-5TX | -40 to +75 °C | 1240850000 |
| 4 * RJ45, 1 * SC-Multimode | IE-SW-BL05-4TX-1SC | -10 to +60 °C | 1240890000 |
| | IE-SW-BL05T-4TX-1SC | -40 to +75 °C | 1286550000 |
| 4 * RJ45, 1 * ST-Multimode | IE-SW-BL05-4TX-1ST | -10 to +60 °C | 1240880000 |
| | IE-SW-BL05T-4TX-1ST | -40 to +75 °C | 1286540000 |
| 4 * RJ45, 1 * SC-Singlemode | IE-SW-BL05-4TX-1SCS | -10 to +60 °C | 1240870000 |
| | IE-SW-BL05T-4TX-1SCS | -40 to +75 °C | 1286530000 |
| 8 * RJ45 | IE-SW-BL08-8TX | -10 to +60 °C | 1240900000 |
| | IE-SW-BL08T-8TX | -40 to +75 °C | 1286560000 |
| 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 | -10 to +60 °C | 1240930000 |
| | IE-SW-BL08T-6TX-2ST | -40 to +75 °C | 1286570000 |
| 6 * RJ45, 2 * SC-Singlemode | IE-SW-BL08-6TX-2SCS | -10 to +60 °C | 1412110000 |
| | IE-SW-BL08T-6TX-2SCS | -40 to +75 °C | 1412120000 |
| 7 * RJ45, 1 * SC-Multimode | IE-SW-BL08-7TX-1SC | -10 to +60 °C | 1412070000 |
| | IE-SW-BL08T-7TX-1SC | -40 to +75 °C | 1412080000 |
| 7 * RJ45, 1 * ST-Multimode | IE-SW-BL08-7TX-1ST | -10 to +60 °C | 1412090000 |
| | IE-SW-BL08T-7TX-1ST | -40 to +75 °C | 1412100000 |
| 7 * RJ45, 1 * SC-Singlemode | IE-SW-BL08-7TX-1SCS | -10 to +60 °C | 1240950000 |
| | IE-SW-BL08T-7TX-1SCS | -40 to +75 °C | 1286580000 |

### Accessories

| | Model Type | Order No. |
|---|---|---|
| 19" Rack Mounting Kit | RM-KIT | 1241440000 |
| Cable fixing kit | IE-CFK-05 | 1339610000 |

## 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 °C 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>1.25 MBit (IE-SW-VL16...Series) |
| **Interface** | |
| Fibre Ports | 100BaseFX ports (SC/ST connector) |
| RJ45 Ports | 10/100BaseT(X) auto negotiation speed,<br>Full/Half duplex mode, and<br>auto MDI/MDI-X connection |
| DIP Switches | Port fault alarm<br>Enable/disable broadcast storm protection |
| LED Indicators | PWR1, PWR2, FAULT, 10/100M (TP port),<br>100M (fibre port) |
| Alarm Contact | 1 relay output with current carrying capacity of 1 A @ 24 V DC |
| **Optical Fibre** | |
| | 100BaseFX |
| | 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: 24 V DC (12 to 45 V DC), redundant dual inputs<br>IE-SW-VL16: 12/24/48 V DC (9.6 to 60 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 |
| Overload Current Protection | 1.6 A |
| Connection | 1 removable 6-pin terminal blocks |
| Reverse Polarity Protection | Present |
| **Physical Characteristics** | |
| Housing | Metal, IP 30 protection |
| Dimensions (W x H x D) | 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: 790 g<br>IE-SW-VL16: 1140 g |

| | |
|---|---|
| **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 | UL 508, UL 60950-1<br>CSA C22.2 No. 60950-1, EN60950-1 |
| Hazardous Location | UL/cUL Class I, Division 2, Groups A, B, C<br>and D; ATEX Zone 2, Ex nC IIC |
| EMI | FCC Part 15, CISPR (EN55022) class A |
| EMC | 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 | 0 to +60 °C | 1241000000 |
| | IE-SW-VL16T-16TX | -40 to +75 °C | 1286590000 |
| 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 | 0 to +60 °C | 1241030000 |
| | IE-SW-VL16T-14TX-2SC | -40 to +75 °C | 1286610000 |
| 14 * RJ45, 2 * ST-Multimode | IE-SW-VL16-14TX-2ST | 0 to +60 °C | 1241050000 |
| | IE-SW-VL16T-14TX-2ST | -40 to +75 °C | 1286620000 |

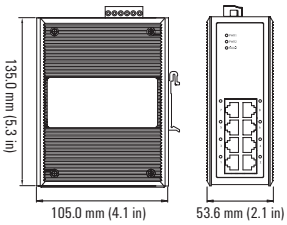
### Accessories

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

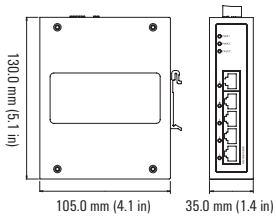
## Unmanaged Gigabit Ethernet Switches

- Full Gigabit Ethernet on all ports
- Variants with slots for Gigabit SFP transceivers
- 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)

IE-SW-VL08-xGT-Series




IE-SW-BL05GT-Series




## 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) |
| Jumbo frame support | up to 9.6 KB |
| **Interface** | |
| Fibre Ports | 100/1000BaseSFP slot (only IE-SW-VL08-6GT-2GS) |
| RJ45 Ports | 10/100/1000BaseT(X) auto negotiation speed,<br>Full/Half duplex mode, and<br>auto MDI/MDI-X connection |
| DIP Switches | Port fault alarm<br>Enable/disable broadcast storm protection<br>Enable/disable jumbo frame support |
| 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),<br>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, IP 30 protection |
| Dimensions (W x H x D) | 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-VL08-8GT 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<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 | UL 508 |
| 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 |

| | |
|---|---|
| **Regulatory Approvals** | |
| EMC | 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 | 478.000 hrs (Serie IE-SW-BL05-5GT)<br>325.000 hrs (Serie IE-SW-VL08-XGT) |
| 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** |
| | IE-SW-BL05T-5GT | -40 to +75 °C | **1286850000** |
| 8 * RJ45 10/100/1000BaseT(X) | IE-SW-VL08-8GT | 0 to +60 °C | **1241270000** |
| | IE-SW-VL08T-8GT | -40 to +75 °C | **1286860000** |
| 6 * RJ45 10/100/1000BaseT(X), 2 Combo Ports (10/100/1000 BaseT(X) or 100/1000BaseSFP) | IE-SW-VL08-6GT-2GS | 0 to +60 °C | **1241280000** |
| | IE-SW-VL08T-6GT-2GS | -40 to +75 °C | **1286870000** |

**Accessories**

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

**Note**

The IE-SW-VL08-6GT-2GS supports up to 2 100/1000Base SFP slots. Corresponding SFP modules for Fast/Gigabit Ethernet, see page F.6.

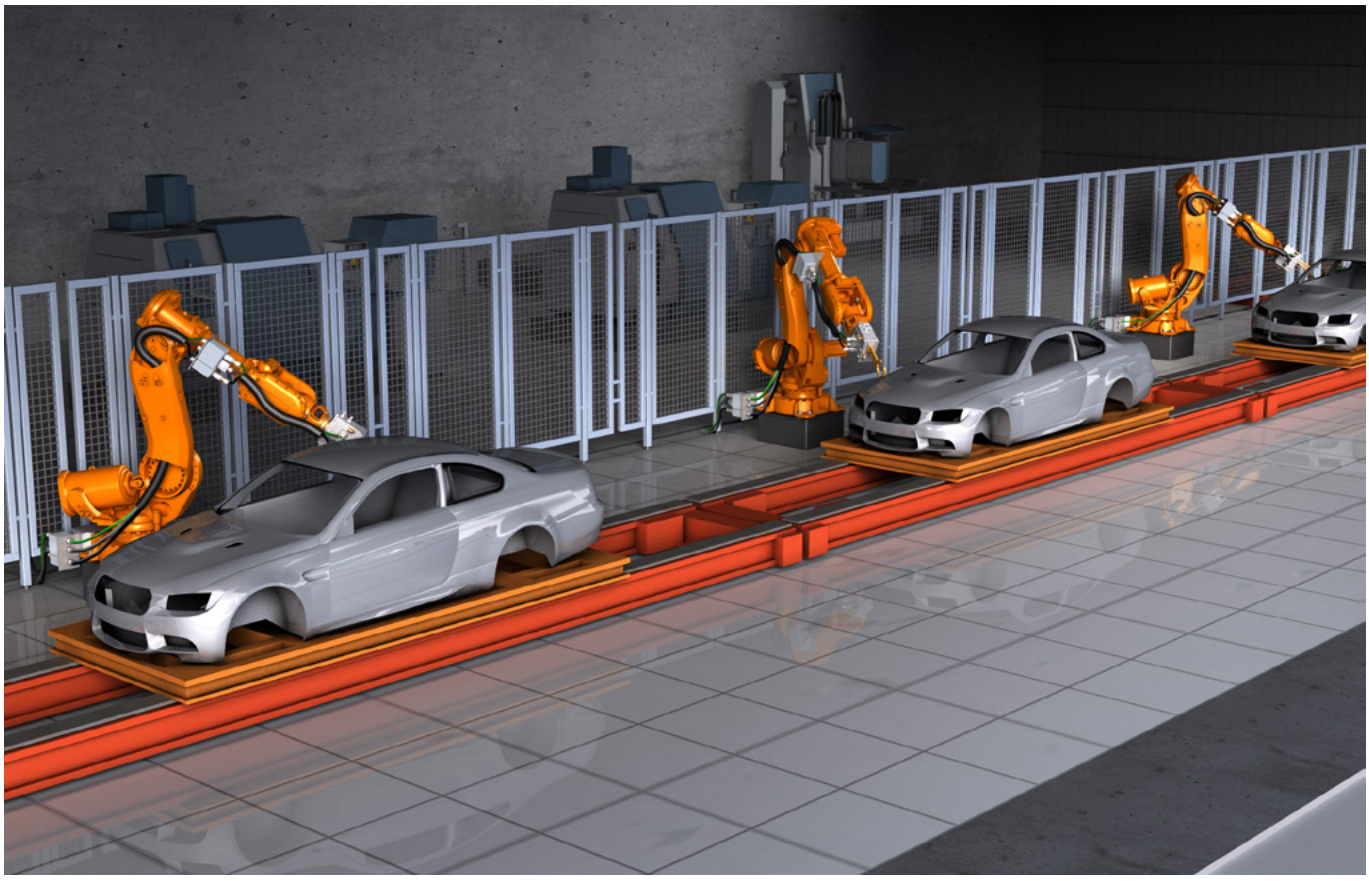
# Managed Switches

## Configurable according to requirements

Managed switches offer extensive control mechanisms for data distribution and bandwidth management to co-ordinate 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 via a serial console.

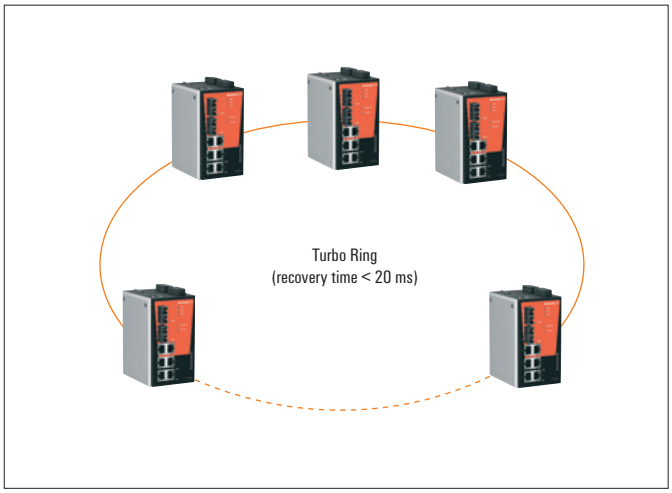
**Powerful and reliable network redundancy**

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.



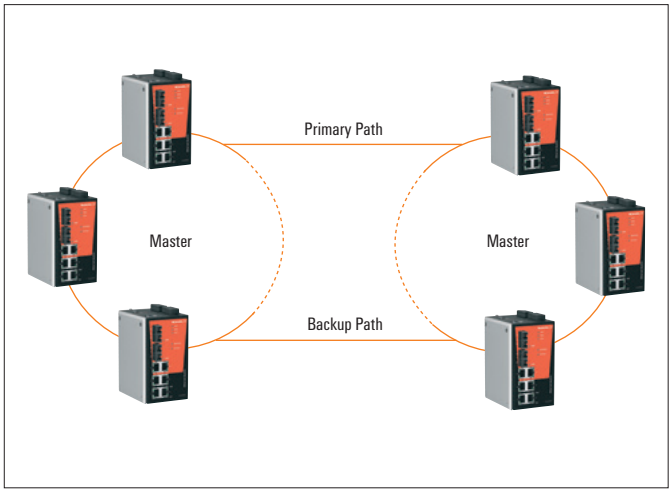
## Ring redundancy

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 thee different topology options (Ring-Coupling, Dual-Ring and Dual-Homing) for different application requirements to ensure the maximum possible availability of industrial network applications.



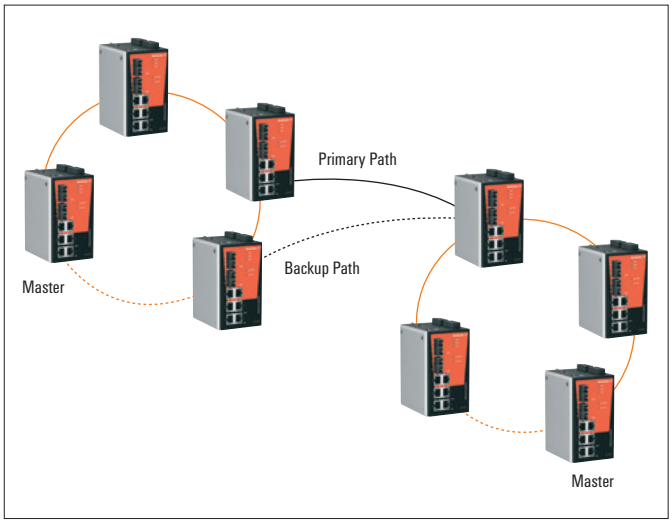

## Ring-Coupling

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.



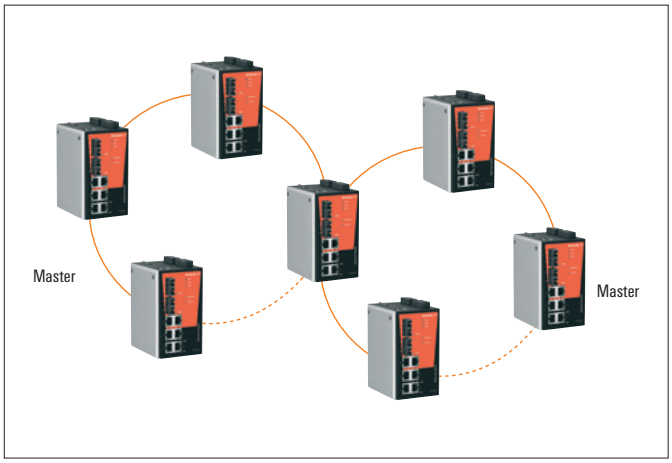

## Dual-Homing

With 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.



## Dual-Ring

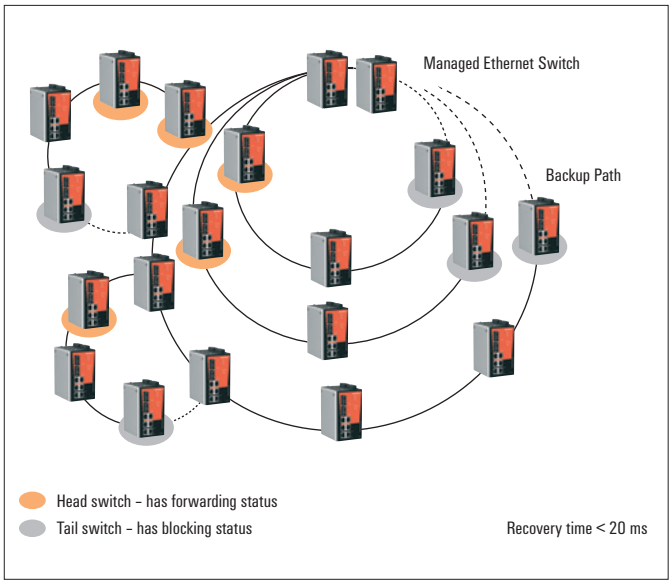
In a Dual-Ring, two neighbouring rings are connected with one another using one switch, without the need for additional ports or cabling. This configuration reduces the total number of ports and saves cabling costs, as an additional primary and back-up line is not needed.




## Turbo-Chain

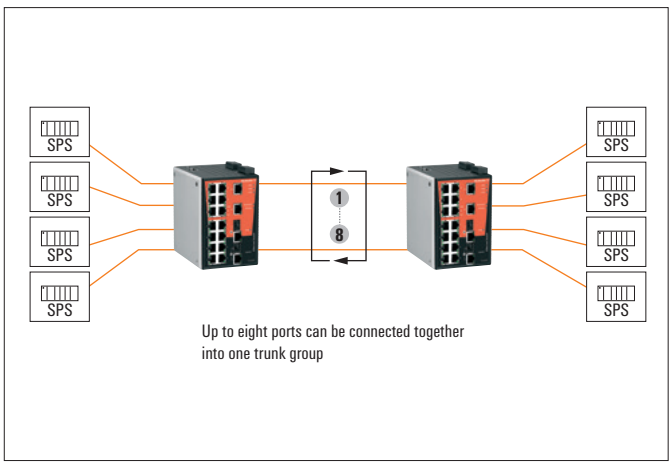
Turbo-Chain offers the possibility of creating multiple redundant networks without the limitations of ring technology. Turbo-Chain can be simply configured by defining two end-points in a segment. This means you can connect or extend existing redundant networks. When compared with traditional ring coupling 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. In addition Turbo Chain also supports 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



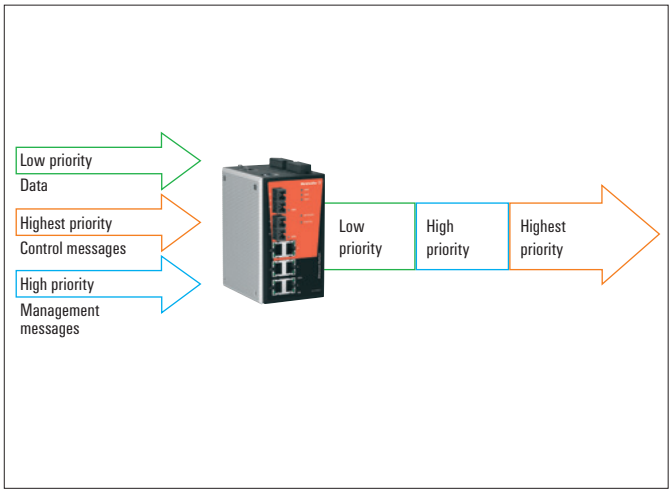

## Port trunking for flexible connections

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



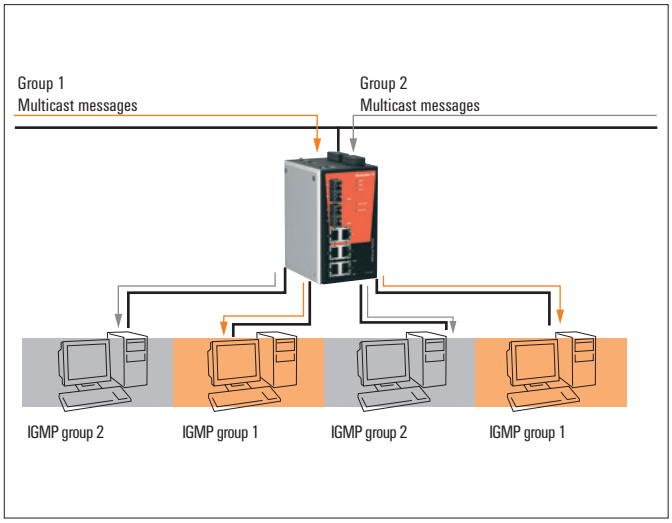
## QoS supports real-time capability

Quality of Service (QoS) enables the possibility of prioritisation of data traffic in a network and ensures that important data is consistently 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.



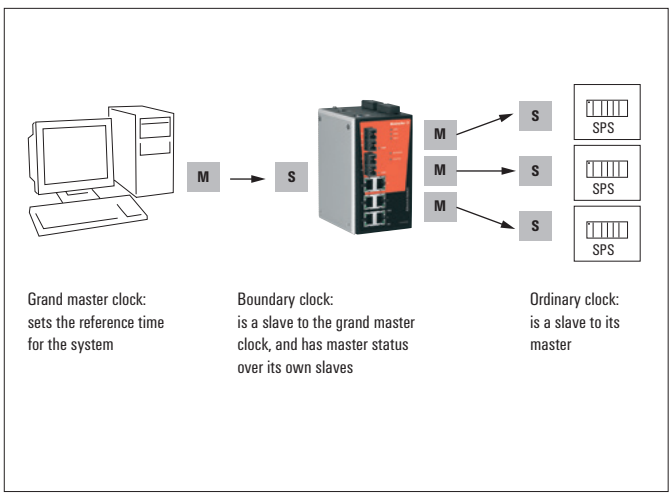

## IGMP snooping and GMRP for filtering multicast data traffic

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.



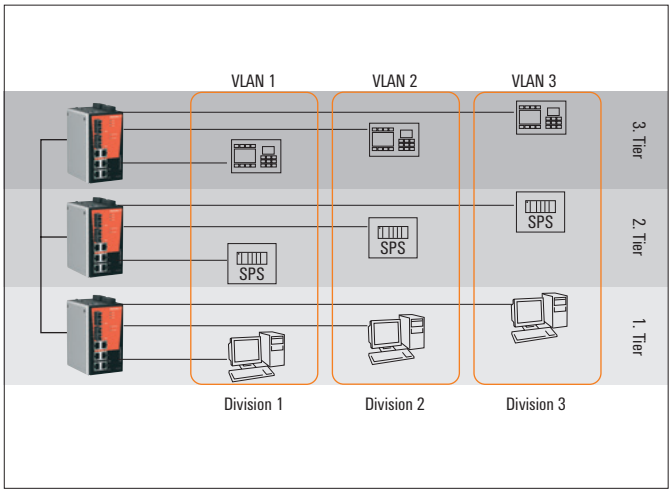

## IEEE 1588 PTP - improves time synchronisation of automation devices

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.



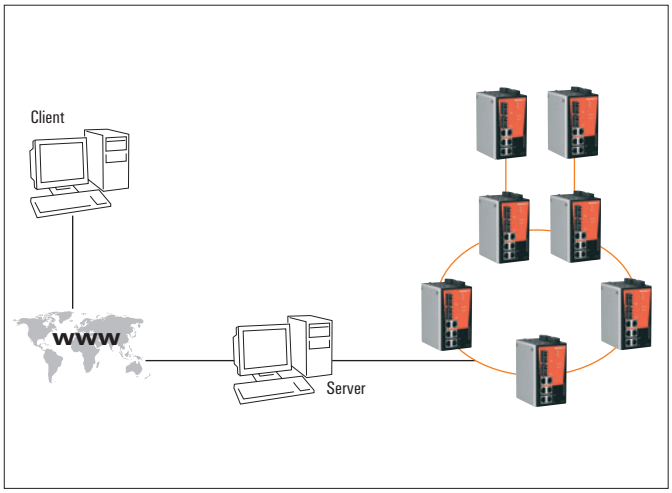
## VLAN – simplifies network planning

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 option for isolating VLANs completely from one another serves to increase the security of data transfer and offers additional protection from unauthorised access or unauthorised data traffic.



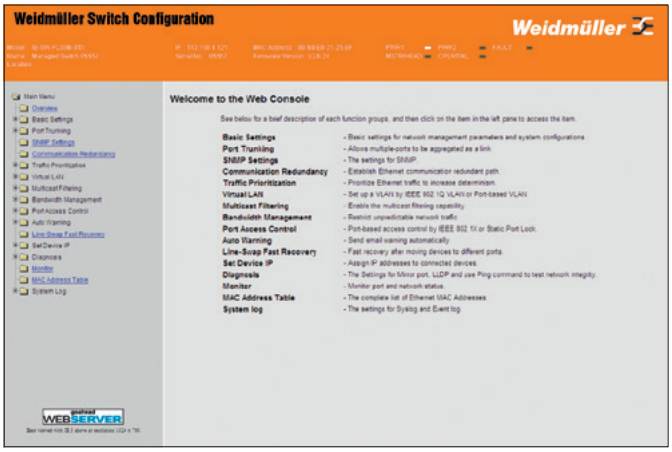

## Automatic topology detection using LLDP

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.



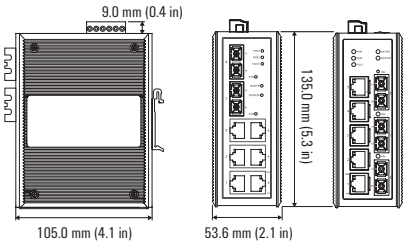

## Simple browser based configuration

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 (<20 ms @ 250 switches)
- IGMP snooping, QoS, port- and tag-based VLAN
- Configurable error messages via SNMP trap, e-mail or relay output
- User-friendly, web-based configuration and management
- External Backup and Restoring Module for easy system reconfiguration (optional accessory)




## Technical data

| | |
|---|---|
| **Standards** | |
| IEEE 802.3 for 10BaseT ▪ IEEE 802.3u for 100BaseT(X) and 100BaseFX ▪ IEEE 802.3x for Flow Control ▪ IEEE 802.1D for Spanning Tree Protocol ▪ IEEE 802.1w for Rapid STP ▪ IEEE 802.1p for Class of Service ▪ IEEE 802.1Q for VLAN Tagging | |
| **Protocols** | |
| IGMPv1/v2 ▪ GMRP ▪ GVRP ▪ SNMPv1/v2c/v3 ▪ DHCP Server/Client ▪ TFTP ▪ SNTP ▪ 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** | |
| Fibre 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 Fibre**

| | 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 [a] | 40 km [c] |
| | 4 km [b] | |
| Saturation | -6 dBm | -3 dBm |

[a] 50/125 µm, 800 MHz*km fibre optic cable
[b] 62.5/125 µm, 500 MHz*km fibre optic cable
[c] 9/125 µm singlemode fibre 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 |
| Overload Current Protection | Present |
| Connection | 1 removable 6-contact terminal block |
| Reverse Polarity Protection | Present |

| | |
|---|---|
| **Physical Characteristics** | |
| Housing | Metal, IP 30 protection |
| Dimensions (W x H x D) | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in) |
| Weight | IE-SW-VL08MT-...8TX/6TX-2SC/6TX-2ST/6TX-2SCS: 650 g<br>IE-SW-VL08MT-...5TX/3SC/5TX-1SC-2SCS: 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 | UL 508, UL 60950-1, CSA C22.2 No. 60950-1, EN60950-1 |
| Hazardous Location | UL/cUL Class I, Division 2, Groups A, B, C and D;<br>ATEX-Zone 2, Ex nC IIC (not for 1345240000) |
| EMI | FCC Part 15, CISPR (EN55022) class A |
| EMC | 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 (not 1345240000 and 1344770000) |
| Shock | IEC 60068-2-27 |
| Freefall | IEC 60068-2-32 |
| Vibration | IEC 60068-2-6 |
| **MTBF (mean time between failures)** | |
| Time | 1,102,845 hrs (IE-SW-VL08MT-6TX/8TX devices)<br>363,000 hrs (IE-SW-VL08MT-5TX devices) |
| Database | Telcordia (Bellcore), GB |
| **Warranty** | |
| Warranty Period | 5 years |

**Ordering Information**

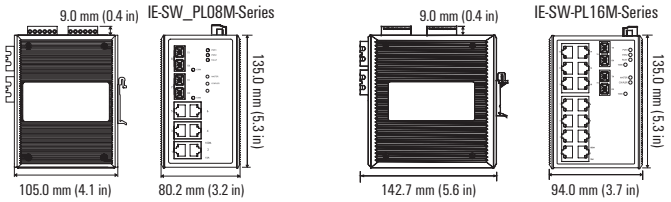
| Port Variants | Model Type | Operating Temperature | Order No. |
|---|---|---|---|
| 8 * RJ45 | IE-SW-VL08MT-8TX | -40 to +75 °C | **1240940000** |
| 5 * RJ45, 3 * SC-Multimode | IE-SW-VL08MT-5TX-3SC | -40 to +75 °C | **1240970000** |
| 5 * RJ45, 1 * SC-Multimode, 2 * SC-Singlemode | IE-SW-VL08MT-5TX-1SC-2SCS | -40 to +75 °C | **1345240000** |
| 6 * RJ45, 2 * ST-Multimode | IE-SW-VL08MT-6TX-2ST | -40 to +75 °C | **1240990000** |
| 6 * RJ45, 2 * SC-Multimode | IE-SW-VL08MT-6TX-2SC | -40 to +75 °C | **1344770000** |
| 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** |
| 19" Rack Mounting Kit | RM-KIT | **1241440000** |

## Managed Fast Ethernet Switches

- Plug-n-play Turbo Ring and Turbo Chain (<20 ms @ 250 switches), 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

| | |
|---|---|
| **Standards** | |
| IEEE 802.3 for 10BaseT ▪ IEEE 802.3u for 100BaseT (X) and 100BaseFX ▪ 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 ▪ GVRP ▪ SNMPv1/v2c/v3 ▪ DHCP Server/Client ▪ BootP ▪ TFTP ▪ SNTP ▪ 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 (IE-SW-PL08M), 2 MBit (IE-SW-PL16M) |
| **Interface** | |
| Fibre 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 (only IE-SW-PL08M) |
| 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<br>• +13 to +30 V for state "1"<br>• -30 to +3 V for state "0"<br>• Max. input current: 8 mA |

| **Optical Fibre** | 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 |

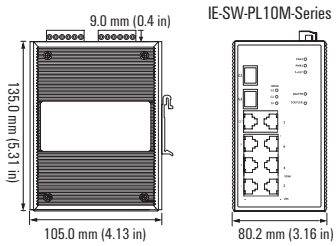
| | |
|---|---|
| **Power Requirements** | |
| Overload Current Protection | Present |
| Connection | 2 removable 6-contact terminal blocks |
| Reverse Polarity Protection | Present |
| **Physical Characteristics** | |
| Housing | Metal, IP 30 protection |
| Dimensions (W x H x D) | IE-SW-PL08M: 80.2 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, 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<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 | UL 508, UL 60950-1, CSA C22.2 No. 60950-1, EN60950-1 |
| 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 |
| EMC | 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 3;<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 |
| | IE-SW-PL08MT-8TX | -40 to +75 °C | 1286780000 |
| 6 * RJ45, 2 * SC-Multimode | IE-SW-PL08M-6TX-2SC | 0 to 60 °C | 1241070000 |
| | IE-SW-PL08MT-6TX-2SC | -40 to +75 °C | 1286790000 |
| 6 * RJ45, 2 * ST-Multimode | IE-SW-PL08M-6TX-2ST | 0 to 60 °C | 1241080000 |
| | IE-SW-PL08MT-6TX-2ST | -40 to +75 °C | 1286800000 |
| 6 * RJ45, 2 * SC-Singlemode | IE-SW-PL08M-6TX-2SCS | 0 to 60 °C | 1241090000 |
| | IE-SW-PL08MT-6TX-2SCS | -40 to +75 °C | 1286810000 |
| 16 * RJ45 | IE-SW-PL16M-16TX | 0 to 60 °C | 1241100000 |
| | IE-SW-PL16MT-16TX | -40 to +75 °C | 1286820000 |
| 14 * RJ45, 2 * SC-Multimode | IE-SW-PL16M-14TX-2SC | 0 to 60 °C | 1241120000 |
| | IE-SW-PL16MT-14TX-2SC | -40 to +75 °C | 1286830000 |
| 14 * RJ45, 2 * ST-Multimode | IE-SW-PL16M-14TX-2ST | 0 to 60 °C | 1241130000 |
| | IE-SW-PL16MT-14TX-2ST | -40 to +75 °C | 1286840000 |

## 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
- EEE 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

| | |
|---|---|
| **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 ▪ SNTP ▪ 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** | |
| Fibre Ports | 1000BaseSFP-Slot<br>(100BaseSFP modules are not supported) |
| RJ45 Ports | 10/100BaseT(X) oder 10/100/1000BaseT(X) auto negotiation |
| 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, IP 30 protection |
| Dimensions (W x H x D) | 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 (-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 | UL 508, UL 60950-1, 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 |
| EMC | EN61000-4-2 (ESD),level 3; EN61000-4-3 (RS),level 3; EN61000-4-4 (EFT),level 3; EN61000-4-5 (Surge),level 3; 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 | 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), 7 * RJ45 10/100BaseT(X) | IE-SW-PL10M-3GT-7TX | 0 to 60 °C | **1241290000** |
| | IE-SW-PL10MT-3GT-7TX | -40 to +75 °C | **1286930000** |
| 1 * RJ45 10/100/1000BaseT(X), 2 * Slots 1000BaseSFP, 7 * RJ45 10/100BaseT(X) | IE-SW-PL10M-1GT-2GS-7TX | 0 to 60 °C | **1241300000** |
| | IE-SW-PL10MT-1GT-2GS-7TX | -40 to +75 °C | **1286940000** |

### Accessories

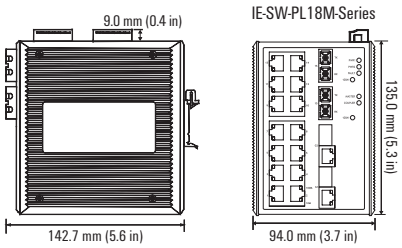
| | Model Type | Order No. |
|---|---|---|
| External Backup and Restore Module | EBR-Modul RS232 | **1241430000** |
| 19" Rack Mounting Kit | RM-KIT | **1241440000** |

**Note**

The IE-SW-PL10M 1GT-2GS-7TX supports up to 2 1000Base SFP slots. Corresponding SFP modules for Gigabit Ethernet, see page F.6.

## 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
- EEE 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

| | |
|---|---|
| **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 mit LACP | |
| **Protocols** | |
| IGMPv1/v2 ▪ GMRP, GVRP ▪ SNMPv1/v2c/v3 ▪ DHCP Server/Client ▪ BootP ▪ TFTP ▪ SNTP ▪ SMTP ▪ RARP ▪ RMON ▪ HTTP ▪ HTTPS ▪ Telnet ▪ Syslog ▪ DHCP-Option 66/67/82 ▪ SSH ▪ SNMP Inform ▪ Modbus/TCP ▪ LLDP ▪ EEE 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** | |
| Fibre Ports | 100BaseFX (SC/ST connection) and 1000BaseSFP slot (100BaseSFP modules are not supported) |
| RJ45 Ports | 10/100BaseT(X) oder 10/100/1000BaseT(X) auto negotiation |
| Console Port | RS 232 (RJ45 connector) |
| LED Indicators | PWR1, PWR2, FAULT, 10/100M (TP-Port), 100M (Glasfaser-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 Fibre** | 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, IP 30 protection |
| Dimensions (W x H x D) | 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)<br>Wide Temp. Models: -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 | UL 508, UL 60950-1, 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 |
| EMC | FCC Part 15, CISPR (EN55022) Class A<br>EN61000-4-2 (ESD), level 2; EN61000-4-3 (RS), level 3;<br>EN61000-4-4 (EFT), level 2; EN61000-4-5 (Surge), level 3;<br>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), 2 * Kombi-Ports[1] | IE-SW-PL18M-2GC-16TX<br>IE-SW-PL18MT-2GC-16TX | 0 to +60 °C<br>-40 to +75 °C | **1241320000**<br>**1286970000** |
| 14 * RJ45 10/100BaseT(X), 2 * SC-Multimode 100FX, 2 * Kombi-Ports[1] | IE-SW-PL18M-2GC14TX2SC<br>IE-SW-PL18MT-2GC14TX2SC | 0 to +60 °C<br>-40 to +75 °C | **1241330000**<br>**1286990000** |
| 14 * RJ45 10/100BaseT(X), 2 * ST-Multimode 100FX, 2 * Kombi-Ports[1] | IE-SW-PL18M-2GC14TX2ST<br>IE-SW-PL18MT-2GC14TX2ST | 0 to +60 °C<br>-40 to +75 °C | **1241340000**<br>**1287000000** |
| 14 * RJ45 10/100BaseT(X), 2 * SC-Singlemode 100FX, 2 * Kombi-Ports[1] | IE-SW-PL18M-2GC14TX2SCS<br>IE-SW-PL18MT-2GC14TX2SCS | 0 to +60 °C<br>-40 to +75 °C | **1241350000**<br>**1287010000** |

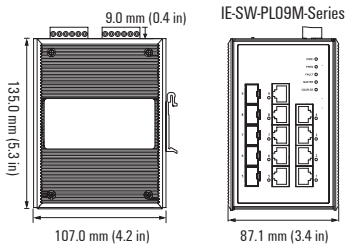
**Note**

The IE-SW-PL18M series supports up to 2 1000Base SFP slots. Corresponding SFP modules for Gigabit Ethernet, see page F.6.

[1] (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

| | |
|---|---|
| **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 ▪ 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** | |
| Fibre Ports | 100/1000Base SFP Slot |
| RJ45 Ports | 10/100/1000BaseT(X) auto negotiation |
| 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, IP 30 protection |
| Dimensions (W x H x D) | 87.1 × 135 × 107 mm (3.43 × 5.31 × 4.21 in) |
| 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) |
| Storage Temperature | -40 to 85 °C (-40 to 185 °F) |
| Ambient Relative Humidity | 5 to 95 % (non-condensing) |
| **Regulatory Approvals** | |
| Safety | UL 508, 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 |
| EMC | 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 (mean time 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) | IE-SW-PL09M-5GC-4GT | 0 to 60 °C | **1241370000** |
| 5 * Kombi-Ports[1] | IE-SW-PL09MT-5GC-4GT | -40 to +75 °C | **1287020000** |

**Accessories**

| | Model Type | Order No. |
|---|---|---|
| External Backup and Restore Module | EBR-Modul RS232 | **1241430000** |
| 19" Rack Mounting Kit | RM-KIT | **1241440000** |

**Note**

The IE-SW-PL09M series supports up to 5 100/1000Base SFP slots. Corresponding SFP modules for Fast/Gigabit Ethernet, see page F.6.

[1] (10/100/1000BaseT(X) or 100/1000BaseSFP)

# Power-over-Ethernet switches
## Power and data transferred in parallel

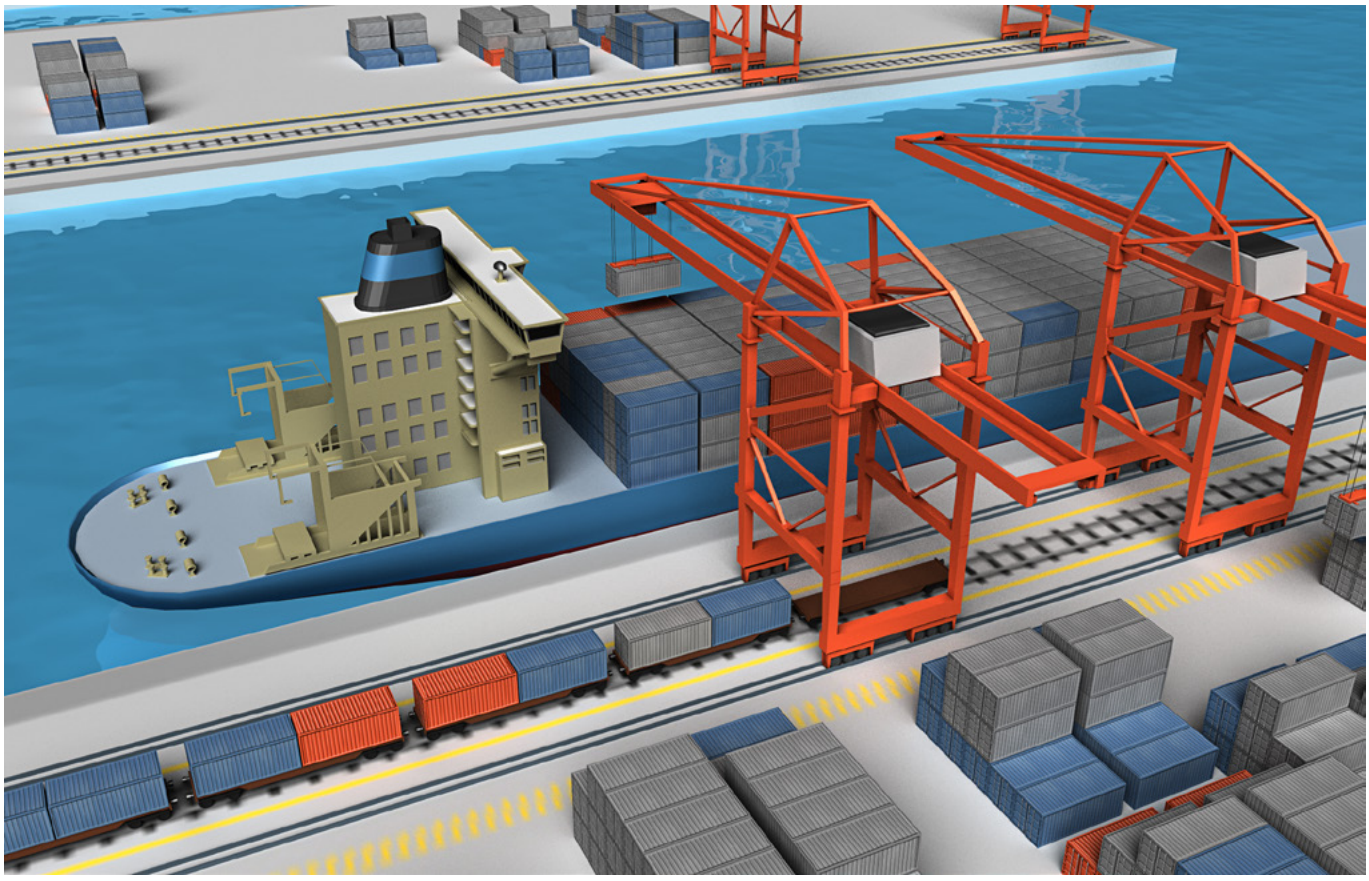
Power over Ethernet (PoE) describes a process where power can be supplied to a network-compatible device over the 8-wire Ethernet cable. In a narrower sense, PoE today means the IEEE 802.3af (DTE Power over MDI) standard which was adopted in June 2003.

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 panels or wireless communications devices such as WLAN access points.

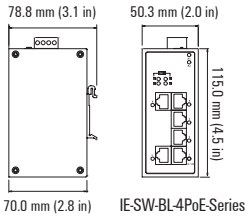
Weidmüller PoE switches support the IEE 802.3at standard (also known as PoE+) and can therefore supply end devices with up to 30 W per PoE port.

Weidmüller PoE switches also offer further advantages by their simple power supply needs. 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 ports
- Up to 30 watts per PoE port
- 24/48 V DC redundant wide-range power supply
- Integrated DC/DC converter can supply 48 V-PoE devices across the entire input voltage range of 24 to 48 V DC
- Intelligent power consumption detection and classification
- Redundant dual V DC power inputs
- Broadcast Storm Protection




IE-SW-BL-4PoE-Series

## Technical data

| | |
|---|---|
| **Technology** | |
| Standards | 802.3af/at 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, back pressure flow control |
| **Switch Properties** | |
| MAC table size | 1 K |
| Packet buffer size | 512 KB |
| **Interface** | |
| RJ45 Ports | 10/100BaseT(X) auto negotiation speed,<br>Full/Half duplex mode and auto MDI/MDI-X connection |
| DIP Switches | Enable/disable broadcast storm protection |
| PoE pin assignment | V-, V-, V+, V+ for pin 1, 2, 3, 6 (endspan, MDI-X alternative A) |
| LED Indicators | PWR1, PWR2, 10/100M, PoE |
| **Power Requirements** | |
| Input Voltage | 24/48 (20 to 60 V) V DC, 2 redundant inputs |
| Input Current | Max 7.5 A @ 24 V DC<br>(supports up to 4 ports at 30 watts per PoE port) |
| Overload Current Protection | Present |
| Connection | 1 removable 4-contact terminal block |
| Reverse Polarity Protection | Present |
| **Physical Characteristics** | |
| Housing | Aluminium, IP 30 protection |
| Dimensions (W x H x D) | 50 × 115 × 70 mm (1.96 x 4.52 x 2.76 in) |
| Weight | 375 g |
| Installation | TS 35 |
| **Environmental Limits** | |
| Operating Temperature | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models:<br>-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 | UL 508 |
| EMI | FCC Part 15, CISPR (EN55022) class A |
| EMC | 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 |
| **MTBF (mean time between failures)** | |
| Time | 645.138 hrs |
| Database | Telcordia (Bellcore), GB |
| **Warranty** | |
| Warranty Period | 5 years |

**Ordering Information**

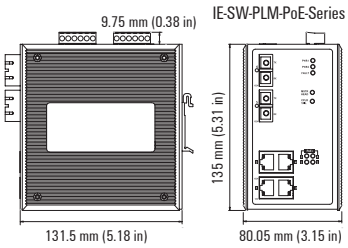
| Port Variants | Type | Operating Temperature | Order No. |
|---|---|---|---|
| 2 * RJ45 10/100 BaseT(X), 4 * RJ45 10/100 BaseT(X) PoE+ | IE-SW-BL06-2TX-4POE | 0 to 60 °C | 1241380000 |
| | IE-SW-BL06T-2TX-4POE | -40 to +75 °C | 1286920000 |

**Accessories**

| | Type | Order No. |
|---|---|---|
| 19" Rack Mounting Kit | RM-KIT | 1241440000 |
| Cable fixing kit | IE-CFK-05 | 1339610000 |

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

- 4 IEEE 802.3af/at compliant PoE ports
- Up to 30 watts per PoE port
- 24/48 V DC redundant wide-range power supply
- Integrated DC/DC converter can supply 48 V-PoE devices across the entire input voltage range of 24 to 48 V DC
- Extended PoE management functions, including PoE error checking or configuring the operational times of connected PoE devices




## Technical data

| | |
|---|---|
| **Standards** | |
| IEEE 802.3at/af for Power-over-Ethernet ▪ IEEE 802.3 for 10BaseT ▪ IEEE 802.3u for 100BaseT (X) and 100BaseFX ▪ 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 ▪ 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 | 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 |
| PoE pin assignment | V-, V-, V+, V+ for pin 1, 2, 3, 6 (endspan, MDI-X alternative A) |
| Console Port | RS 232 (RJ45 connector) |
| DIP Switches | Turbo Ring, Master, Coupler, Reserve |
| LED Indicators | PWR1, PWR2, FAULT, 10/100M, MSTR/HEAD, CPLR/TAIL, PoE |
| Alarm Contact | 2 relay outputs with current carrying capacity of 1 A @ 24 V DC |
| Alarm Contact | 2 inputs with the same ground, electrically isolated<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 | 24/48 (20 to 60 V) V DC |
| Input Current | Max. 7.8 A @ 24 V DC<br>(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 |
| **Technical data** | |
| Housing | Metal, IP 30 protection |
| Dimensions (W x H x D) | 80 x 135 x 131.5 mm (3.15 x 5.31 x 5.18 in) |
| 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:<br>-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 | UL 508 |
| EMI | FCC Part 15, CISPR (EN55022) class A |
| EMC | 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 |
| **MTBF (mean time between failures)** | |
| Time | 433.000 hrs |
| Database | Telcordia (Bellcore), GB |
| **Warranty** | |
| Warranty Period | 5 years |

**Ordering data**

| Port Variants | Type | Operating Temperature | Order No. |
|---|---|---|---|
| 2 * RJ45 10/100 BaseT(X), 4 * RJ45 | IE-SW-PL06M-2TX-4PoE | 0 to 60 °C | **1241390000** |
| 10/100 BaseT(X) PoE+ | IE-SW-PL06MT-2TX-4PoE | -40 to +75 °C | **1286910000** |

**Accessories**

| | Type | Order No. |
|---|---|---|
| External Backup and Restore Module | EBR-Modul RS232 | **1241430000** |
| 19" Rack Mounting Kit | RM-KIT | **1241440000** |

# Industrial Security Router
## Overview

# Gigabit Industrial Security Router

## Secure data communication with integrated VPN technology

You want to be able to communicate with your machinery and systems securely, reliably, and from anywhere? Should only verified data gain access to your industrial network? Then the new Industrial Security Router from Weidmüller is just the right choice.

Due to the steady increase in networking data and information in office-based communication, a strong trend has evolved where the advantages of Ethernet communication are progressively being used in the area of industrial automation technology.

As well as the standardisation provided by Ethernet technology, vertical data integration from the field/production level across the office network to the Internet is an important driver for its rapid spread in industrial applications.

In addition to LAN switching technologies, we are seeing increased use of industrial routers for enhanced security and for efficient management of data traffic between LANs.

Routers with integrated VPN technologies are also ideally suited to secure remote access to components and systems in the LAN, via either a wired or wireless Internet connection.

### Technical features of Weidmüller routers at a glance

Compact and robust industrial-grade metal housing (aluminium die casting)

Gigabit Ethernet interfaces (LAN/WAN) for high data throughput

Digital inputs/outputs (24 V DC) with functions for disconnecting WAN port, indicating alarm status, starting/stopping of pre-configured VPN connections and indicating active VPN tunnel

Supports all standard router functions such as static/dynamic routing, SNMP, DHCP server, Dynamic DNS, event logging or DSL connection (PPPoE) via external DSL modem

Flexibly configurable stateful inspection firewall with filter functions for both Layer 3 (IP layer) and Layer 2 (MAC address level)

Extensive configuration options for IP address mapping (1:1 NAT, virtual mapping/NAT masquerading/port-forwarding/IP address forwarding), e.g. for connecting multiple machine networks in the same IP address range into a primary production network

Integrated VPN functionality (OpenVPN and IPSec) for secure remote access over the Internet. The router can be used with both VPN technologies, either as a VPN client or a VPN server.

Variable bandwidth management by prioritising and limiting network traffic to IP and Ethernet protocol level

Variable user management through multiple user profiles with detailed assignment of rights

Integrated Modbus/TCP server for controlling and querying the status of the digital inputs and outputs and pre-configured VPN connections with Modbus/TCP-capable devices (e.g. PLC)

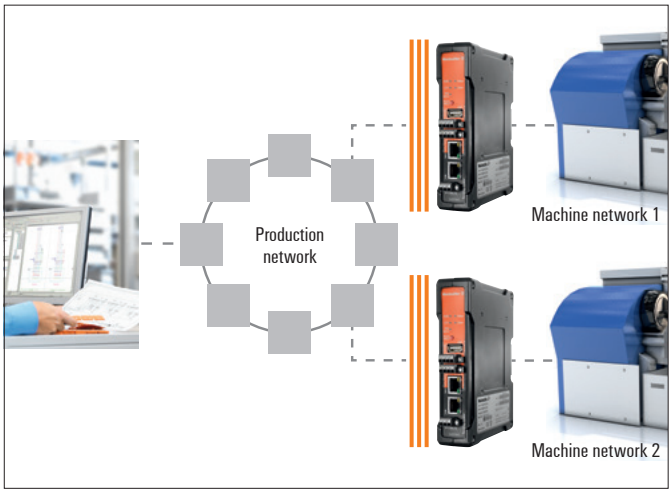
Client Monitoring for the monitoring of network devices

"Remote Capture" function for monitoring network traffic via Wireshark, (Network protocol analyser software)

**IE-SR-2GT-UMTS/3G variant**
Additional integrated UMTS/3G/HSPA + modem for Internet connection via mobile radio (max. downlink 21.2 Mbps, max. uplink 5.8 Mbps)

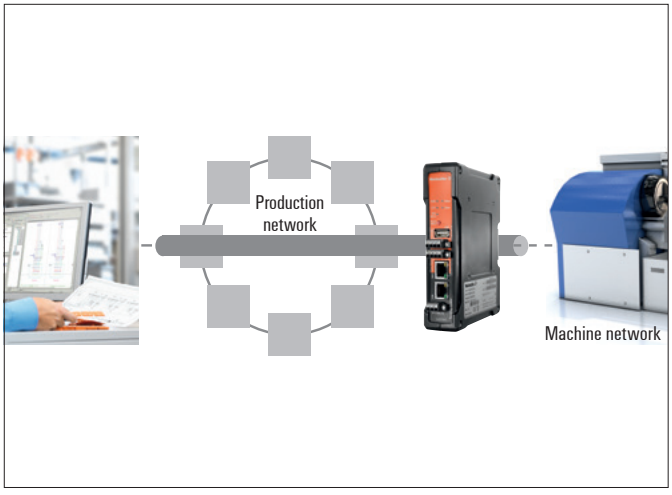
### Securely integrate machines in a production network with Gigabit Ethernet

The router enables controlled and secure data exchange between "switched" Ethernet networks (IP routing). The various manifestations of the Network Address Translation function (1:1 NAT, masquerading, virtual mapping, port and IP forwarding) provide controlled access to both sub-networks as well as individual Ethernet devices. In addition, the 1:1 NAT function allows machine networks with the same IP address range to be easily integrated into a primary production network, as is typically the case in series machine manufacturing. The high-speed performance of the Gigabit interface means that the router will have no problems at all handling future increased data loads in the Ethernet network.




### Remote access via secure VPN connections

Weidmüller Industrial Ethernet routers use encrypted VPN connections (OpenVPN and IPsec) to allow access to machines and systems. Diagnosis and error rectification are therefore possible from any location. This means that an onsite service technician can be dispensed with in many cases. The router supports the standard VPN technologies OpenVPN and IPsec, and can be operated either as a VPN client or a VPN server (with no limits on the number of simultaneously usable clients).

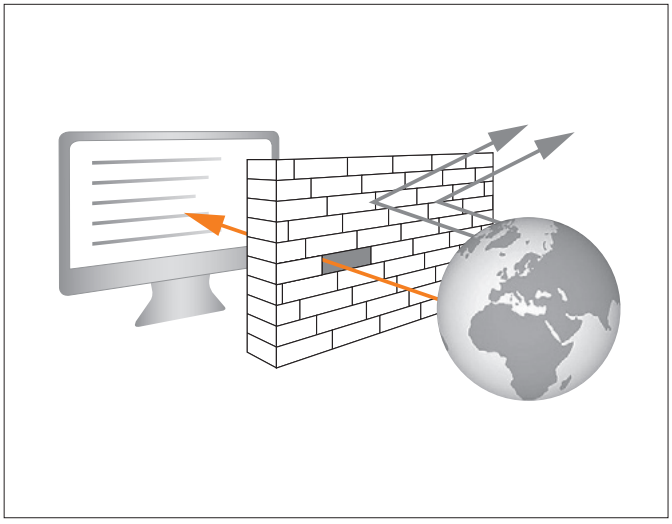


### Control and monitoring via integrated digital inputs and outputs

The router is equipped with 2 digital inputs (“Cut” and “VPN initiate”) and 2 digital outputs (“Alarm” and “VPN active”). The 24 V input “Cut” allows the RJ45 WAN port to be temporarily disabled, e.g. to prevent unauthorised access by third parties to the WAN network during maintenance work on the LAN network. The 24 V input “VPN initiate” enables a pre-configured VPN instance to be started or stopped (client or server). Connections can be initiated, for example, by an external key switch or via the digital output of a controller (PLC). Once a VPN tunnel is successfully established and activated it is indicated by the digital output “VPN active”. The 24 V output “Alarm” can be used to display the router’s configurable alarm conditions externally. An alarm can be triggered by a firewall rule or when a network device is no longer accessible (client monitoring).

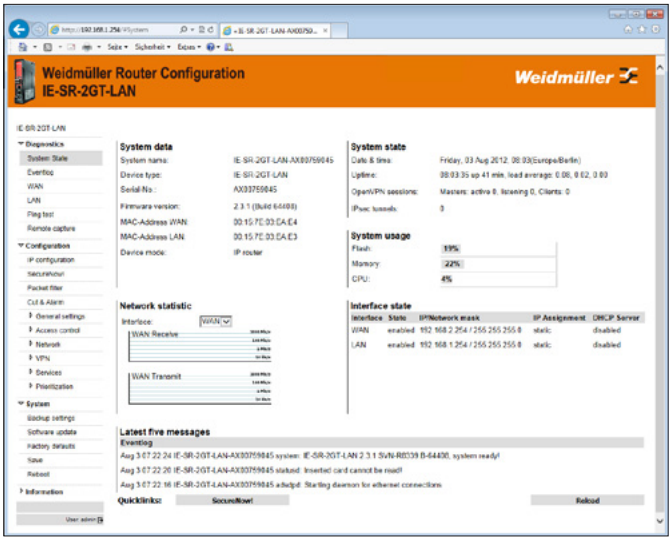

### Intelligent Firewall: Stateful Packet Inspection

The integrated stateful inspection firewall is used to control incoming and outgoing traffic on all router interfaces (LAN, WAN, UMTS, VPN tunnels) on both Layer 2 (Ethernet frames) and Layer 3 (IP-based).
An “auto-learning” function (“SecureNow!” ) is also incorporated; this performs an automatic analysis of network traffic and generates a set of rules, which the user can then apply or modify as needed.



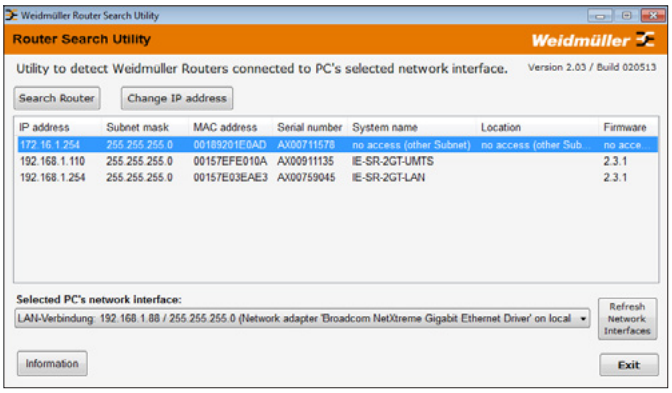
### User-friendly configuration via web interface

The router can be configured using any standard browser. The clear menu structure provides easy-to-learn and intuitive user guidance. The user interface can be switched between German and English. Configuration support for users is provided by integrated online help (tool tips) with detailed instructions about the various settings. Profiles for different user groups (administrators, restricted users, etc.) can be created with detailed assignment of rights.




### Router Search Utility – search for routers on the network

The freely available **Weidmüller Router Search Utility** software tool allows Weidmüller routers to be detected on the local network in the case of unrecognised IP addresses. For all devices found, the most important basic data such as network parameters, serial number, device name, etc. are displayed for device identification. In addition, the IP address of a router can be modified or the web interface of a selected router opened directly.



## Gigabit Industrial Security Router

- 2 Gigabit ports (LAN/WAN)
- Integrated firewall
- NAT masquerading, 1:1 network mapping and port forwarding
- Remote access via VPN (OpenVPN, IPsec, L2TP)
- Key switch function for activation/deactivation of WAN/VPN connection
- Variant with integrated 3G/UMTS modem for rapid, Internet-based wireless access
- Back-up and recovery of device configuration using SIM card

## Technical data

| | |
|---|---|
| **Operation modes** | |
| IP Router | Static or dynamic routing, supporting RIPv2 / OSPF |
| Transparent Bridge | 2-port switch with additional layer-2 filter |
| **Network Services** | |
| | • DHCP server / DHCP relay<br>• DNS relay<br>• NTP client<br>• DynDNS (DHCP client by RFC 2136) |
| **Firewall** | |
| | • IPv4 Stateful inspection Firewall (incoming/outgoing)<br>• NAT-Masquerading, 1:1 NAT, Portforwarding<br>• Layer-2/3-Filter (VLAN ID, VLAN, QoS tag, MAC address, Ethertype frame)<br>• "Auto learning" feature to create packet filter rules (analysis of network traffic)<br>• Layer 2/3-based packet prioritization (Ethernet frame, IP header, VLAN tag) |
| **VPN** | |
| OpenVPN | • Configurable as OpenVPN server or client (Layer 2 and Layer 3)<br>• Authentication with X.509 Certificates<br>• Tunnel support via HTTP proxy<br>• Maximum of 10 different client or server configurations<br>• Unlimited number of client connections in server mode |
| IPsec | • Can be configured as an IPsec server or client<br>• PSK authentication (user ID, password) or X.509 certificates<br>• Hardware-based encryption for faster data throughput<br>• A maximum of 64 simultaneous connections (subnet to subnet or as an IPsec server)<br>• Encryption algorithms DES-56, 3DES-168, AES 128, AES 192, AES-256 |
| **Management** | |
| | • Configuration via WEB interface (HTTP / HTTPS)<br>• Web interface in German or English<br>• Configuration support through detailed help information (tooltip)<br>• Configurable multi-user access with definable rights mask<br>• Support of SNMP v1/v2/v3, event log / syslog |
| **Miscellaneous** | |
| Modbus/TCP | Integrated Modbus TCP Server for status queries, and software-based activation / de-activation of VPN connections |
| Diagnosis | "Remote Capture" feature for network diagnostics via a connected PC (Wireshark) |
| Monitoring | Client Monitoring (via ICMP) with alarm function in case of error |

| | |
|---|---|
| **Interfaces** | |
| RJ45 ports | 2x10/100/1000BaseT(X) |
| USB port | Option for future expansion |
| SCM card reader | Save and restore of the configuration using a smart card (memory chip) |
| LED indicators | Signaling states for power, status, cut, alert, active VPN connection and an active UMTS connection |
| Digital outputs | • "Alarm" –> Indicates a configurable network status or error (24 V out)<br>• "VPN-active" –> Indicates an active VPN connection (24 V out) |
| Digital inputs | • „Cut" –> Disconnects physically (link down) the WAN port (24 V)<br>• "VPN-initiate" –> Enables a pre-configured VPN connection (24 V) |
| Reset button | Restoring the factory default |
| **Power Requirements** | |
| Input Voltage | 1x 24 V DC (7 to 36 volts) |
| Current consumption | max. 600 mA @ 24 V DC |
| **Technical data (housing)** | |
| Housing | Metal, IP 20 protection |
| Dimensions (W x H x D) | 35 x 159 x 134 mm (without antenna)<br>35 x 255 x 134 mm (with UMTS antenna) |
| Installation | TS 35 |
| **Environmental Limits** | |
| Operating temperature | -20 °C to +70 °C |
| Storage Temperature | -20 °C to +85 °C |
| Ambient humidity | 6 to 90 % not condensing |
| **DSL and UMTS/HSPA** | |
| DSL | Connection to the DSL modem via LAN or WAN port<br>Free configuration of the PPPoE login |
| DynDNS | Support automatic registration |
| UMTS/3G | • Built-in quad-band UMTS / HSPA modem (only variant IE-SR-2GT-UMTS/3G)<br>• Peak Downlink 21.1 Mbps, Peak Uplink 5.76 Mbps<br>• GSM/GPRS/EDGE: 850 Mhz, 900 Mhz, 1800 Mhz, 1900 Mhz<br>UMTS/WCDMA/HSDPA/HSUPA: 850 Mhz, 900 Mhz, 1900 Mhz, 2100 Mhz<br>• FCC, CE, IC, NCC, PTCRB, Bell, AT&T |
| **Approvals** | |
| Security | UL 508 |
| EMC | EN301 489-1/-7/-24, FCC Part 15 Class A, EN 55022 Class A, EN61000-4-2 (ESD), EN61000-4-3 (RS) EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS) |
| Shock | DIN EN 60068-2-27 |
| Vibration | DIN EN 60068-2-6 |
| **Warranty** | |
| Warranty Period | 3 years |

## Ordering data

| Models | Type | Order No. |
|---|---|---|
| LAN/WAN router | IE-SR-2GT-LAN | **1345270000** |
| LAN/WAN router with integrated UMTS/3G modem | IE-SR-2GT-UMTS/3G | **1345250000** |

# Media converter
## Overview

# Media converter

## A smooth transition from copper to fibre-optic cables

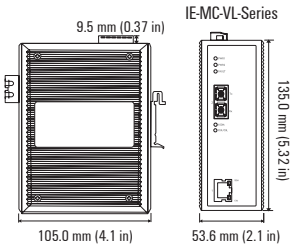
If high interference immunity is needed or long transmission distances are involved, then fibre-optic cables are advisable. Another advantage of using fibre-optic cabling is the insensitivity to lightning or voltage surges. The use of fibre-optic based systems is already established in areas such as the process industry, plant engineering, energy distribution and wind energy.

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 Media Converter (10/100BaseT (X) to 100BaseFX)

- 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 | |
| **Interfaces** | | |
| Fibre Ports | 100BaseFX (SC/ST connectors) | |
| RJ45 ports | 10/100BaseT(X) | |
| DIP Switches | 100BaseFX Full/Half duplex selection,<br>port break alarm mask | |
| LED Indicators | PWR1, PWR2, FAULT, 10/100M (TP port), 100M (Fibre port),<br>FDX/COL (Fibre port) | |
| Alarm Contact | One relay output with current carrying capacity<br>of 1 A @ 24 V DC | |
| **Optical Fibre** | | |
| | 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 [a]<br>4 km [b] | 40 km [c] |
| Saturation | -6 dBm | -3 dBm |

[a] 50/125 µm, 800 MHz*km fibre optic cable
[b] 62.5/125 µm, 500 MHz*km fibre optic cable
[c] 9/125 µm, 3.5 PS/(nm*km) fibre optic cable

| | |
|---|---|
| **Power Requirements** | |
| Input Voltage | 24 V DC (12 to 48 V DC),<br>redundant inputs |
| Current consumption | 0.16 A (@ 24 V) |
| Connection | Removable terminal block |
| Overload Current Protection | 1.1 A |
| Reverse Polarity Protection | Present |
| **Technical data** | |
| Housing | Metal, IP 30 protection |
| Dimensions (W x H x D) | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in) |
| Weight | 630 g |
| Installation | TS 35 |
| **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) |
| Operating Humidity | 5 to 95 % RH |
| Storage Temperature | -40 to 85 °C (-40 to 185 °F) |

| | |
|---|---|
| **Approvals** | |
| Security | UL 508, UL 60950-1 |
| EMI | FCC Part 15, CISPR (EN55022) class A |
| EMC | 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,<br>and D, ATEX Class1, Zone 2, Ex nC IIC |
| Maritime | DNV, GL |
| Freefall | IEC60068-2-32 |
| Shock | IEC60068-2-27 |
| Vibration | IEC60068-2-6 |
| **MTBF (mean time between failures)** | |
| Time | 401.000 hrs |
| Database | MIL-HDBK-217F: GB 25 °C |
| **Warranty** | |
| Warranty Period | 5 years |

### Ordering data

| Port Variants | Type | Operating Temperature | Order No. |
|---|---|---|---|
| 1 * RJ45, 1 * SC-Multimode | IE-MC-VL-1TX-1SC | 0 to +60 °C | 1241400000 |
| | IE-MC-VLT-1TX-1SC | -40 to +75 °C | 1286880000 |
| 1 * RJ45, 1 * ST-Multimode | IE-MC-VL-1TX-1ST | 0 to +60 °C | 1241410000 |
| | IE-MC-VLT-1TX-1ST | -40 to +75 °C | 1286890000 |
| 1 * RJ45, 1 * SC-Singlemode | IE-MC-VL-1TX-1SCS | 0 to +60 °C | 1241420000 |
| | IE-MC-VLT-1TX-1SCS | -40 to +75 °C | 1286900000 |

### Accessories

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

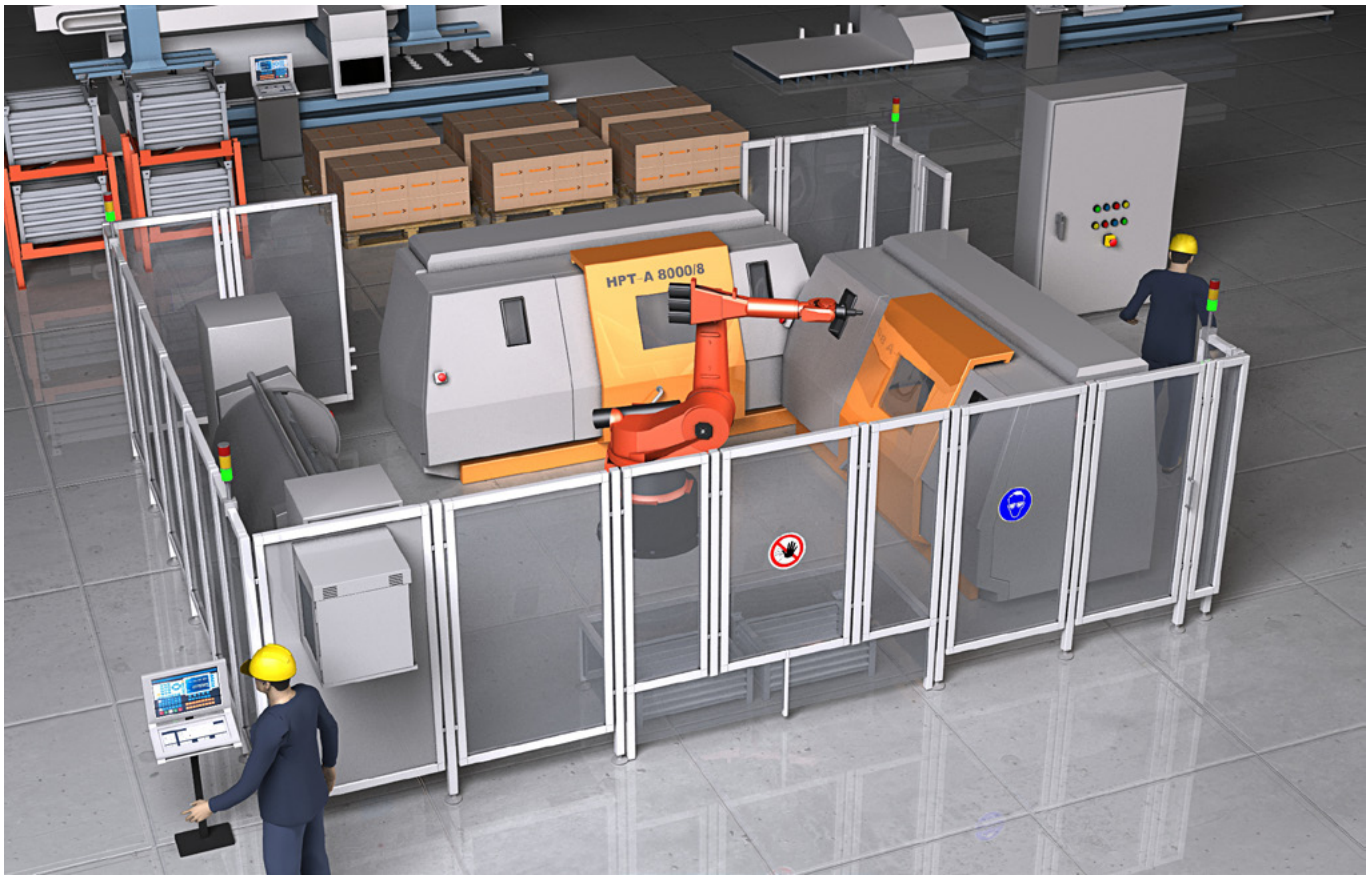
# Serial/Ethernet converter

## Simple integration of end devices into Ethernet networks

Serial interfaces such as RS232, RS422 or RS485 are widespread today in automation systems. To integrate these devices into modern Industrial Ethernets, 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.

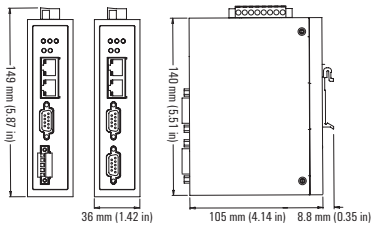
Weidmüller's Serial/Ethernet converters connect these devices simply and easily to existing Ethernet network structures. The configuration of the serial port and Ethernet port parameters is done using an internet browser.
On the Ethernet side, these devices support several operating modes: including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

- High surge protection for the serial ports, LAN ports and power supply connection
- 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

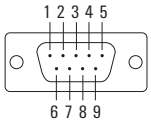



## Technical data

| | |
|---|---|
| **Ethernet Interface** | |
| Number of Ports | 2 |
| Speed | 10/100 MBit/s, auto MDI/MDIX |
| Connection | 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 |
| Connection | IE-CS-2TX-1RS232/485: DB9 for RS 232,<br>terminal block for RS 422/485<br>IE-CS-2TX-2RS232/485: DB9<br>for RS 232/422/485 |
| Serial Line Protection | • 15 KV ESD protection for all signals<br>• 1 KV (level 2) surge protection |
| 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 bit/s to 921.6 kbit/s |
| **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,<br>Rtelnet, DNS, SNMP, HTTP, SMTP, SNTP, IGMP |
| Configuration Options | Web Console, Serial Console, Telnet Console,<br>Windows Utility |
| Windows Real COM Drivers | Windows 95/98/ME/NT/2000, Windows<br>XP/2003/Vista/2008/7/8 x86/x64, 2012 x64 |
| **Technical data** | |
| Housing | Metal, IP 30 protection |
| Weight | IE-CS-2TX-1RS232/485: 475 g<br>IE-CS-2TX-2RS232/485: 485 g |
| Dimensions (W x H x D) | 36 x 105 x 140 mm (1.42 x 4.13 x 5.51 in) |
| **Environmental Limits** | |
| Operating temperature | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models:<br>-40 to 75 °C (-40 to 167 °F) |
| Ambient Relative Humidity | 5 to 95 % RH |
| Storage Temperature | -40 to 85 °C (-40 to 185 °F) |
| **Power Requirements** | |
| Input Voltage | 12 to 48 V DC |
| Current consumption | IE-CS-2TX-1RS232/485: 12 to 48 V DC;<br>220 mA @ 12 V DC, 110 mA @ 24 V DC<br>IE-CS-2TX-2RS232/485: 12 to 48 V DC;<br>250 mA @ 12 V DC, 125 mA @ 24 V DC |

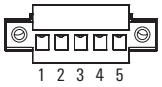
| | |
|---|---|
| **Approvals** | |
| EMC | CE (EN55022 Class A, EN55024),<br>FCC Part 15 Subpart B Class A |
| Security | UL 508 |
| Hazardous Location | UL/cUL Class 1 Division 2 Groups A, B, C and D<br>ATEX Class I, Zone 2 |
| EMC | EN61000-4-2 (ESE), Level 3<br>EN61000-4-3 (RS), Level 3<br>EN61000-4-4 (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) |
| **MTBF (mean time between failures)** | |
| Time | 262.805 hrs |
| Database | Telcordia (Bellcore), GB |
| **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 | PIN | RS 422/RS 485-4w | RS 485-2w |
|---|---|---|---|
|  | 1 | TxD+(B) | - |
| | 2 | TxD-(A) | - |
| | 3 | RxD+(B) | Data+(B) |
| | 4 | RxD-(A) | Data-(A) |
| | 5 | GND | GND |



**Ordering data**

| Models | Type | Operating Temperature | Order No. |
|---|---|---|---|
| Two RJ45; One serial (RS232: Sub-DB9, RS422/485: terminal block) | IE-CS-2TX-1RS232/485 | 0 to +60 °C | **1242080000** |
| | IE-CST-2TX-1RS232/485 | -40 to +75 °C | **1285830000** |
| Two RJ45; Two serial (RS232/422/485: Two SubDB9) | IE-CS-2TX-2RS232/485 | 0 to +60 °C | **1242090000** |
| | IE-CST-2TX-2RS232/485 | -40 to +75 °C | **1285840000** |

**Accessories**

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

# Serial/fibre-optic converter
## Transmitting serial signals via fibre-optic cables

### Serial/fibre-optic converter

If high interference immunity is needed or long transmission distances are involved, then fibre-optic transmission is advisable. Another benefit of using fibre-optic transmission is that it is not sensitive to electromagnetic influences.

One simple and inexpensive solution is media converters, which can convert serial signals from from a RS232/422/485 port on a fibre optic port with an SC or ST glass fibre connection. Fibre-optics with multimode technology make it possible to transmit over distances of up to 5000 m without additional power boosters.

### Ring operation

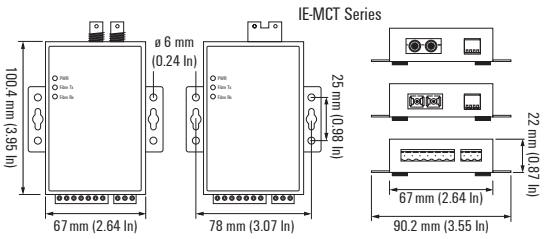
The converter is able to connect several serial devices to form a glass fibre ring. This simply involves connecting the TX port of one converter with the Rx port of a neighbouring converter. Ring mode can then be activated using the DIP switch on the device. A signal which is transmitted by a node is then forwarded in the ring until it is gets back to the sender, where it is blocked. In this way, glass fibre rings can be configured with an spread of up to 100 km.

### Automatic baud rate detection

The serial/fibre-optic converter can automatically detect the serial baud rate of connected devices. This ensures that signals can be forwarded by the media converter without any data loss even if the baud rate of a connected device changes.

## Serial/fibre-optic converters

- "Ring" and "point-to-point" modes of transmission
- Extension of RS232/422/485 transmission to up to 5 km
- Supports baud rates of 50 bps to 921.6 Kbps
- Extended temperature range of -40 to 75 °C
- Compact design




## Technical data

| | |
|---|---|
| **LWL Interface** | |
| Connection type | SC or ST connector, multimode |
| Wavelength | 850 nm |
| Tx Transmit Power | > - 5 dBM |
| Rx Sensitivity | -20 dBM |
| Typical Distance | 5 km (50/125, 62,5/125, 100/140 µm multimode cable) |
| Transmission mode: "Point-to-point" | Full/Half duplex |
| Transmission mode: "Ring" | Half duplex |
| **Serial Interface** | |
| Serial Standards | RS232/422/485 |
| Connector | terminal block |
| Serial Line Protection | 15 kV ESD protection for all signals |
| Baud rate | 50 bit/s to 921,6 kbit/s |
| RS 485 Data Direction Control | ADDC® (automatic data direction control) |
| **Serial Signals** | |
| RS 232 | Tx, Rx, GND |
| RS 422 | TxD+, TxD-, RxD+, RxD-, GND |
| RS 485 4w | TxD+, TxD-, RxD+, RxD-, GND |
| RS 485 2w | Data+, Data-, GND |
| **Technical data** | |
| Housing | Aluminum, IP 30 protection |
| LED Indicators | PWR, fibre Tx, fibre Rx |
| Weight | 320 g |
| Dimensions W x H x D | with wall mounting: 67 x 100 x 22 mm (2.64 x 3.94 x 0.87 in)<br>without wall mounting: 90 x 100 x 22 mm (3.54 x 3.94 x 0.87 in) |
| **Environmental Limits** | |
| Operating temperature | -40 to 75 °C (-40 to 167 °F) |
| Storage temperature | -40 to 75 °C (-40 to 167 °F) |
| Operating Humidity | 5 to 95 % RH |
| **Power Requirements** | |
| Input voltage | 12 to 48 V DC |
| Power consumption | 140 mA @ 12 V |
| Serial Line Protection | 2 KV Burst (EFT), EN61000-4-4<br>2 KV Surge, EN61000-4-5 |
| Reverse Polarity Protection | Present |
| Overload Current Protection | 1,1 A |
| **Approvals** | |
| Safety | UL 60950-1 |
| EMC | FCC Part 15, EN55022 1998, Class B<br>EN61000-4-2 (ESD), criterion A, level 3<br>EN61000-4-3 (RS), criterion A, level 2<br>EN61000-4-4 (EFT), criterion A, level 2<br>EN61000-4-5 (Surge), criterion A, level 3<br>EN61000-4-6 (CS), criterion A, level 2<br>EN61000-4-8 (SFMF), criterion A, level 1 |
| **MTBF (mean time between failures)** | |
| Time | 780.480 hrs |
| Database | Telcordia (Bellcore), GB |
| **Warranty** | |
| Warranty Period | 5 years |

## Ordering data

| Models | Type | Operating temperature | Order No. |
|---|---|---|---|
| 1 * Serial (RS232/422/485: terminal block), 1 * SC multimode | IE-MCT-1RS232/485-1SC | -40 to +75 °C | **1344760000** |
| 1 * Serial (RS232/422/485: terminal block), 1 * ST multimode | IE-MCT-1RS232/485-1ST | -40 to +75 °C | **1362950000** |

# Industrial wireless
## Overview

# Industrial wireless
## Wireless communication solutions

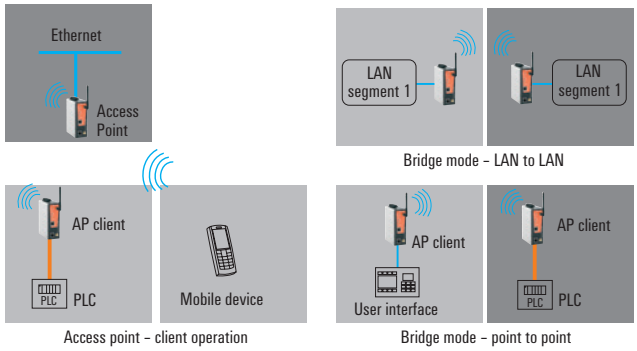
Wireless communications are preferred when working with mobile applications or difficult-to-reach areas. Currently, wireless LAN can be used for industrial manufacturing plants or facilities; it is ideal for use anywhere where traditional cabling is not suitable or where a mobile network connection is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

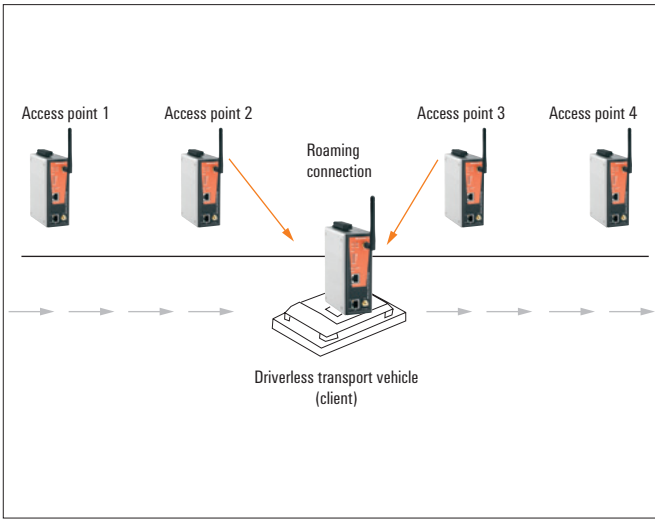
## Wireless operating modes

The most common operating mode for wireless networks are AP client mode (Access Point) and bridge mode. In AP-client mode an Access Point is necessary to set up a Basic Service Set (BSS) for a wireless connection. 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.



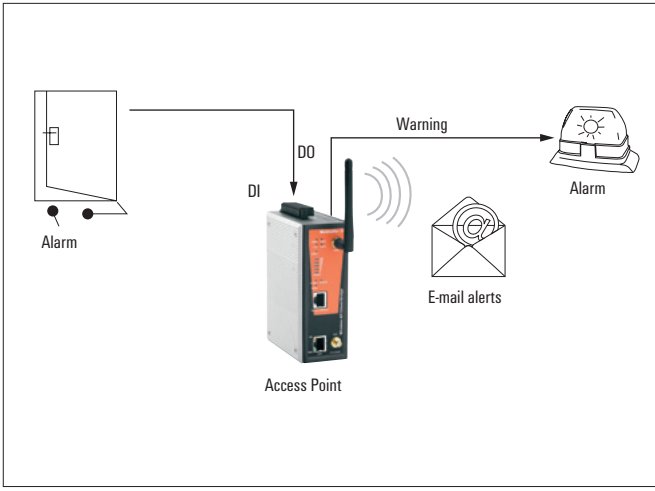

## Turbo roaming for uninterrupted connections

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. It is the roaming technology that offers a seamless wireless connection and permits a swift change between different wireless access points without the risk of interruption to the data communication.



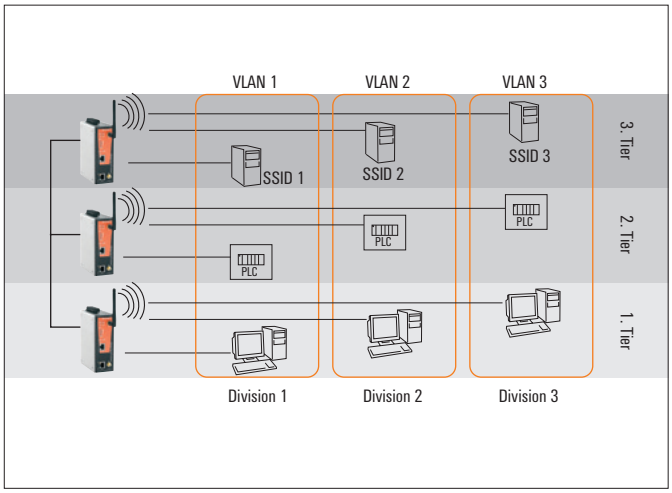

## Integrated digital inputs / outputs

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 failures, or link breaks, occur.



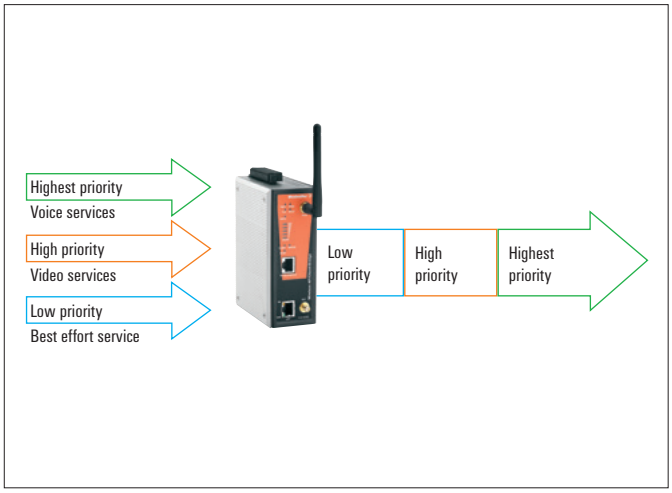
## Wireless VLAN (Multi-SSID)

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.



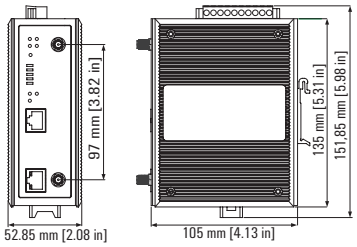

## WMM for prioritising communications

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. Critical data, for example, requires 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 - Access point/bridge/client

- IEEE 802.11a/b/g compatible single radio module (2.4 GHz or 5 GHz band)
- 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 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) | • DSSS with DBPSK, DQPSK, CCK<br>• OFDM with BPSK, QPSK, 16QAM, 64QAM<br>• 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps,DBPSK @ 11 Mbps<br>• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps |
| 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 | • SSID broadcast enable/disable<br>• Firewall for MAC/IP/Protocol/Port-based filtering<br>• 64-bit and 128-bit WEP encryption, WPA /WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP and AES) |
| 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,<br>Typ. 19±1.5 dBm @ 36 Mbps,<br>Typ. 18±1.5 dBm @ 48 Mbps,<br>Typ. 17±1.5 dBm @ 54 Mbps<br>802.11a: Typ. 18±1.5 dBm @ 6 to 24Mbps,<br>Typ. 16±1.5 dBm @ 36 to 48 Mbps,<br>Typ. 15±1.5 dBm @ 54 Mbps |
| RX Sensitivity | 802.11b: -97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps,<br>-92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps<br>802.11g: -93 dBm @ 6 Mbps, -91 dBm @ 9 Mbps,<br>-90 dBm @ 12 Mbps, -88 dBm @ 18 Mbps,<br>-84 dBm @ 24 Mbps, -80 dBm @ 36 Mbps,<br>-76 dBm @ 48 Mbps, -74 dBm @ 54 Mbps<br>802.11a: -90 dBm @ 6 Mbps, -89 dBm @ 9 Mbps,<br>-89 dBm @ 12 Mbps, -85 dBm @ 18 Mbps,<br>-83 dBm @ 24 Mbps, -79 dBm @ 36 Mbps,<br>-75 dBm @ 48 Mbps, -74 dBm @ 54 Mbps |
| **Protocol Support** | |
| General Protocols | Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, 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) |

| Interfaces | |
|---|---|
| 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 |
| **Technical data** | |
| Housing | Metal, IP 30 protection |
| Weight | 850 g |
| Dimensions (W x H x D) | 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in) |
| 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) |
| 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) |
| Connection | 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 |
| **Approvals** | |
| Security | EN60950-1, UL 60950-1 |
| 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 data

| Models | Type | Operating Temperature | Order No. |
|---|---|---|---|
| IEEE 802.11a/b/g Wireless AP/Bridge/ Client (European version) | IE-WL-AP-BR-CL-ABG-EU | 0 to +60 °C | 1242100000 |
| | IE-WLT-AP-BR-CL-ABG-EU | -40 to +75 °C | 1286480000 |
| IEEE 802.11a/b/g Wireless AP/Bridge/ Client (US version) | IE-WL-AP-BR-CL-ABG-US | 0 to +60 °C | 1242110000 |
| | IE-WLT-AP-BR-CL-ABG-US | -40 to +75 °C | 1286490000 |

### Accessories

| | Type | Order No. |
|---|---|---|
| External Backup and Restore Module | EBR-Modul RS232 | 1241430000 |
| 19" Rack Mounting Kit | RM-KIT | 1241440000 |

WLAN antennas and connection cable - page F.2 ff.

# Active components
## Overview of accessories

## WLAN antennas

### IE-ANT-O-BG-360-6-NF

### IE-ANT-O-AH-360-5-NF

## Technical data

| | | |
|---|---|---|
| **Electrical data** | | |
| Frequency range (Mhz) | 2400 - 2500 (Mhz) | 5150 - 5875 (Mhz) |
| VSWR | 1.8 | < 1.7 |
| Antenna gain | 6 dBi | 5 dBi |
| 3dB beamwidth (horizontal) | 360° | 360° |
| 3dB beamwidth (vertical) | 30° | 25° |
| Front-to-back ratio | – | – |
| Vertical electrical tilt | 0° | 0° |
| **General data** | | |
| Radiation | Omnidirectional | Omnidirectional |
| Impedance | 50 ohm | 50 ohm |
| Polarisation | Vertical | Vertical |
| Connector type | 1 x N-type female | 1 x N-type female |
| Connector position | Bottom | Bottom |
| Composite power max. | 25 W | 6 W |
| **Mechanical specifications** | | |
| Dimensions | 250 x 22 mm (height x diameter) | 160 x 16 mm (height x diameter) |
| Weight | 300 g | 300 g |
| Wind load | Frontal: 3N @ 160 km/h, side 3N 160 km/h | Frontal: 7N @ 160 km/h, side 7N @ 160 km/h |
| Mast diameter min. | – | 38.1 mm |
| Mast diameter max. | – | 76.2 mm |
| **Environmental Limits** | | |
| Area of application | outdoors | outdoors |
| Operating temperature | – 40 to 80 °C | – 45 to 70 °C |
| Storage Temperature | – 40 to 80 °C | – 45 to 70 °C |
| IP protection class | IP 67 | IP 64 |
| **Enclosure material** | | |
| Radome colour | RAL 7035 (light grey) | RAL 9002 (grey white) |
| Radome material | Fibre glass | PP |
| Material for base plate | – | – |

## Ordering data

| Models | Type | Operating temperature | Order No. |
|---|---|---|---|
| 802.11 b/g wireless antenna; omnidirectional | IE-ANT-O-BG-360-6-NF | – 40 to 80 °C | **1367090000** |
| 802.11 a/h wireless antenna; omnidirectional | IE-ANT-O-AH-360-5-NF | – 45 to 70 °C | **1367120000** |
| **Note** | Assembly material included in scope of supply | | |
| | Assembly material included in scope of supply | | |

## WLAN antennas

| | IE-ANT-P-ABG-75-9-NF | IE-ANT-O-ABG-360-7-NF |
|---|---|---|
| |  |  |

## Technical data

| | | |
|---|---|---|
| **Electrical data** | | |
| Frequency range (Mhz) | Band 1: 2400 - 2500 (Mhz)<br>Band 2: 5150 - 5875 (Mhz) | Band 1: 2400 - 2500 (Mhz)<br>Band 2: 5150 - 5875 (Mhz)<br>Band 3: 3400 - 3700 (Mhz)<br>Band 4: 4900 - 5470 (Mhz)<br>Band 5: 5470 - 5935 (Mhz) |
| VSWR | < 2 | Band 1: < 1.8<br>Band 2: < 2<br>Band 3: < 2<br>Band 4: < 1.8<br>Band 5: < 1.8 |
| Antenna gain | 9 dBi band 1/2 | Band 1: 6 dBi<br>Band 2: 6 dBi<br>Band 3: 7 dBi<br>Band 4: 8 dBi<br>Band 5: 8 dBi |
| 3dB beamwidth (horizontal) | 75° band 1 ; 55° band 2 | – |
| 3dB beamwidth (vertical) | 55° band 1/2 | – |
| Front-to-back ratio | 15 dB band 1/2 | – |
| Vertical electrical tilt | 0° band 1/2 | – |
| **General data** | | |
| Radiation | Directional | Omnidirectional |
| Impedance | 50 ohm | 50 ohm |
| Polarisation | Vertical | Vertical |
| Connector type | 1 x N-type female | 1 x N-type female |
| Connector position | Bottom | Bottom |
| Composite power max. | 10 W | 75 W |
| **Mechanical specifications** | | |
| Dimensions | 101 x 80 x 35 mm (height x width x depth) | 50.6 x 86 mm (height x diameter) |
| Weight | 110 g | 300 g |
| Wind load | Frontal: 7N @ 160 km/h, side 7N @ 160 km/h | Frontal: 10N @ 160 km/h |
| Mast diameter min. | 40 mm | – |
| Mast diameter max. | 60 mm | – |
| **Environmental Limits** | | |
| Area of application | outdoors | outdoors |
| Operating temperature | – 40 to 80 °C | – 40 to 80 °C |
| Storage Temperature | – 40 to 80 °C | – 40 to 80 °C |
| IP protection class | IP 67 | IP 68 |
| **Enclosure material** | | |
| Radome colour | RAL 7044 (grey) | RAL 7043 (grey) |
| Radome material | PC | ASA_SAN |
| Material for base plate | – | Stainless steel |

## Ordering data

| Models | Type | Operating temperature | Order No. | Type | Operating temperature | Order No. |
|---|---|---|---|---|---|---|
| 802.11 a/b/g/h wireless antenna; directional | IE-ANT-P-ABG-75-9-NF | – 40 to 80 °C | **1367140000** | | | |
| 802.11 a/b/g/h wireless antenna; omnidirectional | | | | IE-ANT-O-ABG-360-7-NF | – 40 to 80 °C | **1367130000** |
| **Note** | Assembly material included in scope of supply | | | Assembly material included in scope of supply | | |

## Antenna cable

| | IE-CC-NM-RPSMAM-2M | IE-CC-NM-RPSMAM-4M |
|---|---|---|
| |  |  |

### Technical data

| | | |
|---|---|---|
| **Electrical data** | | |
| Impedance | 50 Ohm +/- 2 | 50 Ohm +/- 2 |
| Max. operating frequency | 6 Ghz | 6 Ghz |
| Signal delay | 4.08 ns/m | 4.08 ns/m |
| Attenuation @ 2.4 Ghz | approx. 0.55 dB/m | approx. 0.55 dB/m |
| Attenuation @ 5 Ghz | approx. 0.87 dB/m | approx. 0.87 dB/m |
| **Mechanical specifications** | | |
| Length | 2 m | 4 m |
| Weight | 6.3 kg/100 m | 6.3 kg/100 m |
| Min. bending radius (continuous) | 28 mm | 28 mm |
| Connector type | Connection 1: N-type male<br>Connection 2: RP-SMA male | Connection 1: N-type male<br>Connection 2: RP-SMA male |
| **Environmental Limits** | | |
| Operating temperature | –40 to 85 °C | –40 to 85 °C |
| Installation temperature | –20 to 60 °C | –20 to 60 °C |
| Flammability | IEC 60332-1, UL 1581 § 1080 (VW-1) | IEC 60332-1, UL 1581 § 1080 (VW-1) |
| Halogen-free | IEC 60754 | IEC 60754 |
| UV resistance | ISO 4892-2A | ISO 4892-2A |
| **Material data** | | |
| Jacket | LSFH (modified polyethylene) | LSFH (modified polyethylene) |
| Outside diameter | 5.7 mm | 5.7 mm |

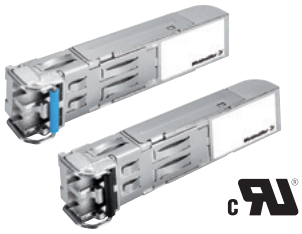
### Ordering data

| Models | Type | Order No. | Type | Order No. |
|---|---|---|---|---|
| Antenna cable, 2m long, N-type (male) –> RP-SMA (male), impedance 50 ohm | IE-CC-NM-RPSMAM-2M | **1367110000** | | |
| Antenna cable, 4m long, N-type (male) –> RP-SMA (male), impedance 50 ohm | | | IE-CC-NM-RPSMAM-4M | **1367100000** |
| **Note** | | | | |

# SFP modules (Fast Ethernet/Gigabit Ethernet)

## 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



### Technical data

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Interfaces** | | | | | | | | |
| Ethernet Ports | 1 | | | | | | | |
| Connectors | Duplex LC Connector or Simplex LC | | | | | | | |
| **Optical Fibre** | | | | | | | | |
| | 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 1310 nm, Empf. 1550 nm | TX 1550 nm, Empf. 1310 nm | TX 1 310 nm, Empf. 1550 nm | TX 1550 nm, Empf. 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 [a] | 2 km [b] | 10 km [c] | 40 km [c] | 10 km [c] | | 20 km [c] | |
| Saturation | 0 dBm | -3 dBm | -3 dBm | -3 dBm | -1 dBm | | -1 dBm | |

[a] 50/125 µm, 400 MHz * km or 62.5/125 µm, 500 MHz * km @ 850 nm multimode fibre optic cable
[b] 62.5/125 µm, 750 MHz * km @ 1310 nm multimode fibre optic cable
[c] 9/125 µm singlemode fibre 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.

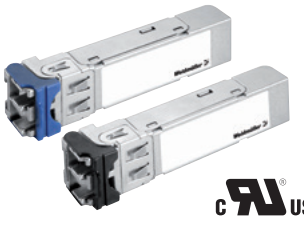
| | |
|---|---|
| **Environmental Limits** | |
| Operating temperature | Standard Models: 0 to 60 °C (32 to 140 °F)<br>Wide Temp. Models: -40 to 75 °C (-40 to 167 °F) |
| Storage Temperature | -40 to 85 °C (-40 to 185 °F) |
| Ambient Relative Humidity | 5 to 95 % (non-condensing) |
| **Approvals** | |
| Security | UL, TÜV |
| Maritime | DNV, GL |
| **Warranty** | |
| Warranty Period | 3 years |

### Ordering data

| SFP Variants | Type | Operating Temperature | Order No. |
|---|---|---|---|
| Gigabit-Ethernet, Multimode, LC Connector, 500 m | IE-SFP-1GSXLC | 0 to +60 °C | **1241490000** |
| | IE-SFP-1GSXLC-T | -20 to 75 °C | **1286700000** |
| Gigabit-Ethernet, Multimode, LC Connector, 2 km | IE-SFP-1GLSXLC | 0 to +60 °C | **1241500000** |
| | IE-SFP-1GLSXLC-T | -40 to 85 °C | **1286710000** |
| Gigabit-Ethernet, Singlemode, LC Connector, 10 km | IE-SFP-1GLXLC | 0 to +60 °C | **1241510000** |
| | IE-SFP-1GLXLC-T | -40 to 85 °C | **1286720000** |
| Gigabit-Ethernet, Singlemode, LC Connector, 40 km | IE-SFP-1GLHXLC | 0 to +60 °C | **1241520000** |
| | IE-SFP-1GLHXLC-T | -40 to 85 °C | **1286730000** |
| 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 | **1241530000** |
| | IE-SFP-1G10ALC-T | -40 to 85 °C | **1286740000** |
| 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 | **1241540000** |
| | IE-SFP-1G10BLC-T | -40 to 85 °C | **1286750000** |
| 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 | **1241550000** |
| | IE-SFP-1G20ALC-T | -40 to 85 °C | **1286760000** |
| 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 | **1241570000** |
| | IE-SFP-1G20BLC-T | -40 to 85 °C | **1286770000** |

## 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



### Technical data

| | | | |
|---|---|---|---|
| **Interfaces** | | | |
| Ethernet Ports | 1 | | |
| Connectors | Duplex LC Connector | | |
| **Optical Fibre** | | | |
| | 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 [a] | 40 km [b] | 80 km [b] |
| Saturation | 0 dBm | -3 dBm | -3 dBm |

[a] 50/125 µm or 62,5/125 µm, 800 MHz * km @ 1300 nm multimode fibre optic cable
[b] 9/125 µm singlemode fibre 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) |
| **Approvals** | |
| Security | UL, TÜV |
| Maritime | DNV, GL |
| **Warranty** | |
| Warranty Period | 3 years |

### Ordering data

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

## 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
- Can be used for all Weidmüller managed switches and WLAN components

### Technical data

| | |
|---|---|
| **Basic Operation** | |
| Connection | RS 232-Interface with RJ45-Connector |
| 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) |
| **Technical data** | |
| Housing | PVC molding, IP 40 protection |
| Dimensions (W x H x D) | 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) |
| **Approvals** | |
| EMI | FCC Part 15, CISPR (EN55022) Class A |
| EMC | EN61000-4-2 (ESD), level 2; 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 |
| **Warranty** | |
| Warranty Period | 5 years |

**Ordering data**

| Models | Type | Order No. |
|---|---|---|
| External Backup and Restore Module | EBR-MODULE RS232 | 1241430000 |

## Kit for 19" rack-mounting

- For mounting DIN-rail based devices in 19" racks

### Technical data

| | |
|---|---|
| **Technical data** | |
| Dimensions (W x H x D) | 481 x 177.8 x 202.4 mm |

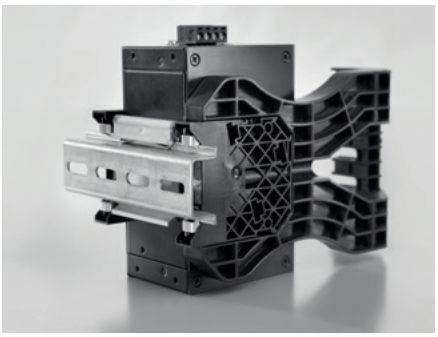
**Ordering data**

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

## Cable fixing kit

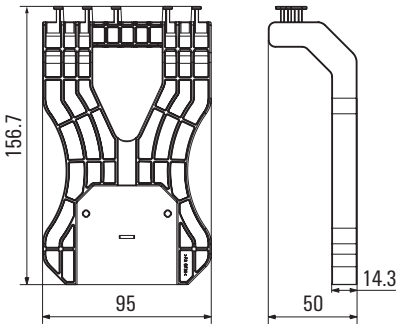
- Quick and easy fixing of Ethernet cable to industrial switches by clamping cable insulation
- Decoupling of Ethernet cable from inharmonious vibrations in vibrating applications
- Reliable connection contact even in the event of vibration
- Up to 10 cables can be fixed at the same time (2 per fixing groove)
- Fixing on DIN-rail using Weidmüller standard end bracket (included in scope of delivery)

## IE-CFK-05



## Technical data

| | |
|---|---|
| **General data** | |
| Usage | Can be used with all Weidmüller BasicLine switches of the BL05/06/08 families |
| Max. build height of plug connector | 40 mm (with 70 mm switch installation depth) |
| Max. no. of cables which can be connected | 10 (2 per fixing groove) |
| Cable diameter which can be clamped | 5 mm to max. 6.8 mm |
| **Mechanical specifications** | |
| Dimensions (W x H x D) | 50 mm x 95 mm x 157 mm |
| Weight | 92 g |
| Installation | TS 35 (retaining bracket for mounting included in scope of supply) |
| **Environmental Limits** | |
| Flammability | V-0 (UL94) |
| Vibration | IEC 600068-2-6 |
| Shock | IEC 600068-2-27 |
| **Material** | |
| Base material | PA GF30 (glass fibre-reinforced plastic) |
| Colour | black |




## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-CFK-05 | 1 | **1339610000** |

| Note |
|---|
| Scope of delivery:<br>1 x cable fixing kit / 1 x retaining bracket for mounting on DIN-rail /<br>5 x cable tie for additional fixing |

# Passive components
## Introduction

# IE-LINE plug-in connectors
## Clever and flexible with ***STEADY***TEC® technology

***STEADY***TEC® – this name stands for the future of connection technology in the field of data and signal transmissions. Established market leaders in the industry, ***STEADY***TEC® forms the foundation for reliable, application-orientated, standards-compliant solutions - for offices through to areas with 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, specialised and dependable solutions.

**The result:** An extremely reliable, extraordinarily practical, flexible and especially efficient plug-in connector system for office and industrial applications. And using products whose characteristics accurately reflect the values originally laid out:

- **fast**
- **reliable**
- **solution-based**
- **simple**

**The Ethernet connector system: clever – flexible**

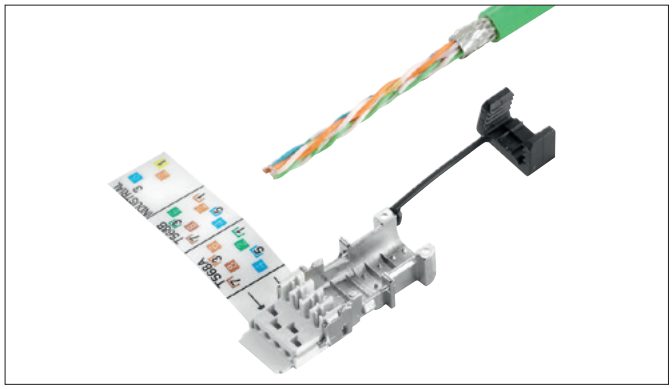
Connectors for modern industrial applications need to be designed in such a way that they simplify processes and cope with faster data transmission. Weidmüller's Ethernet connectors keep you a step ahead. These products are not only ready for 10 gigabit, they are also standardised for IEC 61076-3-106 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 can be 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 more robust and therefore suitable for industrial applications and as it is fitted with a protected locking clip means it is suitable for meeting the requirements of harsh industrial environments.
Weidmüllers IE product line fulfils the requirements for 10 GBit Ethernet, according to IEEE 802.3an, up to 500 MHz.

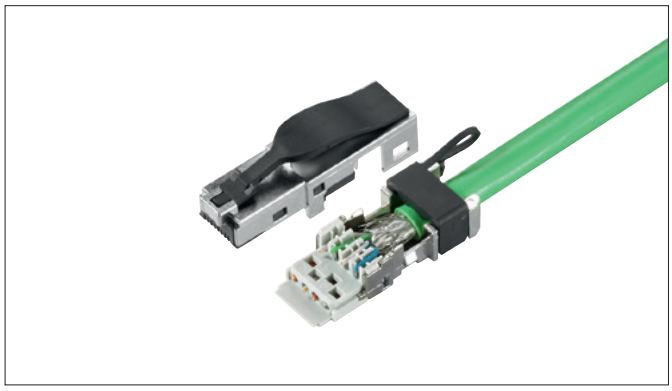
***STEADY**TEC*®: Systematic benefits**

- **Cat. $6_A$ 10 GBit System Class $E_A$**
- **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**

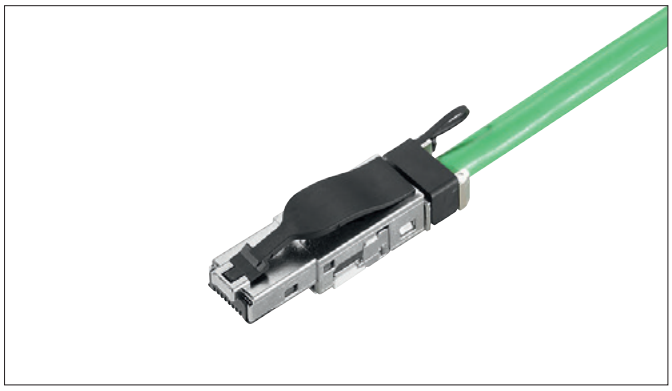


**1. Strip sheath cladding and shorten shield to 5 mm**

**2. Prepare wires and shorten**



**3. Snap together the two pluggable elements**



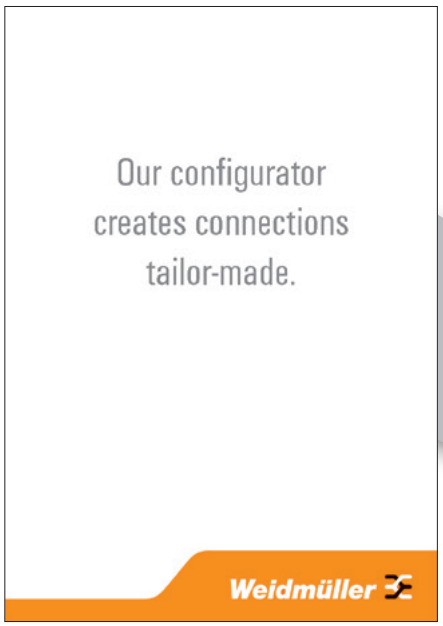
**4. Finished**

# Cable configurator
## Tailor-made connections

The cable configurator allows you to configure your specific cable with comfort, speed and simplicity. Just select, request order – and you are finished!

Make your selection from the list of available cables (material for cable sheathing, category, colour, ...). Next, choose the connector for both the right and left cable ends and 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.

The Industrial Ethernet Configurator can be found in our online catalogue.




You will be forwarded directly and will be able to configure a fibre-optic or copper cable.

After you have made your selection, there are several available options:

- Locate and display 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 to obtain a quote or to order

Practically all types of connectors and cables can be combined to your requirements!

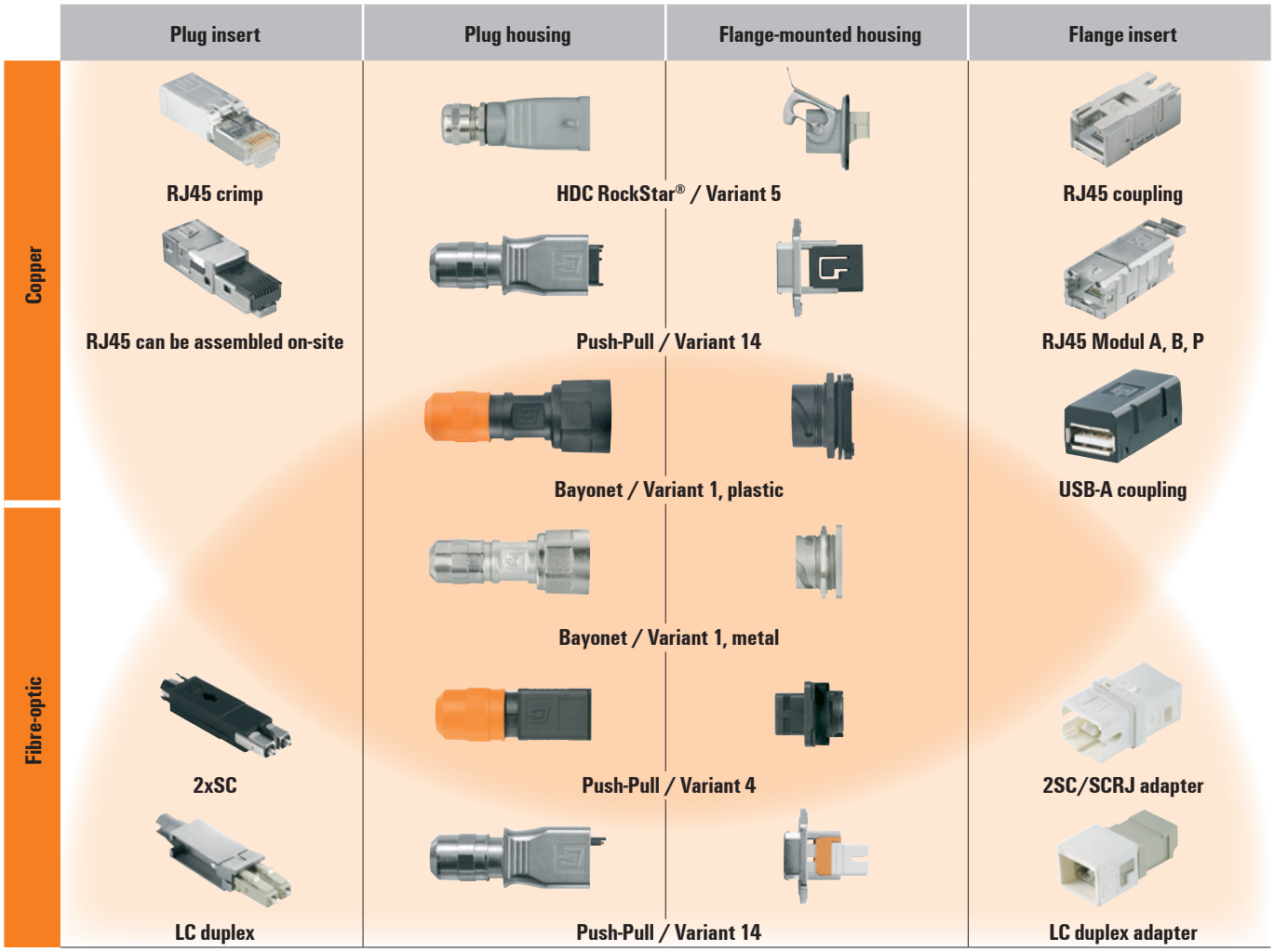
# From office communication to Industrial Ethernet

## An overview of the differences

| | Office Ethernet | Industrial Ethernet |
|---|---|---|
| |  |  |
| **Cabling** | • Fixed building installation<br>• Variable connection options<br>• Pre-assembled connection cables<br>• Star topology most widely in use | • Individual plant-influenced networks<br>• Robust component characteristics<br>• On-site, user assembly connections<br>• Redundant network topologies (ring) |
| **Transmission** | • Large volume of data<br>• Mid-level network availability<br>• Mostly only acyclical transmission<br>• No real-time characteristics required for standard applications | • Small data packets (measurement values)<br>• Very high network availability<br>• Extremely high real-time requirement<br>• Mostly cyclical transmission |
| **Surroundings** | • No extreme conditions | • Extreme temperatures<br>• Dust, dirt, splashing water, oils gases,<br>• Vibration, electromagnetic fields<br>• Risks of danger and damage from mechanical or chemical influences |

# Unlimited combinations of IE-LINE plug-in connectors

## The modular principle




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

The Weidmüller products take account of the latest market conditions and most recent international standards. In doing so we offer you a limitless 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. $6_A$ / Class $E_A$).
- 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

STEADYTEC

## Metal plug

| | Inserts | | | Housings | Variant 1 Bayonet | | Variant 14 PushPull RJ | | Variant 14 PushPull fibre-optic | | Var. 5 HDC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | |  | |  | |  | |  |
| | | | | | With KS | Without KS | With KS | Without KS | With KS | Without KS | Without KS |
| | | | | | 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 | 1962730000 | | 1963130000 | 1963120000 | 1012090000 | | | | 1963200000 |
| | | TIA-A | 1132010000 | | | | | | | | |
| | | TIA-B | 1132020000 | | | | | | | | 1271250000 |
| | | PROFINET | 1132030000 | | | | | 1012170000 | | | |
|  | 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 | | 1968920000 |

KS = anti-kink protection

## Plastic plug

| | Inserts | | | Housings | Variant 1 Bayonet | | Variant 4 PushPull | |
|---|---|---|---|---|---|---|---|---|
| | | | | |  | |  | |
| | | | | | With KS | Without KS | With KS | Without KS |
| | | | | | 1012460000 | 1012440000 | 1962530000 | 1962520000 |
|  | RJ45 AWG 24 crimp | | 1962720000 | | 1012560000 | 1012470000 | 1963190000 | 1963180000 |
|  | RJ45 AWG 22 tool-free | TIA-A/-B/-P | 1962730000 | | 1012570000 | 1012490000 | 1963170000 | 1963160000 |
| | | TIA-A | 1132010000 | | | | | |
| | | TIA-B | 1132020000 | | | | | 1271240000 |
| | | PROFINET | 1132030000 | | | | | |
|  | 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**

STEADYTEC

## Metal flange

| | | | Housings | Variant 1 Bayonet | Variant 14 PushPull RJ | | Variant 14 PushPull fibre-optic | | Variant 5 HDC |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Standardised flange | Central flange | Standardised flange | Central flange | |
| | Inserts | | | 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**

# Customised cabling solutions
## for PROFINET and Sercos

Weidmüller's cabling products enable you to create a specific infrastructure that meets all the requirements of PROFINET and Sercos.

The cabling components for copper and fibre-optic cables are designed and tested for use in harsh 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 the 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 typical hardware synchronisation, 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 are also remarkably easy to handle when out 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.

PROFINET INDUSTRIAL ETHERNET

sercos the automation bus

**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 applications. IP 20 plug-in connectors for copper and fibre-optic cables are also included 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.

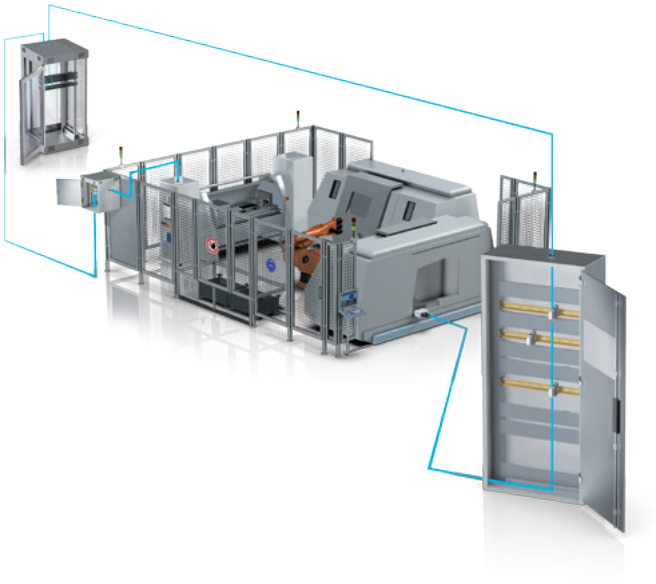
IP 67
assembled RJ45 cables

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
## Ideal combinations

### IP 20 plug-in connector

| Description | Type | Order No. | See page |
|---|---|---|---|
| RJ45 tool-free PROFINET printing | IE-PS-RJ45-FH-BK-P | 1132060000 | H.2 |
| SC-RJ for POF fibres 1 mm | IE-PS-SCRJ1-POF | 1206720000 | H.4 |
| SC-RJ for multimode fibres 50/62.5 µm | IE-PS-SCRJ1-MM | 1206730000 | H.4 |
| SC-RJ for singlemode fibres 9 µm | IE-PS-SCRJ1-SM | 1206740000 | H.4 |

### IP 20 assembled data cables

| Description | Type | Order No. | See page |
|---|---|---|---|
| RJ45 PUR patch cable - type C - 1 m | IE-C5DD4UG0010A20A20-E | 1173030010 | L.25 |
| RJ45 PUR patch cable - type C - 3 m | IE-C5DD4UG0030A20A20-E | 1173030030 | L.25 |
| RJ45 PUR patch cable - type C - 5 m | IE-C5DD4UG0050A20A20-E | 1173030050 | L.25 |
| RJ45 PUR patch cable - type C - 10 m | IE-C5DD4UG0100A20A20-E | 1173030100 | L.25 |
| SC-RJ zipcord patch cable - POF - 1 m | IE-FPOZ2EE0001MSJ0SJ0-X | 1273430010 | M.12 |
| SC-RJ zipcord patch cable - POF - 3 m | IE-FPOZ2EE0003MSJ0SJ0-X | 1273430030 | M.12 |
| SC-RJ zipcord patch cable - POF - 5 m | IE-FPOZ2EE0005MSJ0SJ0-X | 1273430050 | M.12 |
| SC-RJ zipcord patch cable - POF - 10 m | IE-FPOZ2EE0010MSJ0SJ0-X | 1273430100 | M.12 |
| Further PROFINET cables are available on request - Sercos cables on request | | | |

### IP 20 mounting rail outlets

| Description | Type | Order No. | See page |
|---|---|---|---|
| RJ45 coupling | IE-TO-RJ45-C | 8946920000 | H.10 |
| RJ45 module PROFINET printing | IE-TO-RJ45-FJ-P | 8946950000 | H.8 |
| SC-RJ POF coupling / multimode | IE-TO-SCRJ-MM | 8946990000 | H.12 |
| SC-RJ singlemode coupling | IE-TO-SCRJ-SM | 8947000000 | H.12 |

### 19" patch panel

| Description | Type | Order No. | See page |
|---|---|---|---|
| With adaptor, without RJ45 inserts | IE-PPA19-24P | 1049270000 | H.14 |
| RJ45 module PROFINET printing | IE-BI-RJ45-FJ-P | 1963830000 | H.14 |
| fitted with 24 RJ45 couplings | IE-PPA19-24P-RJ45-C | 1049930000 | H.14 |
| other inserts from page J.42 | | | |

### IP 65 service interface

| Description | Type | Order No. | See page |
|---|---|---|---|
| FrontCom® Micro RJ45 coupling | IE-FCM-RJ45-C | 1018790000 | I.3 |
| FrontCom® Micro RJ45 module PROFINET printing | IE-FCM-RJ45-FJ-P | 1018830000 | I.2 |

### IP 67 flange data

| Description | Type | Order No. | See page |
|---|---|---|---|
| PushPull standard flange RJ45 coupling | IE-BSS-V14M-RJ45-C | 1012310000 | J.4 |
| PushPull central cable gland RJ45 coupling | IE-BSC-V14M-RJ45-C | 1058250000 | J.4 |
| PushPull standardised flange RJ45 module PROFINET printing | IE-BSS-V14M-RJ45-FJ-P | 1085260000 | J.3 |
| PushPull standardised flange hybrid (Q10) 10-pole module without contacts | IE-BSS-V14M-HYB-10P-FJ | 1072900000 | J.7 |
| Contacts for Hybrid (Q10) module 0.5 mm² - 0.75 mm² VPE 300 | IE-BIC-HYB-P-0,75-300 | 1068970000 | J.7 |
| Contacts for Hybrid (Q10) module 0.2 mm² - 0.5 mm² VPE 300 | IE-BIC-HYB-P-0,5-300 | 1096150000 | J.7 |
| PushPull standardised flange SC-RJ coupling POF / multimode | IE-BSS-V14M-SCRJ-MM-C | 1058120000 | J.11 |
| PushPull standardised flange SC-RJ coupling singlemode | IE-BSS-V14M-SCRJ-SM-C | 1058140000 | J.11 |
| PushPull central cable gland SC-RJ coupling POF / multimode | IE-BSC-V14M-SCRJ-MM-C | 1062590000 | J.11 |
| PushPull central cable gland SC-RJ coupling singlemode | IE-BSC-V14M-SCRJ-SM-C | 1062600000 | J.11 |
| PushPull device flange | IE-BHD-V14M | 1047940000 | J.11 |
| PushPull flange protective cap IP 67 | IE-BP-V14P | 1058310000 | N.20 |
| other inserts from page J.42 | | | |

### 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 | J.55 |
| PushPull Power standardised flange with 400 V / 16 A use | IE-BSS-VAPM-400V | 1323950000 | J.55 |
| PushPull Power device flange | IE-BHD-VAPM | 1068920000 | J.55 |
| PushPull Power flange protective cap IP 67 | IE-BP-VAPP | 1068930000 | N.20 |

## IP 67 data connectors

| Description | Type | Order No. | See page |
|---|---|---|---|
| PushPull RJ45 tool-free module PROFINET printing | IE-PS-V14M-RJ45-FH-P | 1012170000 | J.2 |
| PushPull Hybrid (Q10) use, 10-pole module without contacts | IE-PS-V14M-HYB-10P | 1072910000 | J.6 |
| Contacts for Hybrid (Q10) use 0.75 mm² VPE 300 | IE-PIC-HYB-S-0,75-300 | 1068950000 | J.6 |
| Contacts for Hybrid (Q10) use 0.2 mm² - 0.5 mm² VPE 300 | IE-PIC-HYB-S-0,5-300 | 1096180000 | J.6 |
| PushPull SC-RJ use POF 1 mm | IE-PS-V14M-2SC-POF | 1191550000 | J.10 |
| PushPull plug protective cap IP 67 | IE-PP-V14P | 1058280000 | N.20 |

## IP 67 assembled data cables

| Description | Type | Order No. | See page |
|---|---|---|---|
| PushPull RJ45 patch cable PUR - Type C - 1 m | IE-C5DD4UG0010A2EA2E-X | 1119730010 | L.26 |
| PushPull RJ45 patch cable PUR - Type C - 3 m | IE-C5DD4UG0030A2EA2E-X | 1119730030 | L.26 |
| PushPull RJ45 patch cable PUR - Type C - 5 m | IE-C5DD4UG0050A2EA2E-X | 1119730050 | L.26 |
| PushPull RJ45 patch cable PUR - Type C - 10 m | IE-C5DD4UG0100A2EA2E-X | 1119730100 | L.26 |
| Further PROFINET cables are available on request - Sercos 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 | J.54 |
| PushPull Power with 400 V / 16 A use | IE-PS-VAPM-400V | 1323940000 | J.54 |

## IP 67 plug connector M12 D-coded and X-Type

M 12 components can be found from page J.36

## IP 65 connection components

| Description | Type | Order No. | See page |
|---|---|---|---|
| FreeCon passive double junction box RJ45/Power | IE-CD-V14MRJ/VAPM24V-FJ | 1068830000 | K.2 |
| FreeCon passive single junction box RJ45 | IE-CD-V14MRJ-FJ | 1068880000 | K.2 |
| FreeCon passive single junction box Hybrid (Q10) without contacts | IE-CD-V14MHYB-10P-FJ | 1068850000 | K.6 |
| Contacts for Hybrid (Q10) module 0.75 mm² VPE 300 | IE-BIC-HYB-P-0,75-300 | 1068970000 | K.6 |
| Contacts for Hybrid (Q10) module 0.2 mm² - 0.5 mm² VPE 300 | IE-BIC-HYB-P-0,5-300 | 1096150000 | K.6 |
| Mounting foot for junction boxes | IE-CD-MA | 1099580000 | K.2 |
| FreeCon passive double coupling RJ45/Power | IE-CD-V14MRJ/VAPM24V-C-MA | 1068820000 | K.3 |
| FreeCon passive single coupling RJ45 | IE-CD-V14MRJ-C-MA | 1068870000 | K.3 |
| FreeCon passive single coupling hybrid (Q10) | IE-CD-V14MHYB-10P-C-MA | 1068840000 | K.7 |
| FreeCon PushPull Power Y-distributor | IE-CD-VAPM24V-Y-MA | 1297010000 | K.5 |
| FreeCon PushPull Power single coupling | IE-CD-VAPM24V-C-MA | 1397690000 | K.5 |
| FreeCon passive single coupling SCRJ | IE-CD-V14MSCRJ-MM-C-MA | 1318150000 | K.4 |
| FreeCon active FO PROFINET repeater | IE-CDR-V14MSCPOF/VAPM-C | 1253240000 | K.8 |
| FreeCon active PROFINET media converter | IE-CDM-V14MRJSCP/VAPM-C | 1324440000 | K.8 |
| PushPull flange protective cap IP 67 | IE-BP-V14P | 1058310000 | N.20 |

## Bulk stock copper cable

| Description | Type | Order No. | See page |
|---|---|---|---|
| 100 m ring installation cable PVC type A | IE-C5AS4V1000 | 8899000000 | L.14 |
| Bulk stock installation cable PVC type A from 110 m | IE-C5AS4VG-MW | 8955950000 | L.14 |
| 100 m ring connection cable PVC type B | IE-C5DS4V1000 | 8898990000 | L.14 |
| Bulk stock connection cable PVC type B from 110 m | IE-C5DS4VG-MW | 8955560000 | L.14 |
| 100 m ring dragline cable PUR type C | IE-C5DD4U1000 | 8899010000 | L.15 |
| Bulk stock dragline cable PUR type C from 110 m | IE-C5DD4UG-MW | 8947670000 | L.15 |
| Torsion cable PUR type C available by the metre from 110 m | IE-C5IT4UG-MW | 1103010000 | L.15 |
| Bulk stock hybrid cable PVC from 110 m | IE-C5DHAG-MW | 1172250000 | L.16 |

## Bulk stock fibre-optic cable

| Description | Type | Order No. | See page |
|---|---|---|---|
| Multimode breakout cable 2x50 µm PUR from 50 m | IE-FM5B2UE-MW | 8946000000 | M.5 |
| POF zip-cord cable 2X980/1000 µm TPE, from 50 m | IE-FPOZ2EE-MW | 1242820000 | M.6 |
| POF breakout cable 2X980/1000 µm TPE, from 50 m | IE-FPOD2UE-MW | 1172280000 | M.6 |

# Customised cabling solutions
## for Ethernet/IP

The wiring guidelines for EtherNet/IP clearly define 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 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 cables 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.

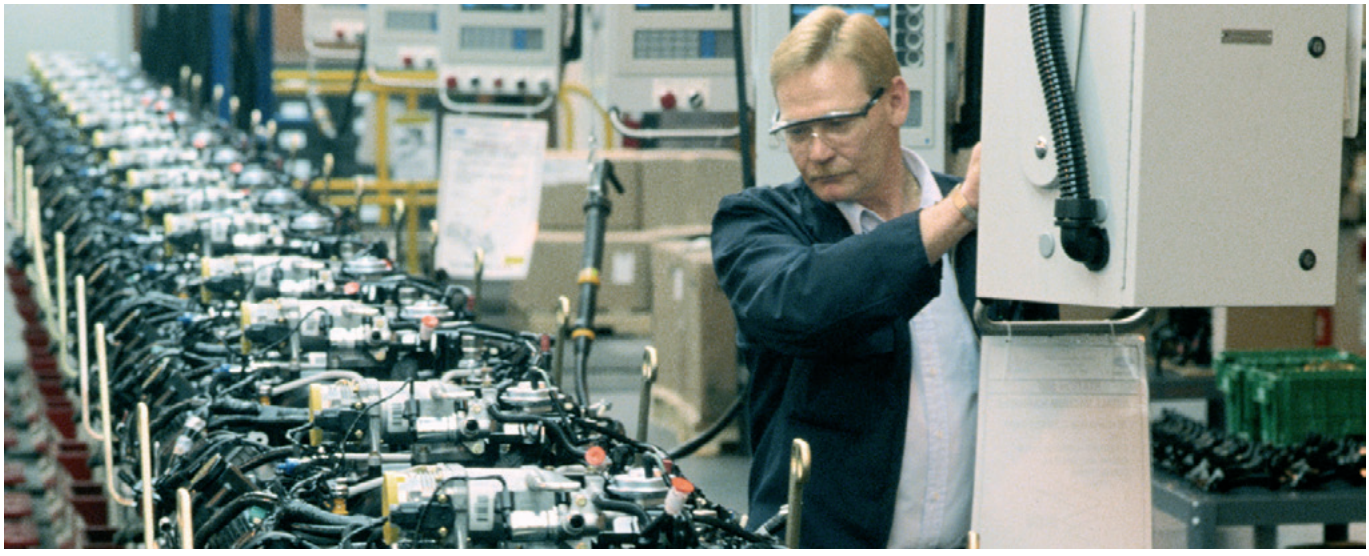
**Profile specific guidelines for the connection components**

**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 are available, as well as IP 67 connectors and junction boxes for the most exacting requirements. The components are designed to be used together from the floor distributors down to the machines.

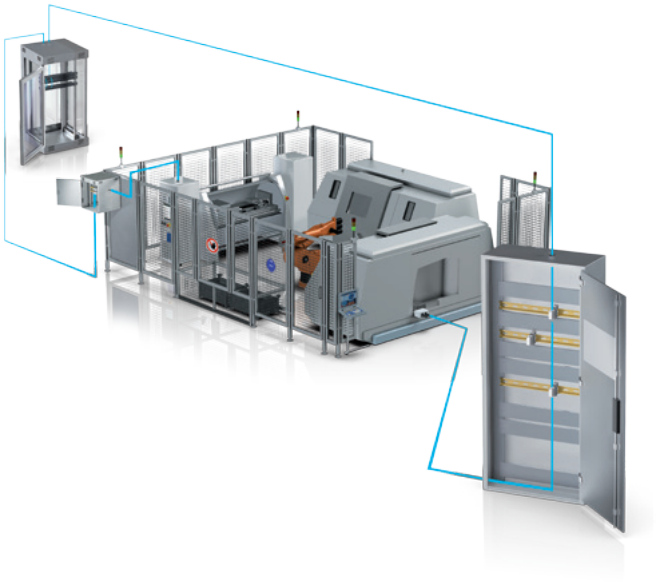
IP 67
assembled RJ45 cables

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

## Ideal combinations for a perfect fit

### IP 20 plug-in connector

| Description | Type | Order No. | See page |
|---|---|---|---|
| RJ45 crimp | IE-PS-RJ45-TH-BK | 1963590000 | H.3 |
| RJ45 tool-free TIA-A printing | IE-PS-RJ45-FH-BK-A | 1132040000 | H.2 |
| RJ45 tool-free TIA-B printing | IE-PS-RJ45-FH-BK-B | 1132050000 | H.2 |
| SC-RJ for 1 mm POF fibres | IE-PS-SCRJ1-POF | 1206720000 | H.4 |
| SC-RJ for multimode fibres 50/62.5 µm | IE-PS-SCRJ1-MM | 1206730000 | H.4 |
| SC-RJ for singlemode fibres 9 µm | IE-PS-SCRJ1-SM | 1206740000 | H.4 |

### IP 20 assembled data cables

| Description | Type | Order No. | See page |
|---|---|---|---|
| RJ45 patch cables - see CabinetLine | | | |
| SC-RJ zipcord patch cable - POF - 1 m | IE-FPOZ2EE0001MSJ0SJ0-X | 1273430010 | M.12 |
| SC-RJ zipcord patch cable - POF - 3 m | IE-FPOZ2EE0003MSJ0SJ0-X | 1273430030 | M.12 |
| SC-RJ zipcord patch cable - POF - 5 m | IE-FPOZ2EE0005MSJ0SJ0-X | 1273430050 | M.12 |
| SC-RJ zipcord patch cable - POF - 10 m | IE-FPOZ2EE0010MSJ0SJ0-X | 1273430100 | M.12 |
| 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 | H.10 |
| RJ45 Module TIA-A printing | IE-TO-RJ45-FJ-A | 8946930000 | H.8 |
| RJ45 Module TIA-B printing | IE-TO-RJ45-FJ-B | 8946940000 | H.8 |
| SC-RJ POF coupling / multimode | IE-TO-SCRJ-MM | 8946990000 | H.12 |
| SC-RJ singlemode coupling | IE-TO-SCRJ-SM | 8947000000 | H.12 |

### 19" patch panel

| Description | Type | Order No. | See page |
|---|---|---|---|
| fitted with 24 RJ45 modules TIA-A printing | IE-PPA19-24P-RJ45-FJ-A | 1049910000 | H.14 |
| fitted with 24 RJ45 modules TIA-B printing | IE-PPA19-24P-RJ45-FJ-B | 1049920000 | H.14 |
| fitted with 24 RJ45 couplings | IE-PPA19-24P-RJ45-C | 1049930000 | H.14 |
| Other inserts from page J.42 | | | |

### IP 65 service interface

| Description | Type | Order No. | See page |
|---|---|---|---|
| FrontCom® Micro RJ45 coupling | IE-FCM-RJ45-C | 1018790000 | I.3 |
| FrontCom® Micro RJ45 module TIA-A printing | IE-FCM-RJ45-FJ-A | 1018810000 | I.2 |
| FrontCom® Micro RJ45 module TIA-B printing | IE-FCM-RJ45-FJ-B | 1018820000 | I.2 |

### IP 67 flange data

| Description | Type | Order No. | See page |
|---|---|---|---|
| Bayonet flange metal RJ45 coupling | IE-BS-V01M-RJ45-C | 1963470000 | J.13 |
| Bayonet flange metal RJ45 module TIA-A printing | IE-BS-V01M-RJ45-FJ-A | 1963480000 | J.13 |
| Bayonet flange plastic RJ45 coupling | IE-BS-V01P-RJ45-C | 1012370000 | J.19 |
| Bayonet flange metal RJ45 module TIA-A printing | IE-BS-V01P-RJ45-FJ-A | 1012380000 | J.19 |
| Bayonet flange metal SC-RJ POF / multimode | IE-BS-V01M-SCRJ-MM | 1221010000 | J.15 |
| Bayonet flange metal SC-RJ singlemode | IE-BS-V01M-SCRJ-SM | 1221020000 | J.15 |
| Bayonet flange protective cap IP 67 | IE-BP-V01P | 1965700000 | N.20 |
| Other inserts from page J.42 | | | |

### IP 67 data connectors

| Description | Type | Order No. | See page |
|---|---|---|---|
| Bayonet plug metal RJ45 crimped | IE-PS-V01M-RJ45-TH | 1963140000 | J.12 |
| Bayonet plug metal RJ45 tool-free | IE-PS-V01M-RJ45-FH | 1963120000 | J.12 |
| Bayonet plug plastic RJ45 crimped | IE-PS-V01P-RJ45-TH | 1012470000 | J.18 |
| Bayonet plug plastic RJ45 tool-free | IE-PS-V01P-RJ45-FH | 1012490000 | J.18 |
| Bayonet plug metal SC-RJ use POF | IE-PS-V01M-2SC-POF | 1963280000 | J.14 |
| Bayonet plug metal SC-RJ use multimode | IE-PS-V01M-2SC-MM | 1963260000 | J.14 |
| Bayonet plug metal SC-RJ use singlemode | IE-PS-V01M-2SC-SM | 1963300000 | J.14 |
| Bayonet plug protective cap IP 67 | IE-PP-V01P | 1965690000 | N.20 |

## IP 67 assembled data cables

| Description | Type | Order No. | See page |
|---|---|---|---|
| Bayonet metal RJ45 patch cable PUR 1 m | IE-C5ES8UG0010B41B41-E | 1066850000 | L.37 |
| Bayonet metal RJ45 patch cable PUR 2 m | IE-C5ES8UG0020B41B41-E | 1066860000 | L.37 |
| Bayonet metal RJ45 patch cable PUR 5 m | IE-C5ES8UG0050B41B41-E | 1066870000 | L.37 |
| Bayonet metal RJ45 patch cable PUR 10 m | IE-C5ES8UG0100B41B41-E | 1066880000 | L.37 |
| Bayonet plastic RJ45 patch cable PUR 1 m | IE-C5ES8UG0010P41P41-E | 1106010000 | L.37 |
| Bayonet plastic RJ45 patch cable PUR 2 m | IE-C5ES8UG0020P41P41-E | 1106020000 | L.37 |
| Bayonet plastic RJ45 patch cable PUR 5 m | IE-C5ES8UG0050P41P41-E | 1106030000 | L.37 |
| Bayonet plastic RJ45 patch cable PUR 10 m | IE-C5ES8UG0100P41P41-E | 1106040000 | L.37 |
| Other EtherNet/IP cables available on request | | | |

## IP 67 plug-in M12 connectors

M 12 components can be found from page J.36

## IP 65 connection components

| Description | Type | Order No. | See page |
|---|---|---|---|
| Single junction box, plastic | IE-OP-V01P-1S | 1061830000 | K.9 |
| Plastic cable coupling | IE-CC-V01P | 1061820000 | J.20 |
| RJ45 module TIA-A printing | IE-BI-RJ45-FJ-A | 1962850000 | J.44 |
| RJ45 module TIA-B printing | IE-BI-RJ45-FJ-B | 1963840000 | J.44 |

## 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 | L.6 |
| Bulk stock installation cable PVC Cat. 5 SF/UTP from 110 m | IE-C5CS8VG-MW | 8953160000 | L.6 |
| 100 m ring installation cable PUR Cat. 5 SF/UTP | IE-5IC4x2xAWG24/1-PUR | 8813160000 | L.6 |
| Bulk stock installation cable PUR Cat. 5 SF/UTP from 110 m | IE-C5CS8UG-MW | 8944310000 | L.6 |
| 100 m ring connection cable PVC Cat. 5 SF/UTP | IE-5CC4x2xAWG26/7-PVC | 8813190000 | L.8 |
| Bulk stock connection cable PVC Cat. 5 SF/UTP from 110 m | IE-C5ES8VG-MW | 8955490000 | L.8 |
| 100 m ring connection cable PUR Cat. 5 SF/UTP | IE-5CC4x2xAWG26/7-PUR | 8813200000 | L.8 |
| Bulk stock connection cable PUR Cat. 5 SF/UTP from 110 m | IE-C5ES8UG-MW | 8938880000 | L.8 |
| Other EtherNet/IP cables available on request | | | |

## Bulk stock fibre-optic cable

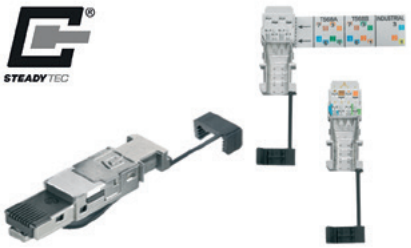
| Description | Type | Order No. | See page |
|---|---|---|---|
| Multimode breakout cable 2x50 µm PUR from 50 m | IE-FM5B2UE-MW | 8946000000 | M.5 |
| POF zip-cord cable 2X980/1000 µm TPE, from 50 m | IE-FPOZ2EE-MW | 1242820000 | M.6 |
| POF breakout cable 2X980/1000 µm TPE, from 50 m | IE-FPOD2UE-MW | 1172280000 | M.6 |

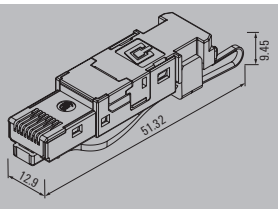
# IP 20 plug-in connectors and mounting rail outlets
## Overview

## RJ45 plug, tool-free

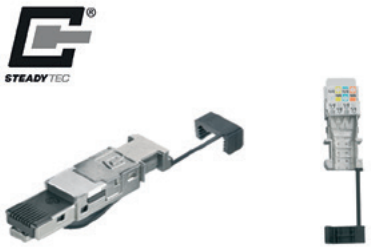
- Cat. $6_A$ (8-wire) / Cat. 5 (4-wire) for PROFINET
- Multi-port-compatible
- IP 20

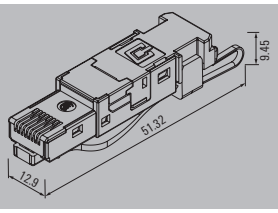
### 8-wire






### 4-wire for PROFINET






## Technical data

| | | |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 20 | IP 20 |
| Housing main material | Zinc diecast | Zinc diecast |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | 0.48 mm / 0.76 mm |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | 0.4 mm / 0.64 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Insulation diameter, min. / max. | 0.85 mm / 1.6 mm | 0.85 mm / 1.6 mm |
| Sheath diameter, min. / max. | 5.5 mm / 8.5 mm | 5.5 mm / 8.5 mm |
| Contact surface | Gold over nickel | Gold over nickel |
| Shielding | 360° all-round enclosure | 360° all-round enclosure |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Insulation resistance | > 500 MΩ | > 500 MΩ |
| Dielectric strength, contact contact | ≥ 1000 V DC | ≥ 1000 V DC |
| Dielectric strength, contact shield | ≥ 1500 V DC | ≥ 1500 V DC |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| Current-carrying capacity at 50 °C | 1 A | 1 A |
| Speed | 10 GBit | 100 MBit |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Approvals | | GOSTME25 |
| **Note** | Approvals available on request | |

## Ordering data

| Plug | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| with tear-off flags: EIA / TIA 568-A/B/PROFINET | IE-PS-RJ45-FH-BK | 10 | **1963600000** | | | |
| with printing: PROFINET | | | | IE-PS-RJ45-FH-BK-P | 10 | **1132060000** |
| with printing: EIA / TIA 568-A | IE-PS-RJ45-FH-BK-A | 10 | **1132040000** | | | |
| with printing: EIA/TIA 568-B | IE-PS-RJ45-FH-BK-B | 10 | **1132050000** | | | |
| **Note** | | | | | | |

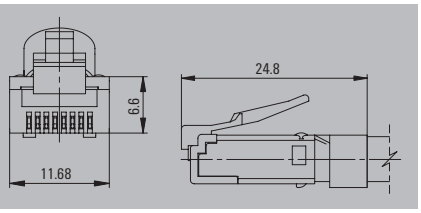
## Accessories

| Strain relief | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| blue | IE-CR-IP20-RJ45-FH-BU | 10 | **1963080000** | IE-CR-IP20-RJ45-FH-BU | 10 | **1963080000** |
| orange | IE-CR-IP20-RJ45-FH-OG | 10 | **1963070000** | IE-CR-IP20-RJ45-FH-OG | 10 | **1963070000** |
| green | IE-CR-IP20-RJ45-FH-GN | 10 | **1963100000** | IE-CR-IP20-RJ45-FH-GN | 10 | **1963100000** |
| grey | IE-CR-IP20-RJ45-FH-GY | 10 | **1963060000** | IE-CR-IP20-RJ45-FH-GY | 10 | **1963060000** |
| white | IE-CR-IP20-RJ45-FH-WH | 10 | **1963050000** | IE-CR-IP20-RJ45-FH-WH | 10 | **1963050000** |
| yellow | IE-CR-IP20-RJ45-FH-YE | 10 | **1963090000** | IE-CR-IP20-RJ45-FH-YE | 10 | **1963090000** |
| **Tools** | | | | | | |
| Optional pressing tool | PWZ RJ45 | 1 | **1118040000** | PWZ RJ45 | 1 | **1118040000** |
| **Note** | | | | | | |

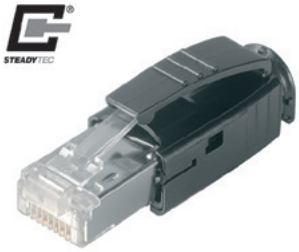
## RJ45 crimp plug

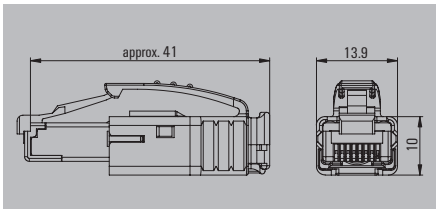
- Cat. 6
- With kink prevention
- With protective mechanism for locking lever

## 8-wire, housing 1-part




## 8-wire, housing 2-part






## Technical data

| | | |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 20 | IP 20 |
| Connection diameter, flexible, min. / max. | 0.46 mm / 0.61 mm | 0.46 mm / 0.61 mm |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 24 | AWG 27 / AWG 24 |
| Connection diameter, solid, min. / max. | 0.36 mm / 0.51 mm | 0.36 mm / 0.51 mm |
| Connection cross-section, solid, min. / max. | AWG 27 / AWG 24 | AWG 27 / AWG 24 |
| Insulation cross-section, max. | 1.02 mm | 1.05 mm |
| Sheath diameter, min. / max. | | 5 mm / 7.3 mm |
| Shielding | 360° all-round enclosure | 360° all-round enclosure |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| Bending protection sleeve material | Polyamide PA6, UL 94-V0 | Polycarbonate PC, UL 94 V-0 |
| Material insulator | Polycarbonate PC, UL 94 V-0 | Polycarbonate PC, UL 94 V-0 |
| Contact material / Contact surface | Phosphorus bronze / Gold-plated | Phosphorus bronze / Gold-plated |
| Shielding material | 0.5 mm brass, 2 µm nickel | 0.5 mm brass, 2 µm nickel |
| Cable pull-out force, min. | 89 N | 89 N |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Insulation resistance | 500 MΩ | 500 MΩ |
| Dielectric strength, contact contact | ≤ 1000 V DC | ≤ 1000 V DC |
| Dielectric strength, contact shield | ≤ 1500 V DC | ≤ 1500 V DC |
| Current-carrying capacity at 50 °C | 1 A | 1 A |
| PoE / PoE+ | conforming to IEEE 802.3af | conforming to IEEE 802.3af |
| Approvals | GOSTME25 | CURUS; GOSTME25 |
| **Note** | | |

## Ordering data

| Plug | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| with kink prevention; sheath diameter 5.5 - 6.2 mm | IE-P63 | 10 | **8813110000** | | | |
| with kink prevention; sheath diameter 6.2 - 7.1 mm | IE-P70 | 10 | **8813120000** | | | |
| with kink prevention sleeve. black | | | | IE-PS-RJ45-TH-BK | 10 | **1963590000** |
| without kink prevention sleeve | | | | IE-PM-RJ45-TH | 100 | **1963580000** |
| **Note** | | | | | | |

## Accessories

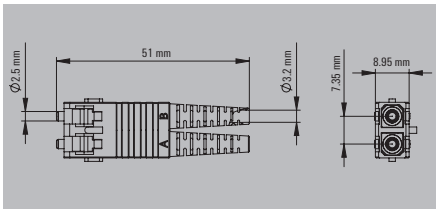
| Kink prevention sleeve | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| blue | | | | IE-PH-RJ45-TH-BU | 10 | **1962470000** |
| orange | | | | IE-PH-RJ45-TH-OG | 10 | **1962450000** |
| black | | | | IE-PH-RJ45-TH-BK | 10 | **1962500000** |
| green | | | | IE-PH-RJ45-TH-GN | 10 | **1962490000** |
| grey | | | | IE-PH-RJ45-TH-GY | 10 | **1962440000** |
| white | | | | IE-PH-RJ45-TH-WH | 10 | **1962430000** |
| yellow | | | | IE-PH-RJ45-TH-YE | 10 | **1962480000** |
| **Tools** | | | | | | |
| Crimping tool | TT 8 RS MP 8 | 1 | **9202800000** | TT 8 RS MP 8 | 1 | **9202800000** |
| **Note** | | | | | | |

# IP 20 plug-in connectors

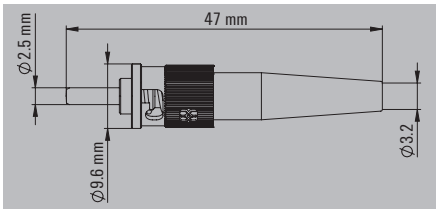
## FO connector

- IP 20

## SC-RJ




## ST




## Technical data

| | SC-RJ | ST |
|---|---|---|
| Protection degree | IP 20 | IP 20 |
| Plugging cycles | 1000 | 1000 |
| Ambient temperature (operational) | -20 °C...+80 °C | -20 °C...+80 °C |
| Connector standard | IEC 61754-24 | IEC 61754-2 |
| Individual wire diameter, min. / max. | 0.6 mm...1.4 mm | |
| Crimp barrel material | Copper, nickel-plated | Copper, nickel-plated |
| Pressure spring material | Rustless steel | |
| Ferrule material | Zirconia, Hole 125.5 µm | |
| Dust protection cap material | TPE | TPE |
| Bending protection sleeve material | TPE | TPE |
| Cable pull-out force, min. | 100 N | 100 N |
| Housing main material | PC UL 94 V0 | Zinc diecast |
| Housing material, insert | Zinc diecast | |
| Humidity | 0...93 % rel. humidity | |
| Sheath diameter, min. / max. | 2.8 mm / 3 mm | 2.8 mm / 3 mm |
| Approvals | | |
| **Note** | | |

## Ordering data

| | SC-RJ Type | Qty. | Order No. | ST Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Singlemode | IE-PS-SCRJ1-SM | 10 | **1206740000** | | | |
| Multimode | IE-PS-SCRJ1-MM | 10 | **1206730000** | IE-PS-ST-MM | 1 | **1968150000** |
| POF | IE-PS-SCRJ1-POF | 10 | **1206720000** | | | |
| **Note** | | | | | | |

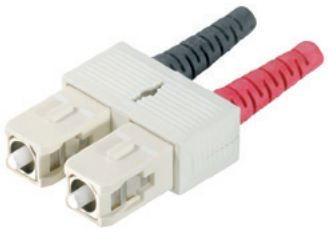
## Accessories

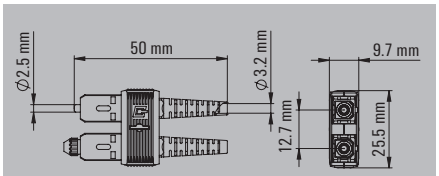
| **Tools** | SC-RJ Type | Qty. | Order No. | ST Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Fibre-optic tool case | | | | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Crimping tool POF | HTX-IE-POF | 1 | **1208870000** | | | |
| Replacement ferrule | IE-SCRJ1-IP20-POF-100 | 100 | **1278420000** | | | |
| **Note** | | | | | | |

## FO connector

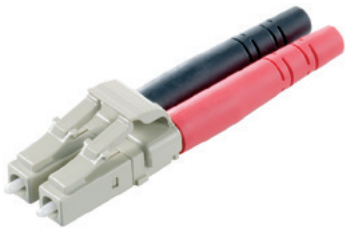
- IP 20

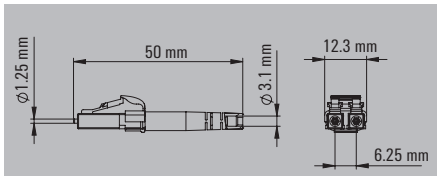
## SC Duplex






## LC duplex






## Technical data

| | | |
|---|---|---|
| Protection degree | IP 20 | IP 20 |
| Plugging cycles | 1000 | 1000 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61754-4 | IEC 61754-20 |
| Individual wire diameter, min. / max. | 0.6 mm...1.4 mm | 0.6 mm...1.4 mm |
| Crimp barrel material | Copper, nickel-plated | Copper, nickel-plated |
| Pressure spring material | Rustless steel | Rustless steel |
| Ferrule material | Zirconia, Hole 127 µm | Zirconia, Hole 127 µm |
| Dust protection cap material | TPE | TPE |
| Bending protection sleeve material | TPE | TPE |
| Cable pull-out force, min. | 100 N | 100 N |
| Housing main material | PC UL 94 V0 | PC UL 94 V0 |
| Housing material, insert | Zinc diecast | Zinc diecast |
| Humidity | 0...93 % rel. humidity | 0...93 % rel. humidity |
| Sheath diameter, min. / max. | 2.8 mm / 3 mm | 2.8 mm / 3 mm |
| Approvals | | |

**Note**

## Ordering data

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

**Note**

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

## Accessories

**Tools**

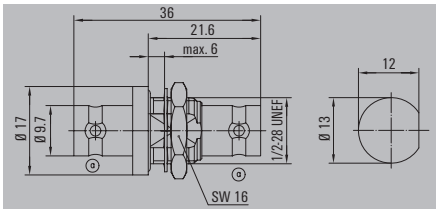
| | Type | Qty. | Order No. |
|---|---|---|---|
| Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Accessory set for LC plugs | | | |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-CTC-SCST-GOF | 1 | **1032030000** |
| | IE-CTC-AS-LC-GOF | 1 | **1033350000** |

**Note**

## Coupling BNC

## BNC




## Technical data

| | |
|---|---|
| Housing main material | Brass, nickel-plated |
| Insulation | PTFE |
| Return loss (attenuation) | 23 dB at 4 GHz, 27 dB at 1 GHz |
| Characteristic impedance | 50 Ω |
| O-Ring | NBR |
| Connector standard | IEC 61169-8 |
| Approvals | |

**Note**

## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-BI-BNC-C | 1 | 1345020000 |

**Note**

## Accessories

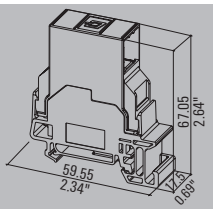
**Note**

## Module RJ45

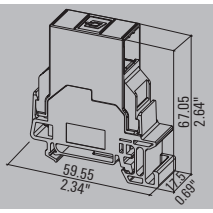
### Outlet direction straight

- Cat. $6_A$
- IP 20
- TS 35

### 8-wire




### 4-wire




## Technical data

| | 8-wire | 4-wire |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 20 | IP 20 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Contact surface | Au ≥ 0.8 µm | Au ≥ 0.8 µm |
| Colour | Light Grey | Light Grey |
| Type of mounting | TS 35 | TS 35 |
| Plugging cycles | 750 | 750 |
| Configuration | Switchable volt. connection from module/coupling to mounting rail | Switchable volt. connection from module/coupling to mounting rail |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Temperature range, installation, min. / max. | -25 °C...70 °C | -25 °C...70 °C |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | 0.48 mm / 0.76 mm |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | 0.4 mm / 0.64 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| **Electrical properties** | | |
| PoE / PoE+ | conforming to IEEE 802.3af | conforming to IEEE 802.3af |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Current-carrying capacity at 50 °C | 1 A | 1 A |
| Dielectric strength, contact contact | ≥ 1000 V DC | ≥ 1000 V DC |
| Dielectric strength, contact shield | ≥ 1500 V DC | ≥ 1500 V DC |
| Insulation resistance | 500 MΩ | 500 MΩ |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | Weidmüller Cat. 7 AWG 27/7 LSZH cable can be connected | |

## Ordering data

| | 8-wire Type | 8-wire Qty. | 8-wire Order No. | 4-wire Type | 4-wire Qty. | 4-wire Order No. |
|---|---|---|---|---|---|---|
| Outlet RJ45 A-coded | IE-TO-RJ45-FJ-A | 10 | **8946930000** | | | |
| Outlet RJ45 B-coded | IE-TO-RJ45-FJ-B | 10 | **8946940000** | | | |
| Outlet RJ45 PROFINET-coded | | | | IE-TO-RJ45-FJ-P | 10 | **8946950000** |
| **Note** | | | | | | |

## Accessories

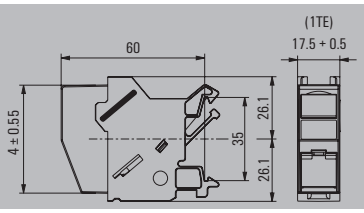
| Markers | 8-wire Type | 8-wire Qty. | 8-wire Order No. | 4-wire Type | 4-wire Qty. | 4-wire Order No. |
|---|---|---|---|---|---|---|
| 9*11 mm. white | ESG 9/11 K MC NE WS | 200 | **1857440000** | ESG 9/11 K MC NE WS | 200 | **1857440000** |
| **Note** | | | | | | |

## Module RJ45

### Outlet direction diagonal

- Cat. 6
- IP 20
- TS 35

### 8-wire




## Technical data

| | |
|---|---|
| Category | Cat.6 (ISO/IEC 11801) |
| Protection degree | IP 20 |
| Housing main material | PA 66, UL 94: V-0 |
| Contact surface | |
| Colour | Light Grey |
| Type of mounting | TS 35 |
| Plugging cycles | 750 |
| Configuration | Inspection window for labelling<br>1 TE pitch dimension acc. to DIN 43880. insta-compatible |
| Ambient temperature (operational) | -25 °C...+70 °C |
| Temperature range, installation, min. / max. | |
| Connector standard | IEC 60603-7-5 |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.48 mm |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 26 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 |
| **Electrical properties** | |
| PoE / PoE+ | conforming to IEEE 802.3at |
| Contact resistance | ≤ 20 mΩ |
| Current-carrying capacity at 50 °C | 1 A |
| Dielectric strength, contact contact | ≥ 1000 V DC |
| Dielectric strength, contact shield | ≥ 1500 V DC |
| Insulation resistance | 500 MΩ |
| Approvals | GERMLLOYD; GOSTME25 |
| **Note** | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| Outlet RJ45 A-coded | IE-XM-RJ45/IDC | 1 | **8808360000** |
| Outlet RJ45 B-coded | IE-XM-RJ45/IDC-B | 1 | **8891980000** |

**Note**

## Accessories

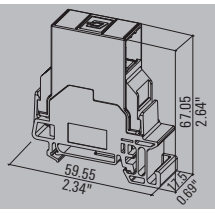
| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Marking tag | IE-DM | 50 | **8813500000** |

**Note**

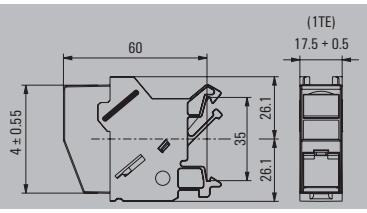
## Coupling RJ45, 8-wire

- Cat. $6_A$
- IP 20
- TS 35

## Outlet direction straight




## Outlet direction diagonal




## Technical data

| | | |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.6 (ISO/IEC 11801) |
| Protection degree | IP 20 | IP 20 |
| Housing main material | PA UL 94 V0 | PA 66, UL 94: V-0 |
| Contact material / Contact surface | Spring steel, Ni 1.2 µm / Au ≥ 0.8 µm | |
| Colour | Light Grey | Light Grey |
| Type of mounting | TS 35 | TS 35 |
| Plugging cycles | 750 | 750 |
| Configuration | Switchable volt. connection from module/coupling to mounting rail | Inspection window for labelling<br>1 TE pitch dimension acc. to DIN 43880. insta-compatible |
| Ambient temperature (operational) | -40 °C...+70 °C | -25 °C...+70 °C |
| Temperature range, installation, min. / max. | -25 °C...70 °C | |
| Humidity | 0...93 % rel. humidity | |
| Shock resistance acc. to IEC 60512-4 | 250 $ms^{-2}$ | |
| Vibration resistance acc. to IEC 60512-4 | 50 $ms^{-2}$ sinusoidal (9 – 500 Hz) | |
| Housing material, insert | Zinc diecast | |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-5 |
| **Electrical properties** | | |
| PoE / PoE+ | conforming to IEEE 802.3af | conforming to IEEE 802.3at |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Current-carrying capacity at 50 °C | 1 A | 1 A |
| Dielectric strength, contact contact | ≥ 1000 V DC | ≥ 1000 V DC |
| Dielectric strength, contact shield | ≥ 1500 V DC | ≥ 1500 V DC |
| Insulation resistance | 500 MΩ | 500 MΩ |
| Approvals | GOSTME25 | GERMLLOYD; GOSTME25 |
| **Note** | | |

## Ordering data

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

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

**Note**

## Accessories

**Markers**

Marking tag
9*11 mm. white

| Type | Qty. | Order No. |
|---|---|---|
| ESG 9/11 K MC NE WS | 200 | **1857440000** |

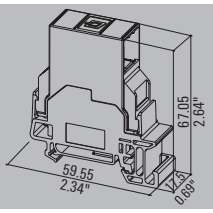
| Type | Qty. | Order No. |
|---|---|---|
| IE-DM | 50 | **8813500000** |

**Note**

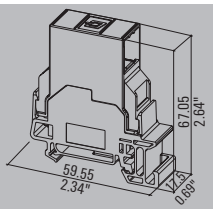
## USB connection

- IP 20
- TS 35

## USB A




## USB AB




## Technical data

| | | |
|---|---|---|
| Protection degree | IP 20 | IP 20 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Colour | Light Grey | Light Grey |
| Type of mounting | TS 35 | TS 35 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Temperature range, installation, min. / max. | -25 °C...70 °C | -25 °C...70 °C |
| Connector standard | IEC 61076-3-107 | IEC 61076-3-107 |
| Connection 1 / 2 | USB A / USB A | USB A / USB B |
| Approvals | GOSTME25 | |
| **Note** | | |

## Ordering data

| USB | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | IE-TO-USB | 10 | **8946960000** | IE-TO-USB-AB | 1 | **1438180000** |
| **Note** | | | | | | |

## Accessories

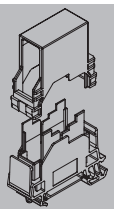
| Markers | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 9*11 mm. white | ESG 9/11 K MC NE WS | 200 | **1857440000** | ESG 9/11 K MC NE WS | 200 | **1857440000** |
| | | | | | | |
| | | | | | | |

**Note**

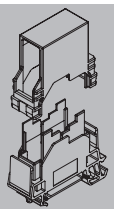
## Coupling fibre-optic

- IP 20
- TS 35

## SC duplex



## SC-RJ



## Technical data

| | | |
|---|---|---|
| Protection degree | IP 20 | IP 20 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Colour | Light Grey | Light Grey |
| Type of mounting | TS 35 | TS 35 |
| Plugging cycles | 1000 | 1000 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Temperature range, installation, min. / max. | -25 °C...70 °C | -25 °C...70 °C |
| Connector standard | IEC 61754-4 | IEC 61754-24 |
| Approvals | GOSTME25 | GOSTME25 |

**Note**

## Ordering data

| Fibre-optic | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Singlemode | IE-TO-SCD-SM | 10 | **8946980000** | IE-TO-SCRJ-SM | 10 | **8947000000** |
| Multimode/POF | IE-TO-SCD-MM | 10 | **8946970000** | IE-TO-SCRJ-MM | 10 | **8946990000** |

**Note**

## Accessories

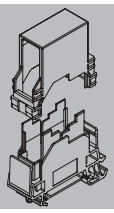
| Markers | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 9*11 mm. white | ESG 9/11 K MC NE WS | 200 | **1857440000** | ESG 9/11 K MC NE WS | 200 | **1857440000** |

**Note**

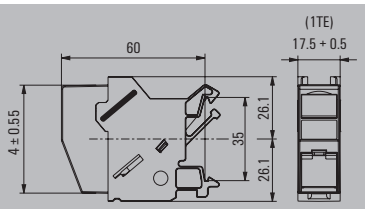
## Coupling fibre-optic

- IP 20
- TS 35

## LC Duplex



## ST




## Technical data

| | | |
|---|---|---|
| Protection degree | IP 20 | IP 20 |
| Housing main material | PA UL 94 V0 | PA 66, UL 94: V-0 |
| Colour | Light Grey | Light Grey |
| Type of mounting | TS 35 | TS 35 |
| Plugging cycles | 1000 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -25 °C...+70 °C |
| Temperature range, installation, min. / max. | -25 °C...70 °C | |
| Connector standard | IEC 61754-20 | IEC 61754-2 |
| Approvals | GOSTME25 | |

**Note**

## Ordering data

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

**Note**

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

## Accessories

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Marking tag | | | |
| 9*11 mm. white | ESG 9/11 K MC NE WS | 200 | **1857440000** |

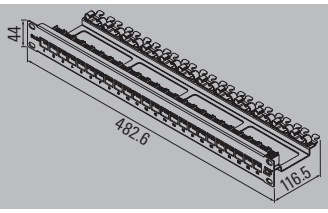
| Type | Qty. | Order No. |
|---|---|---|
| IE-DM | 50 | **8813500000** |

**Note**

## RJ45

- Cat. $6_A$
- IP 20

## RJ45




## Technical data

| | |
|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 20 |
| Housing main material | Powder-coated steel sheet |
| Colour | Light Grey |
| Plugging cycles | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Approvals | |
| **Note** | |

## Ordering data

| 19" Patch Panel | Type | Qty. | Order No. |
|---|---|---|---|
| with 24 RJ45 couplings | IE-PPA19-24P-RJ45-C | 1 | **1049930000** |
| with 24 RJ45 modules A | IE-PPA19-24P-RJ45-FJ-A | 1 | **1049910000** |
| with 24 RJ45 modules B | IE-PPA19-24P-RJ45-FJ-B | 1 | **1049920000** |
| with 24 RJ45 adapters. without inserts | IE-PPA19-24P | 1 | **1049270000** |

**Note**

## Accessories

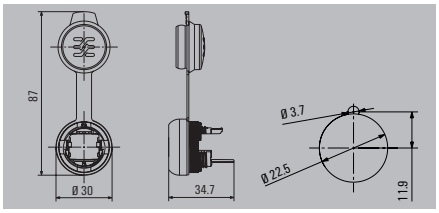
| Flange insert | Type | Qty. | Order No. |
|---|---|---|---|
|  RJ45 EIA/TIA T568 A | IE-BI-RJ45-FJ-A | 10 | **1962850000** |
| RJ45 EIA/TIA T568 B | IE-BI-RJ45-FJ-B | 10 | **1963840000** |
| RJ45 PROFINET | IE-BI-RJ45-FJ-P | 10 | **1963830000** |
| USB coupling. type A | IE-BI-USB-A | 10 | **1019570000** |

**Note**

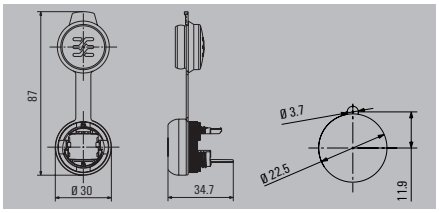
# IP 65 service interface
## Overview

## FrontCom® Micro RJ45 Module

### 8-wire




### 4-wire




## Technical data

| | 8-wire | 4-wire |
|---|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 65 according to DIN EN 60529 | IP 65 according to DIN EN 60529 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Contact surface | Gold over nickel | Gold over nickel |
| Colour | Black | Black |
| Shielding | 360° shield contact | 360° shield contact |
| Type of mounting | Cabinet, Distribution box | Cabinet, Distribution box |
| Plugging cycles | 750 | 750 |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| Connection 1 / 2 | RJ45 / IDC | RJ45 / IDC |
| Wall thickness, min. / max. | 1 mm / 3 mm | 1 mm / 3 mm |
| Dust protection cap material | EPDM | EPDM |
| PoE / PoE+ | conforming to IEEE 802.3af | conforming to IEEE 802.3af |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Approvals | CULUS | CULUS |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| PROFINET module | | | |
| TIA-A module | IE-FCM-RJ45-FJ-A | 10 | **1018810000** |
| TIA-B module | IE-FCM-RJ45-FJ-B | 10 | **1018820000** |

| Type | Qty. | Order No. |
|---|---|---|
| IE-FCM-RJ45-FJ-P | 10 | **1018830000** |

**Note**

## Accessories

**Fixing tool**

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

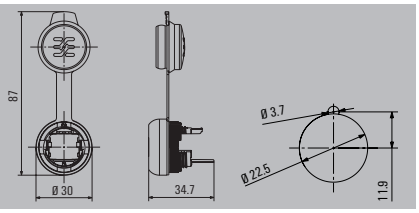
**Markers**

| | Type | Qty. | Order No. |
|---|---|---|---|
| SwitchMark markers white | SM 27/18 MC NE WS | 80 | **1699860000** |
| SwitchMark holder | SM-H 27/18 SW | 25 | **1716630000** |

**Note**

## FrontCom® Micro RJ45
## Coupling

### 8-wire




### Technical data

| | |
|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 65 according to DIN EN 60529 |
| Housing main material | PA UL 94 V0 |
| Contact surface | Gold over nickel |
| Colour | Black |
| Shielding | 360° shield contact |
| Type of mounting | Cabinet, Distribution box |
| Plugging cycles | 750 |
| Connector standard | IEC 60603-7-51 |
| Connection 1 / 2 | RJ45 / RJ45 |
| Wall thickness, min. / max. | 1 mm / 3 mm |
| Dust protection cap material | EPDM |
| PoE / PoE+ | conforming to IEEE 802.3af |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Approvals | CULUS |
| **Note** | |

### Ordering data

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

**Note**

### Accessories

**Fixing tool**

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

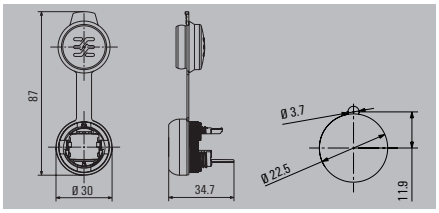
**Markers**

| | Type | Qty. | Order No. |
|---|---|---|---|
| SwitchMark markers white | SM 27/18 MC NE WS | 80 | **1699860000** |
| SwitchMark holder | SM-H 27/18 SW | 25 | **1716630000** |

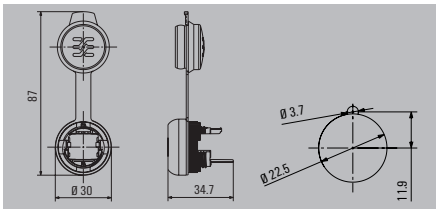
**Note**

## FrontCom® Micro USB

## Coupling AA




## Coupling AB




## Technical data

| | FrontCom® Micro USB | Coupling AA | Coupling AB |
|---|---|---|---|
| Ambient temperature (operational) | | -40 °C...+70 °C | -40 °C...+70 °C |
| Protection degree | | IP 65 according to DIN EN 60529 | IP 65 according to DIN EN 60529 |
| Housing main material | | PA UL 94 V0 | PA UL 94 V0 |
| Colour | | Black | Black |
| Shielding | | 360° shield contact | 360° shield contact |
| Type of mounting | | Cabinet, Distribution box | Cabinet, Distribution box |
| Connector standard | | IEC 61076-3-107 | IEC 61076-3-107 |
| Connection 1 / 2 | | USB A / USB A | USB A / USB B |
| Dust protection cap material | | EPDM | EPDM |
| Wall thickness, min. / max. | | 1 mm / 3 mm | 1 mm / 3 mm |
| Approvals | | | CULUS |
| **Note** | | Approvals available on request | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| USB 2.0 | IE-FCM-USB-A | 10 | **1018840000** |
| USB 3.0 | IE-FCM-USB-3.0-A | 10 | **1427960000** |

**Note**

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

## Accessories

**Fixing tool**

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

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

**Markers**

| | Type | Qty. | Order No. |
|---|---|---|---|
| SwitchMark markers white | SM 27/18 MC NE WS | 80 | **1699860000** |
| SwitchMark holder | SM-H 27/18 SW | 25 | **1716630000** |

| Type | Qty. | Order No. |
|---|---|---|
| SM 27/18 MC NE WS | 80 | **1699860000** |
| SM-H 27/18 SW | 25 | **1716630000** |

**Note**

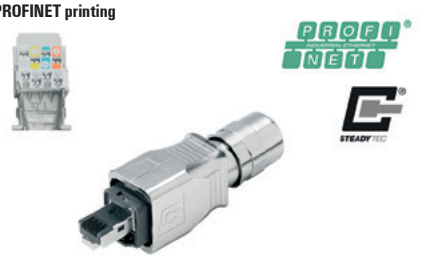
# IP 67 plug-in connectors
## Overview

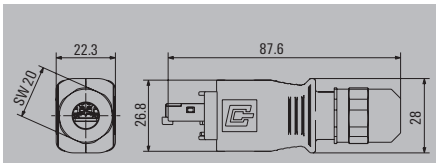
## Plug PushPull V14 - RJ45

- 4- and 8-wire, RJ45 plugs that can be assembled on-site with colour coding on the plug

### without anti-kink prevention, 4-wire

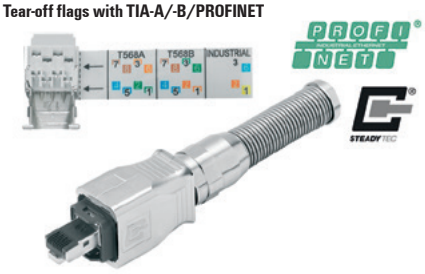
**PROFINET printing**

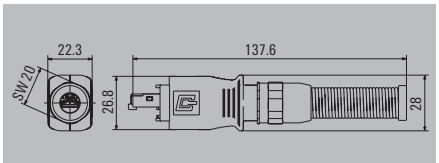





### with anti-kink protection, 8-wire

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




## Technical data

| | | |
|---|---|---|
| Category | Cat.5 (ISO/IEC 11801) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact surface | Gold over nickel | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 60603-7-51 | IEC 61076-3-117 Var. 14, IEC 60603-7-51 |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | 0.48 mm / 0.76 mm |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | 0.4 mm / 0.64 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | Other approvals for individual parts of the set available | Other approvals for individual parts of the set available |

## Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| RJ45 tool-free | IE-PS-V14M-RJ45-FH-P | 10 | **1012170000** |
| **Note** | | | |

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

## Ordering data - Empty housings

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

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

## Accessories

| Dust protection cap | Type | Qty. | Order No. |
|---|---|---|---|
|  | IE-PP-V14P | 10 | **1058280000** |

| Type | Qty. | Order No. |
|---|---|---|
| IE-PP-V14P | 10 | **1058280000** |

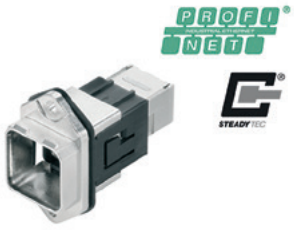
| | | |
|---|---|---|
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

## PushPull V14 - RJ45 flange

### Module

### 4-wire

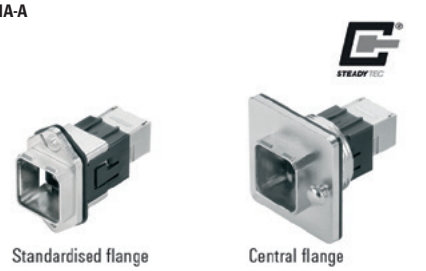
**PROFINET printing**



Standardised flange

### 8-wire

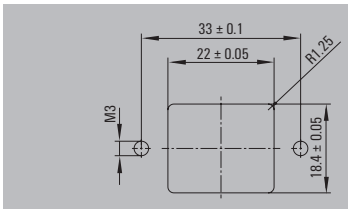
**TIA-A**

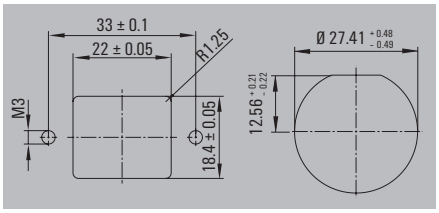


Standardised flange



Central flange




## Technical data

| | | |
|---|---|---|
| Category | Cat.5 (ISO/IEC 11801) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact surface | Gold over nickel | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 60603-7-51 | IEC 61076-3-117 Var. 14, IEC 60603-7-51 |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | 0.48 mm / mm |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | 0.4 mm / 0.64 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | Other approvals for individual parts of the set available | Other approvals for individual parts of the set available |

## Ordering data - Sets

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Standardised flange | IE-BSS-V14M-RJ45-FJ-P | 10 | **1085260000** | IE-BSS-V14M-RJ45-FJ-A | 10 | **1012320000** |
| | | | | IE-BSC-V14M-RJ45-FJ-A | 10 | **1058270000** |

**Note**

## Ordering data - Empty housings

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Central flange | IE-BHC-V14M-RJA | 10 | **1047950000** | IE-BHC-V14M-RJA | 10 | **1047950000** |
| Standardised flange | IE-BHS-V14M-RJA | 10 | **1011540000** | IE-BHS-V14M-RJA | 10 | **1011540000** |
| Device flange | IE-BHD-V14M | 10 | **1047940000** | IE-BHD-V14M | 10 | **1047940000** |

**Note**

## Accessories

**Dust protection cap**

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

**Note**

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

Plug inserts can also be ordered separately, see Inserts

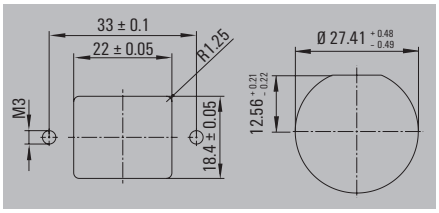
## PushPull V14 - RJ45 flange

## Coupling

### 8-wire

Standardised flange

Central flange




## Technical data

| | |
|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 |
| Housing main material | Zinc diecast |
| Contact surface | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm |
| Plugging cycles | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 60603-7-51 |
| Connection diameter, flexible, min. / max. | |
| Connection cross-section, flexible, min. / max. | |
| Connection diameter, solid, min. / max. | |
| Connection cross-section, solid, min. / max. | |
| Approvals | GOSTME25 |
| **Note** | Other approvals for individual parts of the set available |

## Ordering data - Sets

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

**Note**

## Ordering data - Empty housings

| | Type | Qty. | Order No. |
|---|---|---|---|
| Central flange | IE-BHC-V14M-RJA | 10 | **1047950000** |
| Standardised flange | IE-BHS-V14M-RJA | 10 | **1011540000** |
| Device flange | IE-BHD-V14M | 10 | **1047940000** |

**Note**

## Accessories

**Dust protection cap**

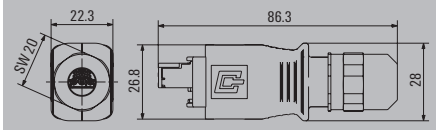
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V14P | 10 | **1058310000** |

**Note**

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

## Plug PushPull V14 - Hybrid

### Without kink prevention




### Technical data

| | |
|---|---|
| Category | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 |
| Housing main material | Zinc diecast |
| Contact surface | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm |
| Plugging cycles | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connection 1 / 2 | Hybrid (Q10) / Crimp |
| Connector standard | IEC 61076-3-117 Var. 14 |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 20 |
| Connection diameter, flexible, min. / max. | 0.08 mm² / 0.75 mm² |
| Rated current (hybrid connector) | 3 A per contact |
| Volume resistance | < 10 mΩ |
| Approvals | GOSTME25 |
| **Note** | Other approvals for individual parts of the set available |

### Ordering data - Sets

| Type | Qty. | Order No. |
|---|---|---|
| IE-PS-V14M-HYB-10P | 10 | **1072910000** |
| **Note** | Order contacts separately | |

### Ordering data - Empty housings

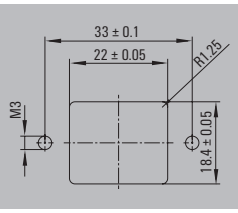
| Type | Qty. | Order No. |
|---|---|---|
| IE-PH-V14M-RJ | 10 | **1011560000** |
| **Note** | | |

### Accessories

| | Type | Qty. | Order No. |
|---|---|---|---|
| **Crimp contacts** | | | |
| 0.33...0.5 mm² | IE-PIC-HYB-S-0,5-300 | 300 | **1096180000** |
| 0.75 mm² | IE-PIC-HYB-S-0,75-300 | 300 | **1068950000** |
| 0.08...0.2 mm² | IE-PIC-HYB-S-0,2-300 | 300 | **1135150000** |
| **Crimping tool** | | | |
| | HTF HYB | 1 | **1119580000** |
| **Cable** | | | |
| Hybrid cable | IE-C5DHAG-MW | 1 | **1172250000** |
| **Dust protection cap** | | | |
| | IE-PP-V14P | 10 | **1058280000** |
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | | |

## Flange PushPull V14 - Hybrid

## Standardised flange




## Technical data

| | |
|---|---|
| Category | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 |
| Housing main material | Zinc diecast |
| Seal material | EPDM |
| Contact surface | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm |
| Plugging cycles | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connection 1 / 2 | Hybrid (Q10) / Crimp |
| Connector standard | IEC 61076-3-117 Var. 14 |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 20 |
| Connection diameter, flexible, min. / max. | 0.08 mm² / 0.75 mm² |
| Rated current (hybrid connector) | 3 A per contact |
| Volume resistance | < 10 mΩ |
| Approvals | GOSTME25 |
| **Note** | Other approvals for individual parts of the set available |

## Ordering data - Sets

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

## Ordering data - Empty housings

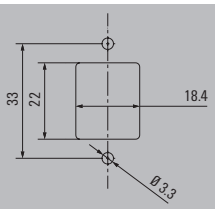
| | Type | Qty. | Order No. |
|---|---|---|---|
| Standardised flange | IE-BHS-V14M-RJA | 10 | **1011540000** |
| **Note** | | | |

## Accessories

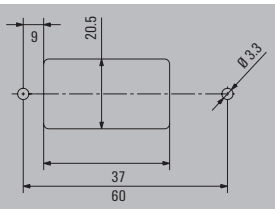
| | Type | Qty. | Order No. |
|---|---|---|---|
| **Crimp contacts** | | | |
| 0.33...0.5 mm² | IE-BIC-HYB-P-0,5-300 | 300 | **1096150000** |
| 0.75 mm² | IE-BIC-HYB-P-0,75-300 | 300 | **1068970000** |
| 0.08...0.2 mm² | IE-BIC-HYB-P-0,2-300 | 300 | **1135160000** |
| **Crimping tool** | | | |
| | HTF HYB | 1 | **1119580000** |
| **Cable** | | | |
| Hybrid cable | IE-C5DHAG-MW | 1 | **1172250000** |
| **Dust protection cap** | | | |
| | IE-BP-V14P | 10 | **1058310000** |
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | | |

## V14 flange adapter

### Straight




### Angled




## Technical data

| | Straight | Angled |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Seal material | EPDM | EPDM |
| Type of mounting | 2 screws, M3 | 2 screws, M3 |
| Ambient temperature (operational) | -40...+70 °C | -40...+70 °C |
| **Note** | | |

## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-AD-BHS-V14M-RJA | 1 | **1302000000** |
| Bulkhead inserts must be ordered separately, see Inserts | | |

**Note**

| Type | Qty. | Order No. |
|---|---|---|
| IE-BHS-V14M-RJA-45 | 10 | **1296710000** |
| Bulkhead inserts must be ordered separately, see Inserts | | |

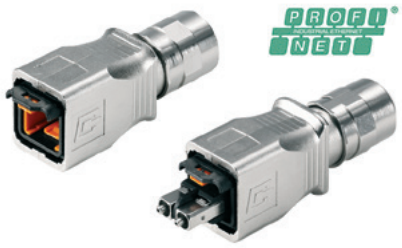
## Accessories

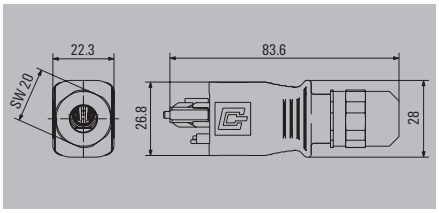
| | | |
|---|---|---|
| | | |

**Note**

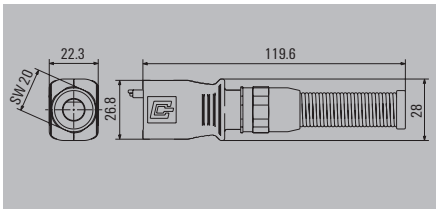
## PushPull V14 plug - fibre-optic

### Without kink prevention






### With kink prevention




## Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40...+70 °C | -40...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 61754-24 | IEC 61076-3-117 Var. 14 |
| Approvals | | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| POF | IE-PS-V14M-2SC-POF | 10 | **1191550000** |
| **Note** | | | |

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

## Ordering data - Empty housings

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

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-PH-V14M-FO-BP | 10 | **1058110000** |
| Only empty housings; order inserts separately | | | |

## Accessories

| | Type | Qty. | Order No. |
|---|---|---|---|
| **Inserts** | | | |
| Multimode | IE-PI-SCRJ-MM | 10 | **1067380000** |
| POF | IE-PI-SCRJ-POF | 10 | **1067410000** |
| Singlemode | IE-PI-SCRJ-SM | 10 | **1067390000** |
| **Dust protection cap** | | | |
| | IE-PP-V14P | 10 | **1058280000** |
| **Tools** | | | |
| Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** |
| POF tool set | TOOL SET IE-POF | 1 | **1208930000** |
| **Replacement ferrule** | | | |
| | IE-SCRJ-IP67-POF-100 | 100 | **1278430000** |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-PI-SCRJ-MM | 10 | **1067380000** |
| | IE-PI-SCRJ-POF | 10 | **1067410000** |
| | IE-PI-SCRJ-SM | 10 | **1067390000** |
| | IE-PP-V14P | 10 | **1058280000** |
| | IE-CTC-SCST-GOF | 1 | **1032030000** |
| | TOOL SET IE-POF | 1 | **1208930000** |
| | IE-SCRJ-IP67-POF-100 | 100 | **1278430000** |

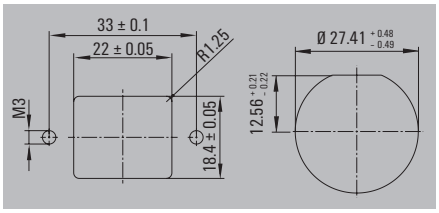
| | |
|---|---|
| **Note** | Plug inserts can also be ordered separately, see Inserts |

## Flange PushPull V14 - fibre-optic

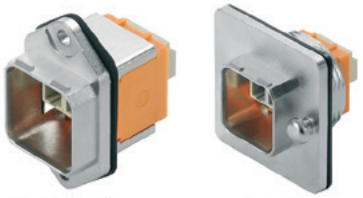
### SC-RJ


Standardised flange

Central flange

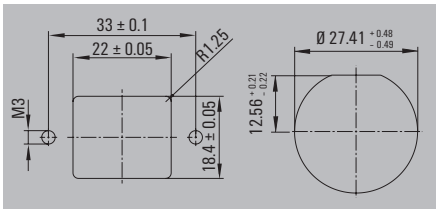



### LC Duplex



Standardised flange

Central flange




## Technical data

| | | |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Plugging cycles | 500 | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Insertion loss | ≤ 0.5 dB | ≤ 0.5 dB |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 61754-24 | IEC 61076-3-117 Var. 14, IEC 61754-20 |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Central flange Singlemode | IE-BSC-V14M-SCRJ-SM-C | 10 | **1062600000** | IE-BSC-V14M-LCD-SM-C | 10 | **1062620000** |
| Standardised flange Singlemode | IE-BSS-V14M-SCRJ-SM-C | 10 | **1058140000** | IE-BSS-V14M-LCD-SM-C | 10 | **1058150000** |
| Central flange Multimode | IE-BSC-V14M-SCRJ-MM-C | 10 | **1062590000** | IE-BSC-V14M-LCD-MM-C | 10 | **1062610000** |
| Standardised flange Multimode | IE-BSS-V14M-SCRJ-MM-C | 10 | **1058120000** | IE-BSS-V14M-LCD-MM-C | 10 | **1058130000** |
| **Note** | Multimode also suitable for POF | | | | | |

## Ordering data - Empty housings

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Device flange | IE-BHD-V14M | 10 | **1047940000** | IE-BHD-V14M | 10 | **1047940000** |
| **Note** | | | | | | |

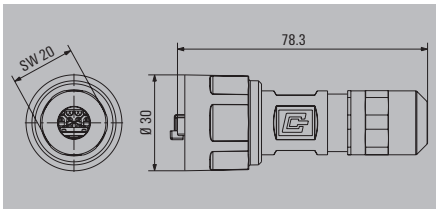
## Accessories

| Dust protection cap | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
|  | IE-BP-V14P | 10 | **1058310000** | IE-BP-V14P | 10 | **1058310000** |
| | | | | | | |
| | | | | | | |

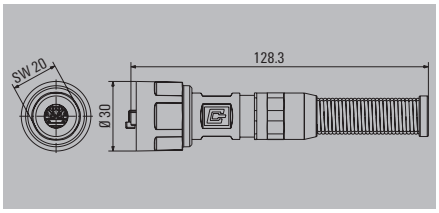
| | | |
|---|---|---|
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

## Plug bayonet V1 Metal - RJ45

### Without kink prevention


### With kink prevention


## Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact surface | Gold over nickel | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 24 | AWG 27 / AWG 24 |
| Connection diameter, flexible, min. / max. | 0.46 mm / 0.61 mm | 0.46 mm / 0.61 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.36 mm / 0.51 mm | 0.36 mm / 0.51 mm |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 60603-7-51 | IEC 61076-3-106 Var. 1, IEC 60603-7-51 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| RJ45 tool-free, AWG 26-22, TIA-A/-B/-PROFINET | IE-PS-V01M-RJ45-FH | 10 | **1963120000** | IE-PS-V01M-RJ45-FH-BP | 10 | **1963130000** |
| RJ45 Crimp, AWG 27-24 | IE-PS-V01M-RJ45-TH | 10 | **1963140000** | IE-PS-V01M-RJ45-TH-BP | 10 | **1963150000** |
| **Note** | | | | | | |

## Ordering data - Empty housings

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| | IE-PH-V01M | 10 | **1962550000** | IE-PH-V01M-BP | 10 | **1962560000** |
| **Note** | | | | | | |

## Accessories

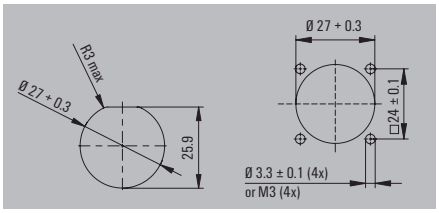
| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| **Dust protection cap** | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
|  Plug housing protective cap | IE-PP-V01P | 10 | **1965690000** | IE-PP-V01P | 10 | **1965690000** |
| | | | | | | |
| | | | | | | |

| Note | Without kink prevention | With kink prevention |
|---|---|---|
| | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

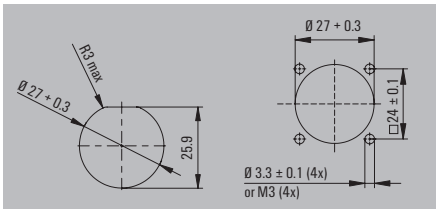
## Flange bayonet V1 Metal - RJ45

### Module

**TIA-A**




### Coupling




### Technical data

| | | |
|---|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact surface | Gold over nickel | Gold over nickel |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 60603-7-51 | IEC 61076-3-106 Var. 1, IEC 60603-7-51 |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

### Ordering data - Sets

| Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|
| IE-BS-V01M-RJ45-FJ-A | 10 | **1963480000** | IE-BS-V01M-RJ45-C | 10 | **1963470000** |

**Note**

### Ordering data - Empty housings

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

**Note**

### Accessories

**Dust protection cap**

Flange-mounted housing protective cap

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

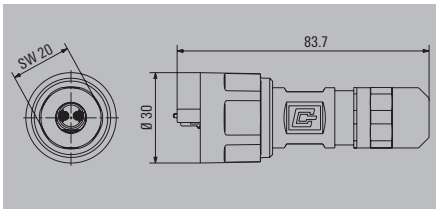
**Note**

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

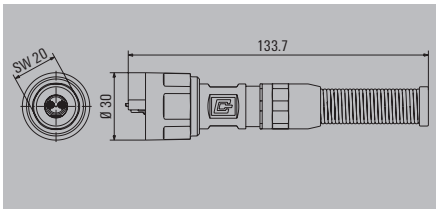
Plug inserts can also be ordered separately. Refer to Inserts.

## Plug bayonet V1 metal - fibre-optic-SC

### Without kink prevention


### With kink prevention


## Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 500 | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 61754-24 | IEC 61076-3-106 Var. 1, IEC 61754-24 |
| Insertion loss | 0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF | 0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF |
| Return loss (attenuation) | 40 dB singlemode; 30 dB multimode | 40 dB singlemode; 30 dB multimode |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| Singlemode | IE-PS-V01M-2SC-SM | 10 | **1963300000** | IE-PS-V01M-2SC-SM-BP | 10 | **1963310000** |
| Multimode | IE-PS-V01M-2SC-MM | 10 | **1963260000** | IE-PS-V01M-2SC-MM-BP | 10 | **1963270000** |
| POF | IE-PS-V01M-2SC-POF | 10 | **1963280000** | IE-PS-V01M-2SC-POF-BP | 10 | **1963290000** |
| **Note** | | | | | | |

## Ordering data - Empty housings

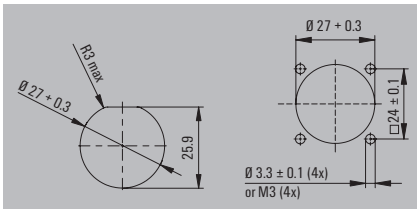
| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| | IE-PH-V01M | 10 | **1962550000** | IE-PH-V01M-BP | 10 | **1962560000** |
| **Note** | | | | | | |

## Accessories

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| **Tools** | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
|  POF tool set | TOOL SET IE-POF | 1 | **1208930000** | TOOL SET IE-POF | 1 | **1208930000** |
| Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** | IE-CTC-SCST-GOF | 1 | **1032030000** |
| **Dust protection cap** | | | | | | |
|  Plug housing protective cap | IE-PP-V01P | 10 | **1965690000** | IE-PP-V01P | 10 | **1965690000** |
| **Note** | 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

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | Zinc diecast |
| Plugging cycles | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 61754-24 |
| Approvals | GOSTME25 |
| **Note** | |

### Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-BS-V01M-SCRJ-SM | 10 | **1221020000** |
| Multimode/POF | 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

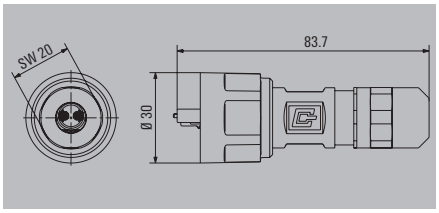
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V01P | 10 | **1965700000** |
| | | |
| | | |

**Note**

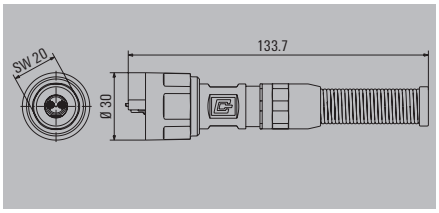
Plug inserts can also be ordered separately. Refer to Inserts.

## Plug bayonet V1 metal - fibre-optic-LC

### Without kink prevention


### With kink prevention


## Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | Zinc diecast | Zinc diecast |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 500 | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 61754-20 | IEC 61076-3-106 Var. 1, IEC 61754-20 |
| Insertion loss | 0.5 dB singlemode, 0.4 dB multimode | 0.5 dB singlemode, 0.4 dB multimode |
| Return loss (attenuation) | 40 dB singlemode; 30 dB multimode | 40 dB singlemode; 30 dB multimode |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| Singlemode | IE-PS-V01M-2LC-SM | 10 | **1963240000** | IE-PS-V01M-2LC-SM-BP | 10 | **1963250000** |
| Multimode | IE-PS-V01M-2LC-MM | 10 | **1963220000** | IE-PS-V01M-2LC-MM-BP | 10 | **1963230000** |
| **Note** | | | | | | |

## Ordering data - Empty housings

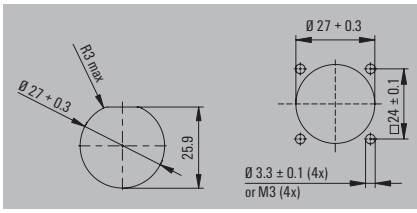
| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| | IE-PH-V01M | 10 | **1962550000** | IE-PH-V01M-BP | 10 | **1962560000** |
| **Note** | | | | | | |

## Accessories

| **Tools** | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
|  Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Accessory set for LC plugs | IE-CTC-AS-LC-GOF | 1 | **1033350000** | IE-CTC-AS-LC-GOF | 1 | **1033350000** |
| **Dust protection cap** | | | | | | |
|  Plug housing protective cap | IE-PP-V01P | 10 | **1965690000** | IE-PP-V01P | 10 | **1965690000** |
| **Note** | 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

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | Zinc diecast |
| Plugging cycles | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 61754-20 |
| Approvals | GOSTME25 |
| **Note** | |

### Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-BS-V01M-LCD-SM-C | 10 | **1963430000** |
| Multimode | 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

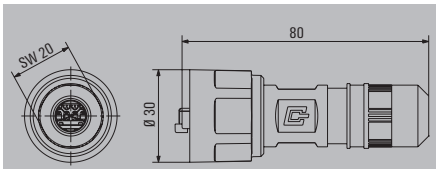
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V01P | 10 | **1965700000** |
| | | |
| | | |

**Note**

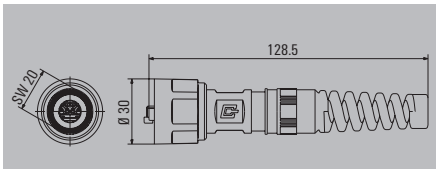
Plug inserts can also be ordered separately. Refer to Inserts.

## Plug bayonet V1 Plastic - RJ45

### Without kink prevention


### With kink prevention


## Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Contact surface | Gold over nickel | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | 0.48 mm / 0.76 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | 0.4 mm / 0.64 mm |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 60603-7-51 | IEC 61076-3-106 Var. 1, IEC 60603-7-51 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| RJ45 tool-free. AWG 26-22. TIA-A/-B/-PROFINET<br>RJ45 Crimp. AWG 27-24 | IE-PS-V01P-RJ45-FH | 10 | 1012490000 |
| | IE-PS-V01P-RJ45-TH | 10 | 1012470000 |

**Note**

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

## Ordering data - Empty housings

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

**Note**

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

## Accessories

**Dust protection cap**

Plug housing protective cap

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

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

**Note**

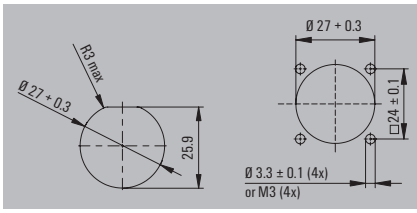
Plug inserts can also be ordered separately. Refer to Inserts.

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

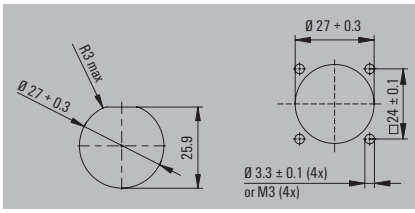
## Flange bayonet V1 Plastic - RJ45

### Module

**TIA-A**




### Coupling




### Technical data

| | Module | Coupling |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Contact surface | Gold over nickel | Gold over nickel |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1, IEC 60603-7-51 | IEC 61076-3-106 Var. 1, IEC 60603-7-51 |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

### Ordering data - Sets

| Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|
| IE-BS-V01P-RJ45-FJ-A | 10 | **1012380000** | IE-BS-V01P-RJ45-C | 10 | **1012370000** |

**Note**

### Ordering data - Empty housings

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

**Note**

### Accessories

**Dust protection cap**

Flange-mounted housing protective cap

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

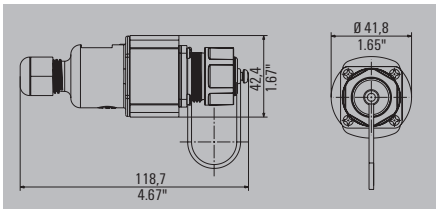
**Note**

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

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

## Cable coupling bayonet V1 Plastic - RJ45

### Cable coupling


### Technical data

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | PA UL 94 V0 |
| Plugging cycles | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1 |
| Sheath diameter, min. / max. | 6 mm / 9.5 mm |
| Approvals | GOSTME25 |
| **Note** | |

### Ordering data

| Variant 1 | Type | Qty. | Order No. |
|---|---|---|---|
| Cable coupling | IE-CC-V01P | 10 | **1061820000** |
| **Note** | RJ45 modules can be ordered separately | | |

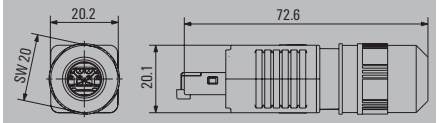
### Accessories

| Flange insert | Type | Qty. | Order No. |
|---|---|---|---|
|  RJ45 EIA/TIA T568 A | IE-BI-RJ45-FJ-A | 10 | **1962850000** |
| RJ45 EIA/TIA T568 B | IE-BI-RJ45-FJ-B | 10 | **1963840000** |
| RJ45 PROFINET | IE-BI-RJ45-FJ-P | 10 | **1963830000** |

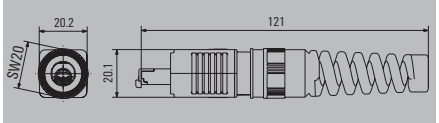
| Note |
|---|

## Plug PushPull V4 - RJ45

### Without kink prevention




### With kink prevention




### Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Contact surface | Gold over nickel | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 24 | AWG 27 / AWG 24 |
| Connection diameter, flexible, min. / max. | 0.46 mm / 0.61 mm | 0.46 mm / 0.61 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.36 mm / 0.51 mm | 0.36 mm / 0.51 mm |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 60603-7-51 | IEC 61076-3-106 Var. 4, IEC 60603-7-51 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

### Ordering data - Sets

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| RJ45 tool-free. AWG 26-22. TIA-A/-B/-PROFINET | IE-PS-V04P-RJ45-FH | 10 | **1963160000** | IE-PS-V04P-RJ45-FH-BP | 10 | **1963170000** |
| RJ45 tool-free. AWG 26-22 . TIA-B | IE-PS-V04P-RJ45-FH-B | 10 | **1271240000** | | | |
| RJ45 Crimp. AWG 27-24 | IE-PS-V04P-RJ45-TH | 10 | **1963180000** | IE-PS-V04P-RJ45-TH-BP | 10 | **1963190000** |
| **Note** | | | | | | |

### Ordering data - Empty housings

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| | IE-PH-V04P | 10 | **1962520000** | IE-PH-V04P-BP | 10 | **1962530000** |
| **Note** | | | | | | |

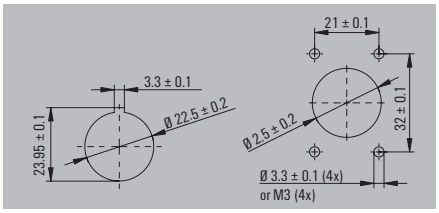
### Accessories

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| **Dust protection cap** | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| Plug housing protective cap | IE-PP-V04P | 10 | **1963890000** | IE-PP-V04P | 10 | **1963890000** |

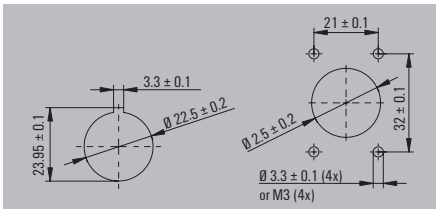
| | | |
|---|---|---|
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

## Flange PushPull V4 - RJ45

## Module




## Coupling




## Technical data

| | | |
|---|---|---|
| Category | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) | Cat.6$_A$ / Class E$_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Contact surface | Gold over nickel | Gold over nickel |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 60603-7-51 | IEC 61076-3-106 Var. 4, IEC 60603-7-51 |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | |
| Approvals | GOSTME25 | CULUS; GOSTME25 |
| **Note** | Other approvals for individual parts of the set available | |

## Ordering data - Sets

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| RJ45 module TIA-B | IE-BS-V04P-RJ45-FJ-B | 10 | **1963730000** | | | |
| RJ45 module TIA-A | IE-BS-V04P-RJ45-FJ-A | 10 | **1963500000** | | | |
| Coupling | | | | IE-BS-V04P-RJ45-C | 10 | **1963490000** |
| **Note** | | | | | | |

## Ordering data - Empty housings

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

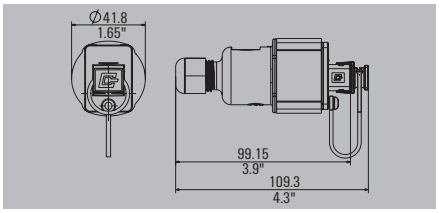
## Accessories

| **Dust protection cap** | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
|  Flange-mounted housing protective cap | IE-BP-V04P | 10 | **1963900000** | IE-BP-V04P | 10 | **1963900000** |
| | | | | | | |
| | | | | | | |

| | | |
|---|---|---|
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

## Cable coupling PushPull V4 - RJ45

### Cable coupling




### Technical data

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | PA UL 94 V0 |
| Plugging cycles | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 4 |
| Sheath diameter, min. / max. | 6 mm / 9.5 mm |
| Approvals | GOSTME25 |
| **Note** | |

### Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| Cable coupling | IE-CC-V04P | 10 | **1045960000** |
| **Note** | RJ45 modules can be ordered separately | | |

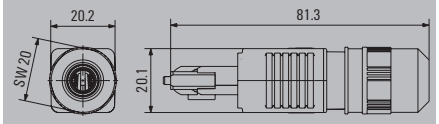
### Accessories

| **Flange insert** | **Type** | **Qty.** | **Order No.** |
|---|---|---|---|
| RJ45 EIA/TIA T568 A | IE-BI-RJ45-FJ-A | 10 | **1962850000** |
| RJ45 EIA/TIA T568 B | IE-BI-RJ45-FJ-B | 10 | **1963840000** |
| RJ45 PROFINET | IE-BI-RJ45-FJ-P | 10 | **1963830000** |

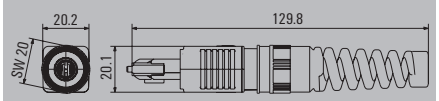
| **Note** | |
|---|---|
| | Plug inserts can also be ordered separately. Refer to Inserts. |

## Plug PushPull V4 - fibre-optic-SC

### Without kink prevention




### With kink prevention




## Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 500 | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 61754-24 | IEC 61076-3-106 Var. 4, IEC 61754-24 |
| Insertion loss | 0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF | 0.5 dB singlemode; 0.4 dB multimode; 1.5 dB POF |
| Return loss (attenuation) | 40 dB singlemode; 30 dB multimode | 40 dB singlemode; 30 dB multimode |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| Singlemode | IE-PS-V04P-2SC-SM | 10 | **1963400000** | IE-PS-V04P-2SC-SM-BP | 10 | **1963410000** |
| Multimode | IE-PS-V04P-2SC-MM | 10 | **1963360000** | IE-PS-V04P-2SC-MM-BP | 10 | **1963370000** |
| POF | IE-PS-V04P-2SC-POF | 10 | **1963380000** | IE-PS-V04P-2SC-POF-BP | 10 | **1963390000** |
| **Note** | | | | | | |

## Ordering data - Empty housings

| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| | IE-PH-V04P | 10 | **1962520000** | IE-PH-V04P-BP | 10 | **1962530000** |
| **Note** | | | | | | |

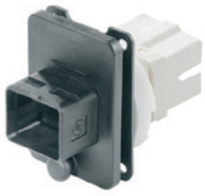
## Accessories

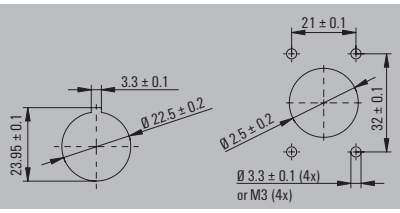
| | Without kink prevention | | | With kink prevention | | |
|---|---|---|---|---|---|---|
| **Tools** | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
|  POF tool set | TOOL SET IE-POF | 1 | **1208930000** | TOOL SET IE-POF | 1 | **1208930000** |
| Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** | IE-CTC-SCST-GOF | 1 | **1032030000** |
| **Dust protection cap** | | | | | | |
|  Plug housing protective cap | IE-PP-V04P | 10 | **1963890000** | IE-PP-V04P | 10 | **1963890000** |

| | Without kink prevention | With kink prevention |
|---|---|---|
| **Note** | 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

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | PA UL 94 V0 |
| Plugging cycles | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 61754-4, IEC 61754-24 |
| Approvals | GOSTME25 |
| **Note** | |

## Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-BS-V04P-SCRJ2SC-SM-C | 10 | **1963420000** |
| Multimode/POF | 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

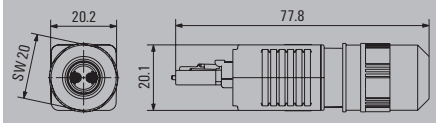
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V04P | 10 | **1963900000** |
| | | |
| | | |

**Note**

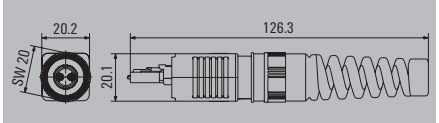
Plug inserts can also be ordered separately. Refer to Inserts.

## Plug PushPull V4 - fibre-optic-LC

### Without kink prevention




### With kink prevention




### Technical data

| | Without kink prevention | With kink prevention |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | PA UL 94 V0 | PA UL 94 V0 |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| Plugging cycles | 500 | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 61754-20 | IEC 61076-3-106 Var. 4, IEC 61754-20 |
| Insertion loss | 0.5 dB singlemode, 0.4 dB multimode | 0.5 dB singlemode, 0.4 dB multimode |
| Return loss (attenuation) | 40 dB singlemode; 30 dB multimode | 40 dB singlemode; 30 dB multimode |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

### Ordering data - Sets

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Singlemode | IE-PS-V04P-2LC-SM | 10 | **1963340000** | IE-PS-V04P-2LC-SM-BP | 10 | **1963350000** |
| Multimode | IE-PS-V04P-2LC-MM | 10 | **1963320000** | IE-PS-V04P-2LC-MM-BP | 10 | **1963330000** |
| **Note** | | | | | | |

### Ordering data - Empty housings

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | IE-PH-V04P | 10 | **1962520000** | IE-PH-V04P-BP | 10 | **1962530000** |
| **Note** | | | | | | |

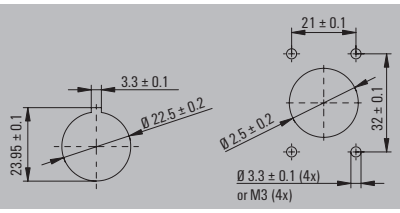
### Accessories

| Tools | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
|  Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Accessory set for LC plugs | IE-CTC-AS-LC-GOF | 1 | **1033350000** | IE-CTC-AS-LC-GOF | 1 | **1033350000** |
| **Dust protection cap** | | | | | | |
|  Plug housing protective cap | IE-PP-V04P | 10 | **1963890000** | IE-PP-V04P | 10 | **1963890000** |

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

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | PA UL 94 V0 |
| Plugging cycles | 500 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 61754-20 |
| Approvals | GOSTME25 |
| **Note** | |

## Ordering data - Sets

| | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-BS-V04P-LCD-SM-C | 10 | **1963450000** |
| Multimode | 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

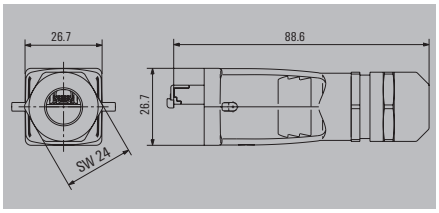
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V04P | 10 | **1963900000** |
| | | |
| | | |

**Note**

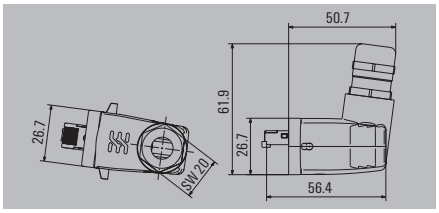
Plug inserts can also be ordered separately. Refer to Inserts.

## RockStar® heavy-duty connector plug V5 - RJ45

### Straight V5 - RJ45 plug




### V5-RJ45 plug, angled




## Technical data

| | | |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | diecast aluminium | diecast aluminium |
| Contact surface | Gold over nickel | Gold over nickel |
| Sheath diameter, min. / max. | 5 mm / 12 mm | 5 mm / 10 mm |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 5, IEC 60603-7-51 | IEC 61076-3-106 Var. 5, IEC 60603-7-51 |
| Approvals | CULUS; GOSTME25 | GOSTME25 |
| **Note** | | Other approvals for individual parts of the set available |

## Ordering data - Sets

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| RJ45 tool-free. AWG 26-22. TIA-A/-B/-PROFINET | IE-PS-V05M-RJ45-FH | 10 | **1963200000** | IE-PS-V05M-A-RJ45-FH | 10 | **1077300000** |
| RJ45 tool-free. AWG 26-22 . TIA-B | IE-PS-V05M-RJ45-FH-B | 10 | **1271250000** | | | |
| RJ45 Crimp. AWG 27-24 | IE-PS-V05M-RJ45-TH | 10 | **1963110000** | | | |
| **Note** | | | | | | |

## Ordering data - Empty housings

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

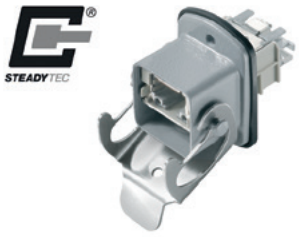
## Accessories

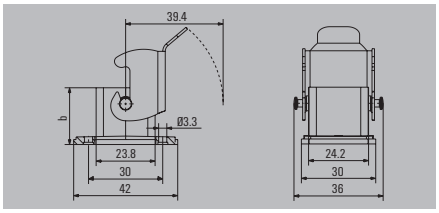
| Dust protection cap | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
|  Plug housing protective cap | IE-PP-V05M | 10 | **1968920000** | IE-PP-V05M | 10 | **1968920000** |
| | | | | | | |
| | | | | | | |

| | | |
|---|---|---|
| **Note** | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

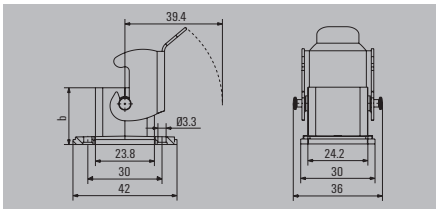
## RockStar® heavy-duty connector flange V5 - RJ45

### Module






### Coupling




## Technical data

| | Module | Coupling |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Housing main material | diecast aluminium | diecast aluminium |
| Contact surface | Gold over nickel | Gold over nickel |
| Plugging cycles | 750 | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 5, IEC 60603-7-51 | IEC 61076-3-106 Var. 5, IEC 60603-7-51 |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data - Sets

| | Module Type | Qty. | Order No. | Coupling Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| PROFINET Cat. 5 | IE-BS-V05M-RJ45-FJ-P | 10 | **1963700000** | | | |
| TIA-A Cat. $6_A$ | IE-BS-V05M-RJ45-FJ-A | 10 | **1963460000** | | | |
| Coupling | | | | IE-BS-V05M-RJ45-C | 10 | **1963510000** |
| **Note** | | | | | | |

## Ordering data - Empty housings

| | Module Type | Qty. | Order No. | Coupling Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | IE-BH-V05M | 10 | **1963530000** | IE-BH-V05M | 10 | **1963530000** |
| **Note** | | | | | | |

## Accessories

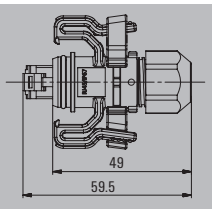
| Dust protection cap | Module Type | Qty. | Order No. | Coupling Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Flange-mounted housing protective cap | IE-BP-V05M | 10 | **1968930000** | IE-BP-V05M | 10 | **1968930000** |

| **Note** | Module | Coupling |
|---|---|---|
| | Plug inserts can also be ordered separately. Refer to Inserts. | Plug inserts can also be ordered separately. Refer to Inserts. |

## Plug SnapIn V6 - RJ45

- Cat. 6
- IP 67

## Without kink prevention




## Technical data

| | |
|---|---|
| Category | Cat.6 (ISO/IEC 11801) |
| Protection degree | IP 67 |
| Shielding | 360° shield contact |
| Housing main material | PA 66, UL 94: V-0 |
| Contact surface | Gold over nickel |
| Colour | Light Grey |
| Plugging cycles | 750 |
| Wiring | EIA/TIA T568 A |
| Type of mounting | Floor-mounted, for exposed connections, Wall mounting |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 6, IEC 60603-7-5 |
| Approvals | GERMLLOYD |
| **Note** | |

## Ordering data

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

**Note**

## Accessories

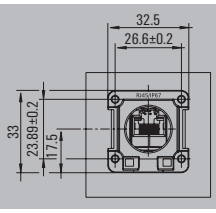
**Note**

See also the "Accessories" chapter.

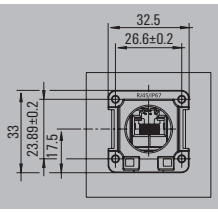
## Flange SnapIn V6 - RJ45

- Cat. 6
- IP 67

## Module




## Coupling




## Technical data

| | Module | Coupling |
|---|---|---|
| Category | Cat.6 (ISO/IEC 11801) | Cat.6 (ISO/IEC 11801) |
| Protection degree | IP 67 | IP 67 |
| Shielding | 360° shield contact | 360° shield contact |
| Housing main material | PA 66, UL 94: V-0 | PA 66, UL 94: V-0 |
| Contact surface | Gold over nickel | Gold over nickel |
| Colour | Light Grey | Light Grey |
| Plugging cycles | 750 | 750 |
| Type of mounting | Cabinet, Distribution box | Cabinet, Distribution box |
| Wiring | Colour-coded pin assignment according to EIA/TIA T568 A . | |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 6, IEC 60603-7-5 | IEC 61076-3-106 Var. 6, IEC 60603-7-5 |
| Approvals | GERMLLOYD; GOSTME25 | GERMLLOYD; GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| Straight | IE-XM-RJ45/IDC-IP67 | 1 | **8808440000** |
| Angled. downwards | | | |
| Angled. upwards | | | |

| 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 | Type | Qty. | Order No. |
|---|---|---|---|
| RJ45 coupling. straight | | | |
| RJ45 module A. straight | IE-XRJ45/IDC | 1 | **8808330000** |

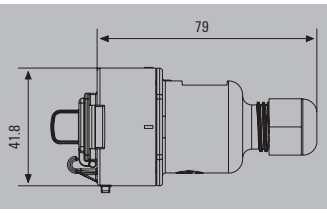
| Type | Qty. | Order No. |
|---|---|---|
| IE-XR-RJ45/RJ45-2 | 24 | **8952950000** |

**Note**

## Cable coupling SnapIn V6 - RJ45

- Cat. 6
- IP 67

## Cable coupling




## Technical data

| | |
|---|---|
| Category | Cat.6 (ISO/IEC 11801) |
| Protection degree | IP 67 |
| Shielding | 360° shield contact |
| Housing main material | PA 66, UL 94: V-0 |
| Contact surface | Gold over nickel |
| Colour | Light Grey |
| Plugging cycles | 750 |
| Type of mounting | Floor-mounted, for exposed connections, Wall mounting |
| Wiring | Colour-coded pin assignment according to EIA/TIA T568 A . |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 6, IEC 60603-7-5 |
| Sheath diameter, min. / max. | 6 mm / 9.5 mm |
| Approvals | GERMLLOYD; GOSTME25 |
| **Note** | |

## Ordering data

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

**Note**

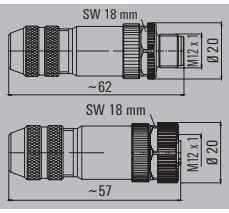
## Accessories

**Note**

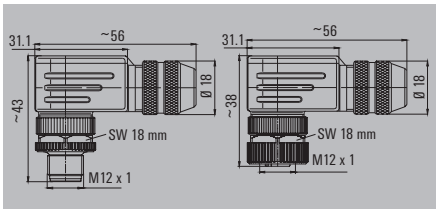
See also the "Accessories" chapter.

## M12 plug, Tension-clamp connection, D-coded

### SAISM / SAIBM




### SAISW / SAIBW




## Technical data

| | SAISM / SAIBM | SAISW / SAIBW |
|---|---|---|
| Type of connection | Tension clamp connection | Tension clamp connection |
| Housing main material | CuZn | PA |
| Ambient temperature (operational) | -25 °C...+85 °C | -25 °C...+85 °C |
| Connector standard | IEC 61076-2-101 | IEC 61076-2-101 |
| Contact tube diameter | M12 | M12 |
| Cable diameter | 6...8 mm (PG9) | 6...8 mm (PG9) |
| Conductor cross-section min. / max. | 0.25 mm² / 0.5 mm² | 0.25 mm² / 0.5 mm² |
| Rated current | 4 | 4 |
| Rated voltage | 250 | 250 |
| Temperature range of housing | -25...+85 °C | -25...+85 °C |
| Protection degree | IP 67 | IP 67 |
| Contact surface | Gold-plated | Gold-plated |
| **Note** | | |

## Ordering data

| Male | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 4-pole. PG 9 | SAISM-4/8S-M12 4P D-ZF | 1 | **1892120001** | SAISW-4/8S-M12 4P D-ZF | 1 | **1803930001** |
| **Socket** | | | | | | |
| 4-pole. PG 9 | SAIBM-4/8S-M12 4P D-ZF | 1 | **1892130001** | SAIBW-4/8S-M12 4P D-ZF | 1 | **1139330000** |
| **Note** | | | | | | |

## Accessories

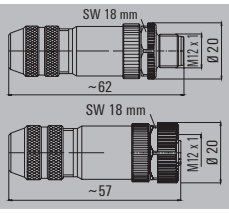
| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |

**Note**

**M12 plug,**
**Screw connection,**
**D-coded**

## SAISM / SAIBM

**Industrial Ethernet**




## Technical data

| | |
|---|---|
| Type of connection | Screw connection |
| Housing main material | CuZn |
| Ambient temperature (operational) | -25 °C...+85 °C |
| Connector standard | IEC 61076-2-101 |
| Contact tube diameter | M12 |
| Cable diameter | 6...8 mm (PG9) |
| Conductor cross-section min. / max. | 0.25 mm² / 0.75 mm² |
| Rated current | 4 |
| Rated voltage | 250 |
| Temperature range of housing | -25...+85 °C |
| Protection degree | IP 67 |
| Contact surface | Gold-plated |
| **Note** | |

## Ordering data

| **Male** | | | |
|---|---|---|---|
| 4-pole. PG 9 | SAISM-4/8S-M12-4P D-COD | 1 | **1892120000** |
| **Socket** | | | |
| 4-pole. PG 9 | SAIBM-4/8S-M12-4P D-COD | 1 | **1892130000** |
| **Note** | | | |

## Accessories

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

| **Note** | |
|---|---|

## Adapter / coupling M12

- Cat. 5
- IP 67
- D-coded

## Adapter M12-RJ45

## Coupling M12-M12

### Technical data

| | Adapter M12-RJ45 | Coupling M12-M12 |
|---|---|---|
| Category | Cat.5 (ISO/IEC 11801) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 | IP 67 |
| Housing main material | Polyamide, fully shielded metal housing | Polyamide, Brass, nickel-plated |
| Shielding | 360° shield contact | 360° shield contact |
| Ambient temperature (operational) | -5 °C...+60 °C | -5 °C...+60 °C |
| Connector standard | IEC 60603-7-5, IEC 61076-2-101 | IEC 61076-2-101 |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

### Ordering data

| **Adaptor** | **Type** | **Qty.** | **Order No.** |
|---|---|---|---|
| Straight | IE-M12-ADAP S | 1 | **8901620000** |
| Angled | IE-M12-ADAP A | 1 | **8901630000** |
| **Coupling** | | | |
| | | | |
| **Note** | | | |

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

### Accessories

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

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

**Note**

## M12 PCB connection element

- Cat. 5
- For installation into the end device
- D-coded

## Standard assembly

## Additional fastening mechanism

## Technical data

| | Standard assembly | Additional fastening mechanism |
|---|---|---|
| Category | Cat.5 (ISO/IEC 11801) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 65 according to DIN EN 60529 | IP 65 according to DIN EN 60529 |
| Configuration | Reflow compatible | Reflow compatible |
| Housing main material | CuZn, Polyamide, nickel-plated | CuZn, Polyamide, nickel-plated |
| Shielding | 360° shield contact | 360° shield contact |
| Ambient temperature (operational) | -25...+85 °C | -25...+85 °C |
| Connector standard | IEC 61076-2-101 | IEC 61076-2-101 |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data

| Connection element | Standard assembly Type | Qty. | Order No. | Additional fastening mechanism Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Straight | IE-M12-PCBCE | 60 | **8902810000** | IE-M12-PCBCE-PANEL | 10 | **8902820000** |
| Angled | | | | IE-M12-PCBCE-PANEL-A | 10 | **1393470000** |
| **Note** | | | | | | |

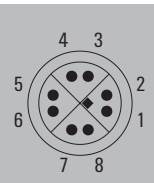
## Accessories

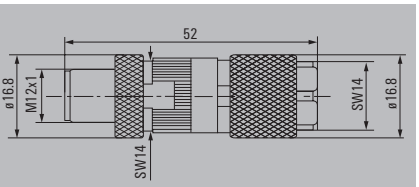
| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| **Note** | | | | | | |

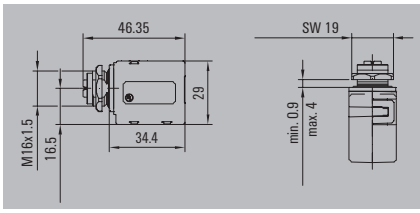
## M12 Plug / Adapter
## M12 X-Type Cat. $6_A$

### Plug

### Adapter M12 X-Type-RJ45




## Technical data

| | | |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 | IP 67 |
| Connection 1 / 2 | M12 / Insulation displacement technology | RJ45 90° / M12 |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact tube diameter | M12 | M12 |
| Contact material / Contact surface | CuZn / Gold-plated | CuZn / Gold over nickel |
| Ambient temperature (operational) | -25 °C...+85 °C | -25 °C...+85 °C |
| Connector standard | IEC 61076-2-109 | IEC 61076-2-109, IEC 60603-7-51 |
| Current-carrying capacity at 50 °C | 0.5 A @ 40 °C | 0.5 A @ 40 °C |
| Rated voltage | 48 V | 60 V |
| Insulation resistance | 100 MΩ | 100 MΩ |
| Plugging cycles | ≥ 100 | ≥ 100 (M12), 750 (RJ45) |
| Configuration | | M12 socket to RJ45 socket |
| Wall thickness, min. / max. | | 0.9 mm / 4 mm |
| Shielding | 360° all-round enclosure | 360° shield contact |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | |
| Insulation cross-section, max. | 1.6 mm | |
| Sheath diameter, min. / max. | 5 mm / 9.7 mm | |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| Plugs | IE-PS-M12X-P-FH | 10 | **1324020000** |
| 90° adapter | | | |
| 180° adapter | | | |

| Type | Qty. | Order No. |
|---|---|---|
| | | |
| IE-AD-M12XRJ45-90 | 1 | **1400610000** |
| IE-AD-M12XRJ45-180 | 1 | **1400620000** |

**Note**

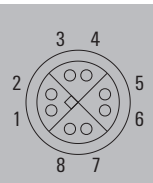
## Accessories

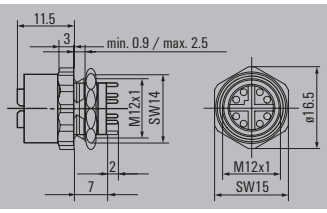
**Note**

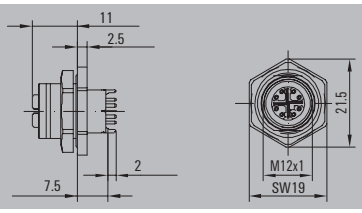
## M12 PCB socket
## M12 X-Type Cat. $6_A$

### PCB socket

### PCB socket, back panel mounting




## Technical data

| | | |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 (when screwed in) | IP 67 (when screwed in) |
| Connection 1 / 2 | M12 / Solder connection | M12 / Solder connection |
| Housing main material | CuZn | CuZn |
| Contact tube diameter | M12 | M12 |
| Contact material / Contact surface | CuZn / Gold over nickel | CuZn / Gold over nickel |
| Ambient temperature (operational) | -40 °C...+85 °C | -40 °C...+85 °C |
| Connector standard | IEC 61076-2-109 | IEC 61076-2-109 |
| Current-carrying capacity at 50 °C | 0.5 A @ 40 °C | 0.5 A @ 40 °C |
| Rated voltage | 48 V | 48 V |
| Insulation resistance | 100 MΩ | 100 MΩ |
| Plugging cycles | ≥ 100 | ≥ 100 |
| Configuration | Reflow compatible | Reflow compatible, Back panel mounting |
| Wall thickness, min. / max. | 0.9 mm / 2.5 mm | 0.9 mm / 2.5 mm |
| Shielding | 360° all-round enclosure | 360° all-round enclosure |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| pre-assembled | IE-PCB-M12X-S-180 | 10 | **1324010000** |
| 2-piece design | IE-PCB2-M12X-S-180 | 10 | **1393080000** |
| **Note** | | | |

| Type | Qty. | Order No. |
|---|---|---|
| IE-PCBR-M12X-S-180 | 10 | **1427670000** |
| IE-PCBR2-M12X-S-180 | 10 | **1444650000** |

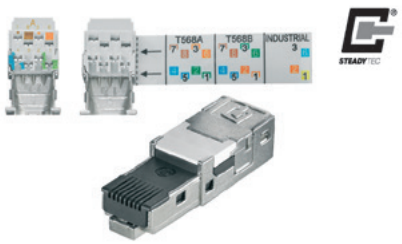
## Accessories

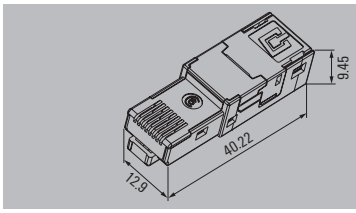
| | | |
|---|---|---|
| | | |
| **Note** | | |

## RJ45 plug inserts, without tools

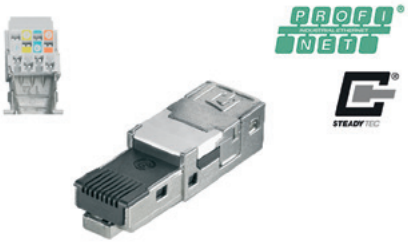
- Cat. $6_A$
- IP 20
- For variant 1, 4, 5 and 14 housings

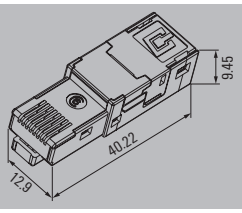
### 8-wire




### 4-wire




## Technical data

| | 8-wire | 4-wire |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 with housing | IP 67 with housing |
| Plugging cycles | 750 | 750 |
| Shielding | 360° all-round enclosure | 360° all-round enclosure |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact material | | |
| Contact surface | Gold over nickel | Gold over nickel |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection diameter, flexible, min. / max. | 0.48 mm / 0.76 mm | |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.64 mm | 0.4 mm / 0.64 mm |
| Insulation diameter, min. / max. | 0.85 mm...1.6 mm | 0.85 mm...1.6 mm |
| Humidity | | |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Insulation resistance | 500 MΩ | 500 MΩ |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Dielectric strength, contact contact | ≥ 1000 V DC | ≥ 1000 V DC |
| Dielectric strength, contact shield | ≥ 1500 V DC | ≥ 1500 V DC |
| Current-carrying capacity at 50 °C | 1 A | 1 A |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Speed | 10 GBit | 10 GBit |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| Approvals | | |
| **Note** | Approvals available on request | |

## Ordering data

| tool-free | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| TIA-A/B/PROFINET | IE-PI-RJ45-FH | 10 | **1962730000** | | | |
| TIA-A | IE-PI-RJ45-FH-A | 10 | **1132010000** | | | |
| TIA-B | IE-PI-RJ45-FH-B | 10 | **1132020000** | | | |
| PROFINET | | | | IE-PI-RJ45-FH-P | 10 | **1132030000** |
| **Note** | | | | | | |

## Accessories

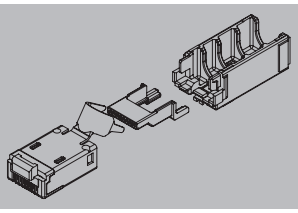
| Tools | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
|  Optional pressing tool | PWZ RJ45 | 1 | **1118040000** | PWZ RJ45 | 1 | **1118040000** |
| | | | | | | |
| | | | | | | |

**Note**

## RJ45 plug inserts, crimp

- Cat. $6_A$
- IP 20
- For variant 1, 4, 5 and 14 housings

## 8-wire

## Technical data

| | |
|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 with housing |
| Plugging cycles | 750 |
| Shielding | 360° all-round enclosure |
| Housing main material | Brass, PC UL 94 V0 |
| Contact material | Phosphorus bronze |
| Contact surface | Au ≥ 0.8 µm, Ni 2.54 µm |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 24 |
| Connection diameter, flexible, min. / max. | 0.46 mm / 0.61 mm |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 24 |
| Connection diameter, solid, min. / max. | 0.4 mm / 0.51 mm |
| Insulation diameter, min. / max. | 0.85 mm...1.05 mm |
| Humidity | 0...93 % rel. humidity |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Insulation resistance | 500 MΩ |
| Contact resistance | ≤ 20 mΩ |
| Dielectric strength, contact contact | ≥ 1000 V DC |
| Dielectric strength, contact shield | ≥ 1500 V DC |
| Current-carrying capacity at 50 °C | 1 A |
| PoE / PoE+ | conforming to IEEE 802.3af |
| Speed | 10 GBit |
| Connector standard | IEC 60603-7-51 |
| Approvals | CURUS |

**Note**

## Ordering data

**Crimp**

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

**Note**

## Accessories

**Tools**

Crimping tool

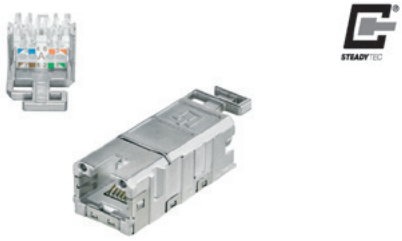
| Type | Qty. | Order No. |
|---|---|---|
| TT 8 RS MP 8 | 1 | 9202800000 |
| | | |
| | | |

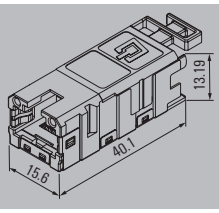
**Note**

## RJ45 flange inserts, module

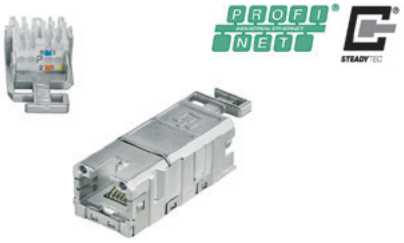
- Cat. $6_A$
- IP 20
- For variant 1, 4, 5 and 14 housings

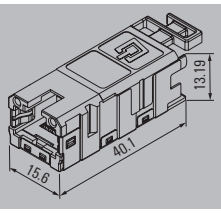
## 8-wire






## 4-wire






## Technical data

| | 8-wire | 4-wire |
|---|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 with housing | IP 67 with housing |
| Plugging cycles | 750 | 750 |
| Shielding | 360° all-round enclosure | 360° all-round enclosure |
| Housing main material | Zinc diecast | Zinc diecast |
| Contact surface | Au ≥ 0.8 µm | Au ≥ 0.8 µm |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection cross-section, solid, min. / max. | AWG 24 / AWG 22 | AWG 24 / AWG 22 |
| Insulation diameter, min. / max. | 0.85 mm...1.6 mm | 0.85 mm...1.6 mm |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| PoE / PoE+ | conforming to IEEE 802.3af | conforming to IEEE 802.3af |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

| tool-free | 8-wire Type | 8-wire Qty. | 8-wire Order No. | 4-wire Type | 4-wire Qty. | 4-wire Order No. |
|---|---|---|---|---|---|---|
| TIA-A | IE-BI-RJ45-FJ-A | 10 | **1962850000** | | | |
| TIA-B | IE-BI-RJ45-FJ-B | 10 | **1963840000** | | | |
| PROFINET | | | | IE-BI-RJ45-FJ-P | 10 | **1963830000** |
| **Note** | | | | | | |

## Accessories

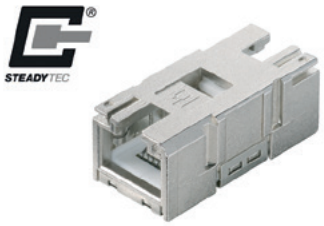
| Tools | 8-wire Type | 8-wire Qty. | 8-wire Order No. | 4-wire Type | 4-wire Qty. | 4-wire Order No. |
|---|---|---|---|---|---|---|
|  Optional pressing tool | PWZ RJ45 | 1 | **1118040000** | PWZ RJ45 | 1 | **1118040000** |
| | | | | | | |
| | | | | | | |

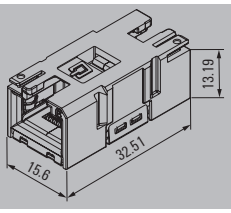
**Note**

## RJ45 flange inserts, coupling

- Cat. $6_A$
- IP 20
- For variant 1, 4, 5 and 14 housings

## 8-wire




## Technical data

| | |
|---|---|
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Protection degree | IP 67 with housing |
| Plugging cycles | 750 |
| Shielding | 360° all-round enclosure |
| Housing main material | Zinc diecast |
| Contact surface | Gold over nickel |
| Connection cross-section, flexible, min. / max. | |
| Connection cross-section, solid, min. / max. | |
| Insulation diameter, min. / max. | |
| Connector standard | IEC 60603-7-51 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| PoE / PoE+ | conforming to IEEE 802.3af |
| Approvals | CULUS; GOSTME25 |
| **Note** | |

## Ordering data

| tool-free | | Type | Qty. | Order No. |
|---|---|---|---|---|
| | Coupling | IE-BI-RJ45-C | 10 | **1962840000** |
| **Note** | | | | |

## Accessories

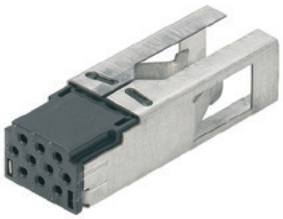
| | |
|---|---|
| | |

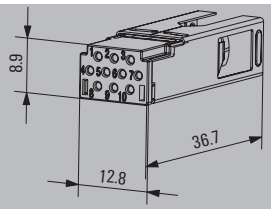
| **Note** | |
|---|---|

## Plug inserts Hybrid

- Cat. 5
- IP 20
- For variant 1 (Metal) and 14 housings

## Crimp






## Technical data

| | |
|---|---|
| Category | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 with housing |
| Plugging cycles | 500 |
| Shielding | 360° all-round enclosure |
| Housing main material | Nickel silver, PA 66 |
| Contact surface | Gold over nickel |
| No. of poles | 10 |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 20 |
| Connection diameter, flexible, min. / max. | 0.08 mm² / 0.75 mm² |
| Insulation diameter, min. / max. | 1 mm...2.2 mm |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Volume resistance | < 10 mΩ |
| Rated current | 3 A per contact |
| Rated voltage | 24 V |
| Contact resistance | ≤ 5 mΩ |
| Approvals | CULUS; GOSTME25 |
| **Note** | |

## Ordering data

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

**Note**

## Accessories

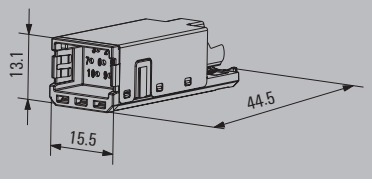
| Type | Qty. | Order No. |
|---|---|---|
| **Crimp contacts** | | |
| 0.33...0.5 mm² | 300 | **1096180000** |
| 0.75 mm² | 300 | **1068950000** |
| 0.08...0.2 mm² | 300 | **1135150000** |
| **Crimping tool** | | |
| HTF HYB | 1 | **1119580000** |

**Note**

## Flange inserts Hybrid

- Cat. 5
- IP 20
- For variant 1 (Metal) 14 housings

## Module




## Technical data

| | |
|---|---|
| Category | Cat.5 (ISO/IEC 11801) |
| Protection degree | IP 67 with housing |
| Plugging cycles | 500 |
| Shielding | 360° all-round enclosure |
| Housing main material | Zinc diecast, Nickel silver, PA 66 |
| Contact surface | Gold over nickel |
| No. of poles | 10 |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 20 |
| Connection diameter, flexible, min. / max. | 0.08 mm² / 0.75 mm² |
| Insulation diameter, min. / max. | 1 mm...2.2 mm |
| Rated current | 3 A per contact |
| Rated voltage | 24 V |
| Contact resistance | ≤ 10 mΩ |
| Volume resistance | < 10 mΩ |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Approvals | CULUS; GOSTME25 |
| **Note** | |

## Ordering data

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

**Note**

## Accessories

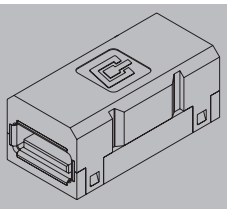
| Type | Qty. | Order No. |
|---|---|---|
| **Crimp contacts** | | |
| 0.33...0.5 mm² | 300 | **1096150000** |
| 0.75 mm² | 300 | **1068970000** |
| 0.08...0.2 mm² | 300 | **1135160000** |
| **Crimping tool** | | |
| HTF HYB | 1 | **1119580000** |

**Note**

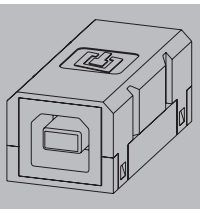
## Flange inserts USB

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

## Coupling USB A/A



## Coupling USB A/B



## Technical data

| | |
|---|---|
| Protection degree | IP 67 with housing |
| Shielding | 360° all-round enclosure |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connection 1 / 2 | USB A / USB A |
| Connector standard | IEC 61076-3-107 |
| Approvals | GOSTME25 |
| **Note** | |

| | |
|---|---|
| IP 67 with housing | |
| 360° all-round enclosure | |
| -40 °C...+70 °C | |
| USB A / USB B | |
| IEC 61076-3-107 | |
| GOSTME25 | |
| | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| USB 2.0 | IE-BI-USB-A | 10 | **1019570000** |
| **Note** | | | |

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

## Accessories

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

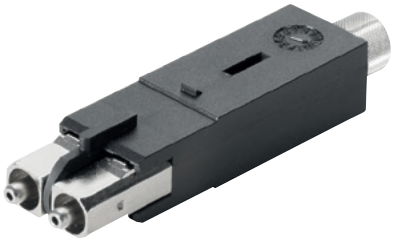
| | | |
|---|---|---|
| | | |

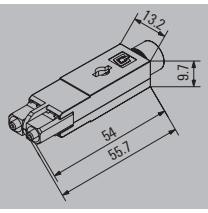
**Note**

## Plug inserts SC

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

## Plug inserts SC






## Technical data

| | |
|---|---|
| Protection degree | IP 67 with housing |
| Housing main material | Zinc diecast |
| Plugging cycles | 1000 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61754-24 |
| Approvals | |

**Note**

## Ordering data

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

**Note**

## Accessories

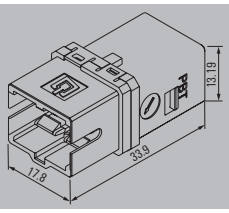
| **Tools** | Type | Qty. | Order No. |
|---|---|---|---|
| POF tool set | TOOL SET IE-POF | 1 | **1208930000** |
| Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Crimping tool POF | HTX-IE-POF | 1 | **1208870000** |
| **Replacement ferrule** | | | |
| | IE-SCRJ-IP67-POF-100 | 100 | **1278430000** |
| | | | |
| | | | |

**Note**

## Flange inserts SC

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

## Flange inserts SC




## Technical data

| | |
|---|---|
| Protection degree | IP 67 with housing |
| Housing main material | PA |
| Plugging cycles | 1000 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Approvals | GOSTME25 |

**Note**

## Ordering data

| Flange insert | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-BI-SCRJ2SC-SM-C | 10 | **1962870000** |
| Multimode/POF | IE-BI-SCRJ2SC-MM-C | 10 | **1964430000** |

**Note**

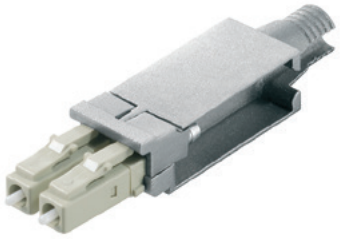
## Accessories

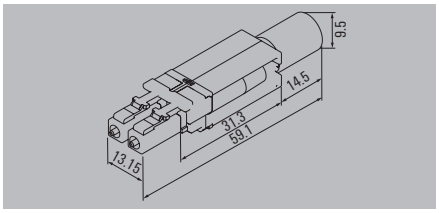
**Note**

## Plug inserts LC

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

## Plug inserts LC






## Technical data

| | |
|---|---|
| Protection degree | IP 67 with housing |
| Housing main material | PBT diecast zinc |
| Plugging cycles | 1000 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61754-20 |
| Approvals | GOSTME25 |

**Note**

## Ordering data

| Plug insert | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-PI-2LC-SM | 10 | **1962790000** |
| Multimode | IE-PI-2LC-MM | 10 | **1962780000** |

**Note**

## Accessories

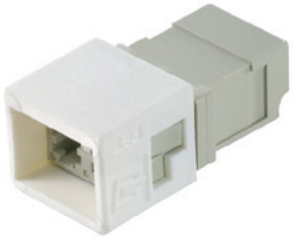
| Tools | Type | Qty. | Order No. |
|---|---|---|---|
|  Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Crimping pliers GOF LC | IE-CT-LC-GOF | 1 | **9205330000** |

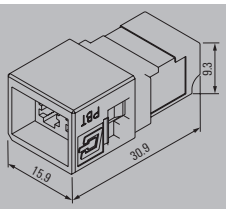
**Note**

## Flange inserts LC

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

## Flange inserts LC






## Technical data

| | |
|---|---|
| Protection degree | IP 67 with housing |
| Housing main material | PBT diecast zinc |
| Plugging cycles | 1000 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61754-20 |
| Approvals | GOSTME25 |
| **Note** | |

## Ordering data

| Flange insert | Type | Qty. | Order No. |
|---|---|---|---|
| Singlemode | IE-BI-LCD-SM-C | 10 | **1962880000** |
| Multimode | IE-BI-LCD-MM-C | 10 | **1964420000** |

**Note**

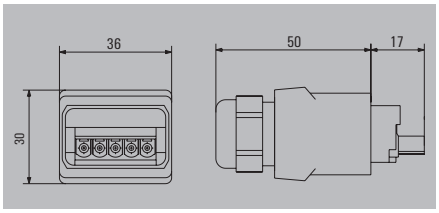
## Accessories

| Tools | Type | Qty. | Order No. |
|---|---|---|---|
|  Fibre-optic tool case | IE-CTC-SCST-GOF | 1 | **1032030000** |
| Crimping pliers GOF LC | IE-CT-LC-GOF | 1 | **9205330000** |

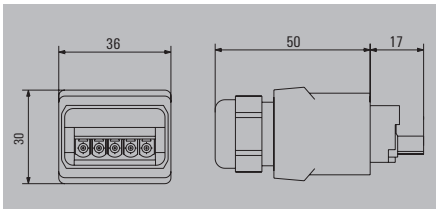
**Note**

## Plug PushPull Power

### Power 24 V plug




### Power 400 V plug




## Technical data

| | | |
|---|---|---|
| **General data** | | |
| Protection degree | IP 67 | IP 67 |
| Connector standard | in accordance with PROFINET specification | in accordance with PROFINET specification |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| No. of poles | 5 | 5 |
| Wire cross-section, flexible, min. / max. | 0.75 mm² / 2.5 mm² | 0.75 mm² / 2.5 mm² |
| Sheath diameter, min. / max. | 9 mm / 13 mm | 9 mm / 13 mm |
| Connection | Tension clamp | Tension clamp |
| Approvals | GOSTME25 | |
| **Material properties** | | |
| Housing base material | Zinc diecast, nickel-plated | Zinc diecast, nickel-plated |
| Sealing material | NBR | NBR |
| Cable sealing material | TPE | TPE |
| Contact material / Contact surface | Copper alloy / Gold over nickel | Copper alloy / Gold over nickel |
| UL 94 flammability rating | V-2 | V-2 |
| Pollution severity level | 2 | 2 |
| Plugging cycles | ≤ 100 | ≤ 100 |
| **Electrical properties** | | |
| Current-carrying capacity at 50 °C | 16 A | 16 A |
| Rated voltage | 24 V | 400 V |
| **Note** | We recommend using 10-mm-long wire-end ferrules | We recommend using 10-mm-long wire-end ferrules |

## Ordering data - Sets

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

**Note**

| Type | Qty. | Order No. |
|---|---|---|
| IE-PS-VAPM-400V | 10 | **1323940000** |

## Ordering data - Empty housings

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

**Note**

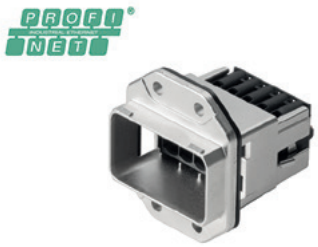
| Type | Qty. | Order No. |
|---|---|---|
| | | |

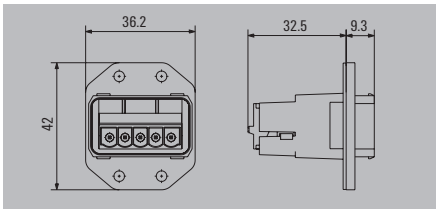
## Accessories

**Note**

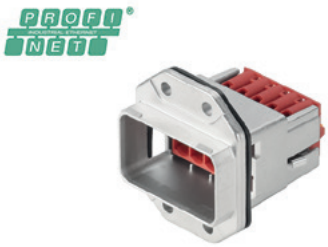
## Flange PushPull Power

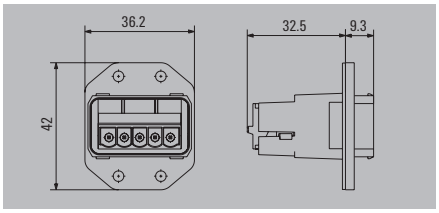
### Power 24 V flange






### Power 400 V flange






## Technical data

| General data | | |
|---|---|---|
| Protection degree | IP 67 | IP 67 |
| Connector standard | in accordance with PROFINET specification | in accordance with PROFINET specification |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| No. of poles | 5 | 5 |
| Connection diameter, flexible, min. / max. | 0.75 mm² / 2.5 mm² | 0.75 mm² / 2.5 mm² |
| Connection 1 | Tension clamp | Tension clamp |
| Approvals | GOSTME25 | |
| Installation | 4 screws | 4 screws |
| **Material properties** | | |
| Housing base material | Zinc diecast, nickel-plated | Zinc diecast, nickel-plated |
| Sealing material | NBR | NBR |
| Cable sealing material | TPE | TPE |
| Contact carrier material | PA | PA |
| Contact material / Contact surface | Copper alloy / Gold over nickel | Copper alloy / Gold over nickel |
| UL 94 flammability rating | V-2 | V-2 |
| Pollution severity level | 2 | 2 |
| Plugging cycles | ≤ 100 | ≤ 100 |
| **Electrical properties** | | |
| Current-carrying capacity at 50 °C | 16 A | 16 A |
| Rated voltage | 24 V | 400 V |
| **Note** | We recommend using 10-mm-long wire-end ferrules | We recommend using 10-mm-long wire-end ferrules |

## Ordering data - Sets

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

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-BSS-VAPM-400V | 10 | 1323950000 |
| | | | |

## Ordering data - Empty housings

| | Type | Qty. | Order No. |
|---|---|---|---|
| Device flange | IE-BHD-VAPM | 10 | 1068920000 |
| **Note** | | | |

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

## Accessories

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

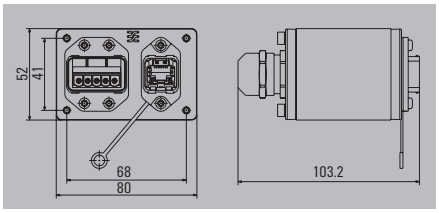
| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-BP-VAPP | 10 | 1068930000 |
| | | | |
| | | | |

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

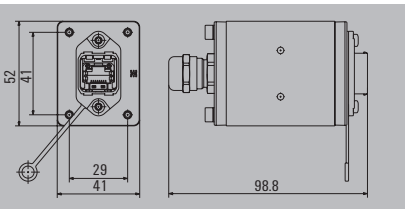
# IP 65 connection components
## Overview

## FreeCon V14 - junction box

### Double junction box, Power / RJ45




### Single junction box, RJ45




## Technical data

| General data | | |
|---|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted | Aluminium profile, Cover: die-cast zinc, painted |
| Protection degree | IP 65 | IP 65 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 60603-7-5 | IEC 61076-3-117 Var. 14, IEC 60603-7-5 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **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 | |
| No. of poles | 5 | |
| Sheath diameter, min. / max. | 6 mm / 12 mm | |
| Connection | Tension clamp | |
| **Electrical properties power connector** | | |
| Current-carrying capacity at 50 °C | 16 A | |
| Rated voltage | 24 V | |
| **Technical specifications for RJ45 module** | | |
| Housing base material | Zinc diecast, nickel-plated | Zinc diecast, nickel-plated |
| Contact surface | Gold over nickel | Gold over nickel |
| Connection cross-section, flexible, min. / max. | AWG 26 / AWG 22 | AWG 26 / AWG 22 |
| Connection 1 | IDC | IDC |
| Sheath diameter, min. / max. | 5 mm / 10 mm | 5 mm / 10 mm |
| **Electrical properties for RJ45 module** | | |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Insulation resistance | > 500 MΩ | > 500 MΩ |
| Dielectric strength, contact – contact, max. | ≤ 1000 V DC | ≤ 1000 V DC |
| Dielectric strength, contact – contact, min. | ≤ 1500 V DC | ≤ 1500 V DC |
| Current carrying capacity | 1 A | 1 A |
| **Note** | | |

## Ordering data

| 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 |

**Dust protection cap**

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

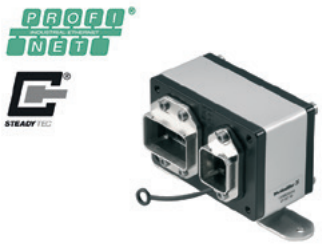
**Note**

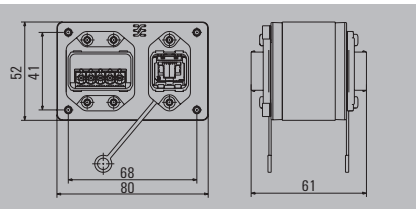
| Type | Qty. | Order No. |
|---|---|---|
| IE-CD-MA | 10 | 1099580000 |
| IE-BP-V14P | 10 | 1058310000 |

**Note**

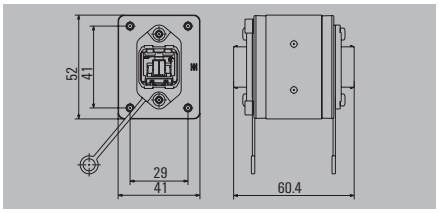
## FreeCon V14 - coupling

### Double coupling, Power / RJ45






### Single coupling, RJ45




## Technical data

| General data | | |
|---|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted | Aluminium profile, Cover: die-cast zinc, painted |
| Protection degree | IP 65 | IP 65 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 60603-7-5 | IEC 61076-3-117 Var. 14, IEC 60603-7-5 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **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 | |
| No. of poles | 5 | |
| Sheath diameter, min. / max. | 6 mm / 12 mm | |
| Connection | Tension clamp | |
| **Electrical properties power connector** | | |
| Current-carrying capacity at 50 °C | 16 A | |
| Rated voltage | 24 V | |
| **Technical data for RJ45 coupling** | | |
| Housing base material | Zinc diecast, PA 66 | Zinc diecast, PA 66 |
| **Electrical properties RJ45 coupling** | | |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Contact resistance | ≤ 20 mΩ | ≤ 20 mΩ |
| Contact surface | Gold over nickel | Gold over nickel |
| Insulation resistance | > 500 MΩ | > 500 MΩ |
| Dielectric strength, contact – contact, min. | ≥ 1000 V DC | ≥ 1000 V DC |
| Dielectric strength, contact – shielding, max. | ≥ 1500 V DC | ≥ 1500 V DC |
| Current carrying capacity | 1 A | 1 A |
| **Note** | | |

## Ordering data

| 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 | | |

## Accessories

**Dust protection cap**

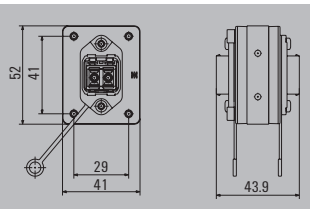
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V14P | 10 | **1058310000** |

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

**Note**

## FreeCon V14 single coupling

### Single coupling, SCRJ




## Technical data

| General data | |
|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted |
| Protection degree | IP 65 |
| Ambient temperature (operational) | -40...+70 °C |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 61754-24 |
| Approvals | |
| **Technical specifications - fibre-optic coupler** | |
| Housing base material (fibre-optic coupling) | PA |
| Plugging cycles (fibre-optic coupling) | ≥ 500 |
| Seal material (fibre-optic coupling) | NBR |
| Connection 1 / 2 | SCRJ / SCRJ |
| Insertion attenuation (fibre-optic coupling) | < 0.2 dB |
| Fibre type | Multimode, POF |
| **Note** | |

## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-CD-V14MSCRJ-MM-C-MA | 1 | 1318150000 |

**Note**

## Accessories

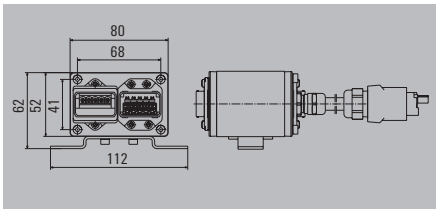
**Dust protection cap**

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

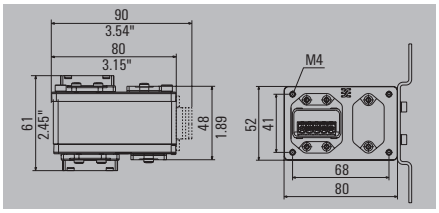
**Note**

## FreeCon V14 - Power

## Y-distributor, Power




## Single coupling, Power




## Technical data

| General data | | |
|---|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted | Aluminium profile, Cover: die-cast zinc, painted |
| Protection degree | IP 65 | IP 65, If thread-locking fluid is used |
| Ambient temperature (operational) | -40...+70 °C | -40...+70 °C |
| Connector standard | in accordance with PROFINET specification | in accordance with PROFINET specification |
| Approvals | | |
| **Technical specifications power connector** | | |
| Housing base material | Zinc diecast, nickel-plated | Zinc diecast, nickel-plated |
| Sealing material | NBR | NBR |
| Cable sealing material | TPE | TPE |
| Contact material | Copper alloy | Copper alloy |
| Contact carrier material | PA | PA |
| Contact surface | Gold over nickel | Gold over nickel |
| UL 94 flammability rating | V-0 | V-0 |
| Plugging cycles | ≥ 100 | ≥ 100 |
| Pollution severity level | 2 | 2 |
| **Electrical properties power connector** | | |
| Current-carrying capacity at 50 °C | 16 A @ 20 °C | 16 A @ 20 °C |
| Rated voltage | 24 V | 24 V |
| No. of poles | 5 | 5 |
| **Note** | | |

## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-CD-VAPM24V-Y-MA | 1 | **1297010000** |

**Note**

| Type | Qty. | Order No. |
|---|---|---|
| IE-CD-VAPM24V-C-MA | 1 | **1397690000** |

## Accessories

**Dust protection cap**

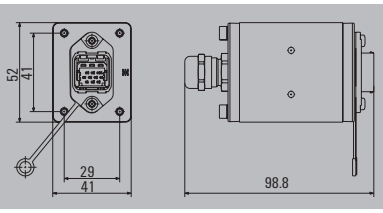
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-VAPP | 10 | **1068930000** |

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

**Note**

## FreeCon V14 - junction box

## Single junction box, Hybrid




## Technical data

| General data | |
|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted |
| Protection degree | IP 65 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Approvals | CULUS; GOSTME25 |
| **Technical specifications** | |
| Housing base material | Zinc diecast (flange), PA 66 |
| Sealing material | NBR |
| Contact material | Copper alloy |
| Contact surface | Gold over nickel |
| Plugging cycles | 500 |
| Pole count | 10 |
| Connection cross-section, flexible, min. / max. | AWG 27 / AWG 20 |
| Connection cross-section, flexible, min. / max. | 0.08 mm² / 0.75 mm² |
| **Electrical properties** | |
| Rated current | 3 A per contact |
| Rated voltage (DIN EN 61984) | 24 V |
| Contact resistance | ≤ 10 mΩ |
| **Note** | |

## Ordering data

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

**Note**

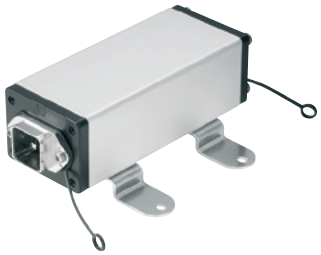
## Accessories

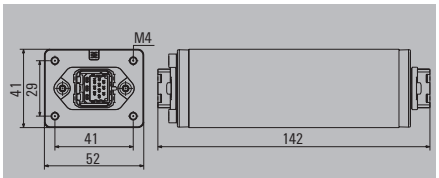
| Type | Qty. | Order No. |
|---|---|---|
| **Mounting foot** | | |
| IE-CD-MA | 10 | **1099580000** |
| **Crimp contacts** | | |
| 0.33...0.5 mm² | | |
| 0.75 mm² | | |
| 0.08...0.2 mm² | | |
| IE-BIC-HYB-P-0,5-300 | 300 | **1096150000** |
| IE-BIC-HYB-P-0,75-300 | 300 | **1068970000** |
| IE-BIC-HYB-P-0,2-300 | 300 | **1135160000** |
| **Crimping tool** | | |
| HTF HYB | 1 | **1119580000** |
| **Dust protection cap** | | |
| IE-BP-V14P | 10 | **1058310000** |

**Note**

## FreeCon V14 single coupling

## Single coupling, Hybrid






## Technical data

| General data | |
|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted |
| Protection degree | IP 65 |
| Ambient temperature (operational) | -40...+70 °C |
| **Technical specifications power connector** | |
| Housing base material | Zinc diecast (flange), PA 66 |
| Sealing material | NBR |
| Contact material | Copper alloy |
| Contact surface | Gold over nickel |
| Plugging cycles | 500 |
| **Electrical properties power connector** | |
| Rated current (hybrid connector) | 3 A per contact |
| Rated voltage (DIN EN 61984) | 24 V |
| Contact resistance | ≤ 10 mΩ |
| Pole count, Hybrid | 10 |
| Approvals | |

**Note**

## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-CD-V14MHYB-10P-C-MA | 1 | 1068840000 |

**Note**

## Accessories

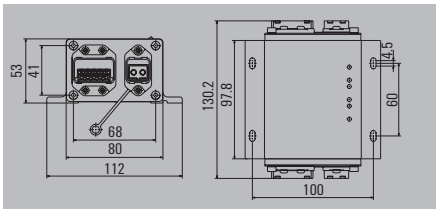
**Dust protection cap**

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

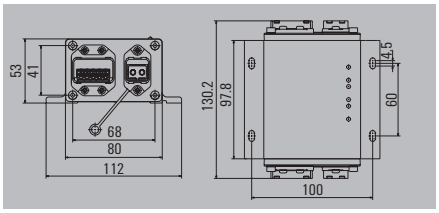
**Note**

## FreeCon Active PROFINET with diagnostics functionality

### POF repeater




### POF media converter




## Technical data

| General data | | |
|---|---|---|
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted | Aluminium profile, Cover: die-cast zinc, painted |
| Weight | 780 g | 780 g |
| Data interface | PROFINET PushPull SCRJ POF (V14) | PROFINET PushPull SCRJ POF (V14), PROFINET PushPull RJ45 (V14) |
| Power interface | PROFINET PushPull Power | PROFINET PushPull Power |
| Protection degree | IP 65 | IP 65 |
| Ambient temperature (operational) | -20 °C...+55 °C | -20 °C...+55 °C |
| Network standard | IEC 61158, IEC 61784 | IEC 61158, IEC 61784 |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 61754-24 | IEC 61076-3-117 Var. 14, IEC 61754-24, IEC 60603-7-51 |
| **Electrical data** | | |
| Operating voltage | 24 V DC | 24 V DC |
| Operational voltage range | 18...30 V DC | 18...30 V DC |
| Current consumption | 200 mA typical | 200 mA typical |
| Baud rate | 100 MB | 100 MB |
| Protocol | PROFINET iRT | PROFINET iRT |
| LED indicator | FO1: port active, FO2: port active, SF: general error, BF: bus error, US1: voltage 1 (electronics), US2: voltage 2 | P1: port active, P2: port active, SF: general error, BF: bus error, US1: voltage 1 (electronics), US2: voltage 2 |
| Approvals | CULUS; GOSTME25 | CULUS |
| **Note** | | |

## Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-CDR-V14MSCPOF/VAPM-C | 1 | 1253240000 |
| Delivery incl. IP 67 protective caps | | |

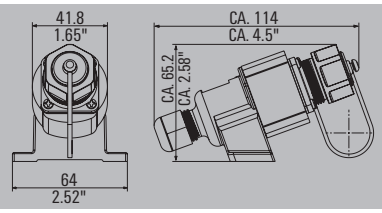
| Type | Qty. | Order No. |
|---|---|---|
| IE-CDM-V14MRJSCP/VAPM-C | 1 | 1324440000 |
| Delivery incl. IP 67 protective caps | | |

## Accessories

**Note**

## V1 junction boxes - plastic

## Single junction box




### Technical data

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | PA UL 94 V0 |
| Plugging cycles | 750 |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Connector standard | IEC 61076-3-106 Var. 1 |
| Sheath diameter, min. / max. | 6 mm / 9.5 mm |
| Approvals | GOSTME25 |
| **Note** | |

### Ordering data

| Variant 1 | Type | Qty. | Order No. |
|---|---|---|---|
| Junction box | IE-OP-V01P-1S | 10 | **1061830000** |
| **Note** | Order RJ45 modules separately | | |

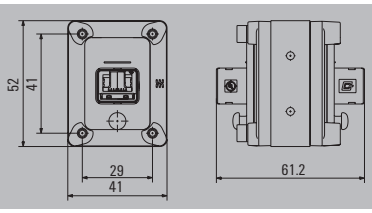
### Accessories

| Flange insert | Type | Qty. | Order No. |
|---|---|---|---|
|  RJ45 EIA/TIA T568 A | IE-BI-RJ45-FJ-A | 10 | **1962850000** |
| RJ45 EIA/TIA T568 B | IE-BI-RJ45-FJ-B | 10 | **1963840000** |
| RJ45 PROFINET | IE-BI-RJ45-FJ-P | 10 | **1963830000** |

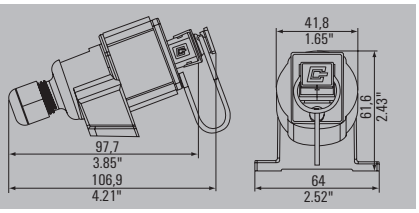
**Note**

## FreeCon V4 junction box

## Single coupling, RJ45




## Single junction box




## Technical data

| General data | | |
|---|---|---|
| Plugging cycles | 750 | 750 |
| Housing main material | Aluminium profile, Cover: die-cast zinc, painted | PA |
| Contact surface | Gold over nickel | Gold over nickel |
| UL 94 flammability rating | | V-0 |
| Connector standard | IEC 61076-3-106 Var. 4, IEC 60603-7-5 | IEC 61076-3-106 Var. 4 |
| Protection degree | IP 65 | IP 67 |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Sheath diameter, min. / max. | | 6 mm / 9.5 mm |
| Approvals | CULUS; GOSTME25 | GOSTME25 |
| **Electrical properties for RJ45 module** | | |
| Category | Cat.$6_A$ / Class $E_A$ (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** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| Junction box | | | |
| Coupling | IE-CD-V04PRJ-C-MA | 1 | **1122710000** |
| **Note** | Including mounting foot | | |

| Type | Qty. | Order No. |
|---|---|---|
| IE-OP-V04P-1S | 10 | **1045780000** |
| Order RJ45 modules separately, IP 67 protective cap included in delivery | | |

## Accessories

| Dust protection cap | Type | Qty. | Order No. |
|---|---|---|---|
|  Flange-mounted housing protective cap | IE-BP-V04P | 10 | **1963900000** |
| | | | |
| | | | |
| **Flange insert** | | | |
|  RJ45 EIA/TIA T568 A | | | |
| RJ45 EIA/TIA T568 B | | | |
| RJ45 PROFINET | | | |

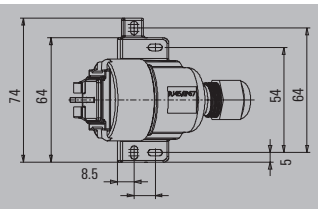
| Type | Qty. | Order No. |
|---|---|---|
| IE-BP-V04P | 10 | **1963900000** |
| | | |
| | | |
| IE-BI-RJ45-FJ-A | 10 | **1962850000** |
| IE-BI-RJ45-FJ-B | 10 | **1963840000** |
| IE-BI-RJ45-FJ-P | 10 | **1963830000** |

**Note**

## V6 junction box

- Cat. 6
- IP 67

## Single junction box, RJ45




## Technical data

| | |
|---|---|
| Protection degree | IP 67 |
| Housing main material | PA 66, UL 94: V-0 |
| Colour | Light Grey |
| Type of mounting | Floor-mounted, for exposed connections, Wall mounting |
| Configuration | Screw-on junction box including RJ45 module with IDC connection |
| Wiring | EIA/TIA T568 A |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Plugging cycles | 750 |
| Connector standard | IEC 61076-3-106 Var. 6 |
| Sheath diameter, min. / max. | 6 mm / 9.5 mm |
| Approvals | GERMLLOYD |

**Note**

## Ordering data

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

**Note**

## Accessories

**Tools**

Crimping tool

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

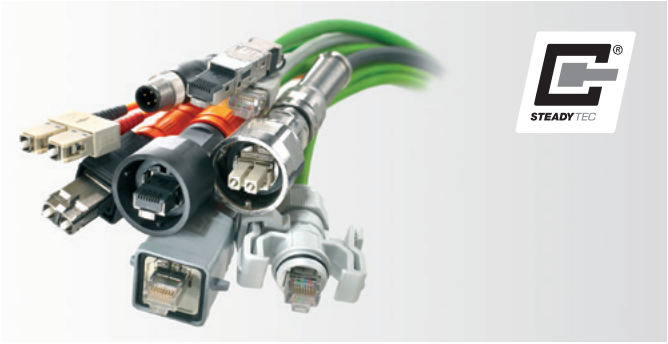
**Note**

# Copper cabling solutions
## Overview

# The ideal solution, whatever your needs

## Our AdvancedLine and CabinetLine product ranges

### AdvancedLine




The AdvancedLine 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 AdvancedLine cables are particularly suitable for industrial use.

- High-quality cables with very good technical characteristics
- Suitable for demanding IP 20 to IP 67 applications
- Suitable for temperatures from -40 to +70 °C
- High-quality shielding

### CabinetLine

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

Additional benefits:
All CabinetLine cables are fitted with Weidmüller TM marking sleeves for clearly labelling cables and ports. CabinetLine is available in the colours grey, blue, red and violet in combination with LSZH sheathing material and transmission power Cat. $6_A$.
CabinetLine 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

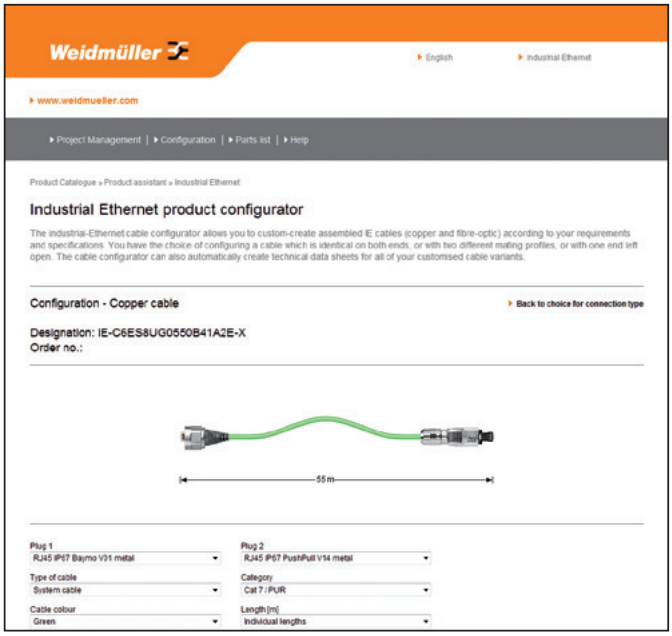
# Configurators for copper cables
## Tailor-made connections

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

An RJ45 plug with IP 20 protection is available. The following variants are also available with IP 67 protection:

- Variant 1, metal and plastic
- Variant 4, plastic
- Variant 5, metal
- Variant 14, metal
- M12 connector, straight and angled

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.




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
- 4-wire PROFINET system cables in Cat. 5, PVC sheathing
- 4-wire railway cable in Cat. 5, Radox sheathing

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 automatically create technical data sheets for all of your customised cable variants.

All of your 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
## Solutions for every environment

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 installation 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 installation 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 for flexible wiring on railway vehicles for both interior and exterior installations.

- In Cat. 5
- Also for PROFINET
- With Radox sheath

## Ordering data for copper cables, metre goods

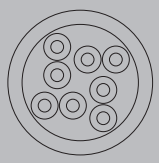
| Type | Cat./Class | Colour | Plug-in connector | | Length | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | left | right | | | | | | |
| **Industrial installation cables** | | | | | 100 m | Metre goods | 305 m | | | |
| IE-5IC4x2xAWG24/1-PUR | Cat. 5 | green | - | - | **8813160000** | **8944310000** | | | | |
| IE-5IC4x2xAWG24/1-PVC | Cat. 5 | green | - | - | **8813150000** | **8953160000** | | | | |
| IE-7IC4x2xAWG23/1-PUR | Cat. 7 | green | - | - | **8813140000** | **8955350000** | | | | |
| IE-7IC4x2xAWG23/1-PVC | Cat. 7 | green | - | - | **8813130000** | **8955360000** | | | | |
| IE-C5AS4Vxx | Cat. 5 PROFINET | green | - | - | **8899000000** | **8955950000** | | | | |
| **Industrial connecting cables** | | | | | | | | | | |
| IE-5CC4x2xAWG26/7-PUR | Cat. 5 | green | - | - | **8813200000** | **8938880000** | | | | |
| IE-5CC4x2xAWG26/7-PVC | Cat. 5 | green | - | - | **8813190000** | **8955490000** | | | | |
| IE-7CC4x2xAWG26/7-PUR | Cat. 7 | green | - | - | **8813180000** | **8954300000** | | | | |
| IE-7CC4x2xAWG26/7-PVC | Cat. 7 | green | - | - | **8813170000** | **8955480000** | | | | |
| IE-C5DS4Vxx | Cat. 5 PROFINET | green | - | - | **8898990000** | **8955560000** | | | | |
| IE-C5DHAGxx | Cat. 5 PROFINET | green | - | - | | **1172250000** | | | | |
| IE-C7FS8LD-305M | Cat. 7 | grey | - | - | | | **1273090000** | | | |
| IE-C7FS8LB-305M | Cat. 7 | blue | - | - | | | **1326540000** | | | |
| IE-C7FS8LE-305M | Cat. 7 | black | - | - | | | **1344690000** | | | |
| IE-C7FS8LG-305M | Cat. 7 | green | - | - | | | **1344680000** | | | |
| IE-C7FS8LR-305M | Cat. 7 | red | - | - | | | **1287910000** | | | |
| IE-C7FS8LM-305M | Cat. 7 | magenta | - | - | | | **1333160000** | | | |
| IE-C7FS8LY-305M | Cat. 7 | yellow | - | - | | | **1344670000** | | | |
| **Industrial trailing cables** | | | | | | | | | | |
| IE-5TC4x2xAWG26/7-PUR | Cat. 5 | green | - | - | **8813210000** | **8936390000** | | | | |
| IE-C5ED8UBxx | Cat. 5 | blue | - | - | **8960670000** | **8949760000** | | | | |
| IE-C5DD4UGx | Cat. 5 PROFINET | green | - | - | **8899010000** | **8947670000** | | | | |
| IE-C5IT4UGx | Cat. 5 PROFINET | green | - | - | | **1103010000** | | | | |

## Raw cables

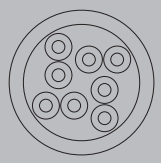
## Installation cable Cat. 5

- In lengths from 100 to 1,000 metres

### PUR



### PVC



## Technical data

| | PUR | PVC |
|---|---|---|
| Product type | Installation cable | Installation cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Cross-section | 4*2*AWG 24/1 - 4*2*0.205 mm² | 4*2*AWG 24/1 - 4*2*0.205 mm² |
| Sheath diameter, max. | 6.7 mm | 6.3 mm |
| Material sheath | PUR | PVC |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1 mm | 1 mm |
| Min. bending radius, repetitive | 10 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| 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 | in accordance with IEC 60754-2 | |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 100.0 m | IE-5IC4x2xAWG24/1-PUR | 1 | **8813160000** |
| Cut to metre starting at 110.0 m | IE-C5CS8UG-MW | | **8944310000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-5IC4x2xAWG24/1-PVC | 1 | **8813150000** |
| | IE-C5CS8VG-MW | | **8953160000** |
| | Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

| Sheathing stripper | Type | Qty. | Order No. |
|---|---|---|---|
| | AM 12 | 1 | **9030060000** |
| | IE-CST | 1 | **9204350000** |
| **Markers** | | | |
| | TM-I 12 MC NE GE | 320 | **1718411687** |
| | TM-I 18 MC NE GE | 320 | **1718431687** |
| | TM 4/12 HF/HB | 500 | **1719840000** |
| | TM 4/18 HF/HB | 500 | **1719850000** |
| | VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

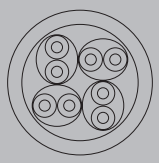
**Note**

## Raw cables

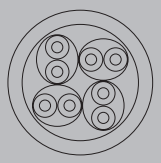
### Installation cable Cat. 7

- In lengths from 100 to 1,000 metres

### PUR



### PVC



## Technical data

| | PUR | PVC |
|---|---|---|
| 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 mm² | 4*2*AWG 23/1 - 4*2*0.255 mm² |
| Sheath diameter, max. | 8.4 mm | 8.4 mm |
| Material sheath | PUR | PVC |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.4 mm | 1.4 mm |
| Min. bending radius, repetitive | 10 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| 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 | in accordance with IEC 60754-2 | |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 100.0 m | IE-7IC4x2xAWG23/1-PUR | 1 | **8813140000** |
| Cut to metre starting at 110.0 m | IE-C7BS8UG-MW | | **8955350000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-7IC4x2xAWG23/1-PVC | 1 | **8813130000** |
| | IE-C7BS8VG-MW | | **8955360000** |
| | Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

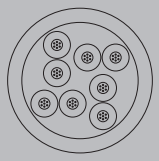
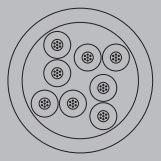
| **Sheathing stripper** | Type | Qty. | Order No. |
|---|---|---|---|
| | AM 12 | 1 | **9030060000** |
| | IE-CST | 1 | **9204350000** |
| **Markers** | | | |
| | TM-I 12 MC NE GE | 320 | **1718411687** |
| | TM-I 18 MC NE GE | 320 | **1718431687** |
| | TM 4/12 HF/HB | 500 | **1719840000** |
| | TM 4/18 HF/HB | 500 | **1719850000** |
| | VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

**Note**

## Raw cables

### Connecting cable Cat. 5

- In lengths from 100 to 1,000 metres

| | PUR | PVC |
|---|---|---|
| |  |  |
| |  |  |

### Technical data

| | PUR | PVC |
|---|---|---|
| Product type | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Cross-section | 4*2*AWG 26/7 - 4*2*0.128 mm² | 4*2*AWG 26/7 - 4*2*0.128 mm² |
| Sheath diameter, max. | 6.1 mm | 5.8 mm |
| Material sheath | PUR | PVC |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1 mm | 1 mm |
| Min. bending radius, repetitive | 10 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| 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 | in accordance with IEC 60754-2 | |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | |
| Standard, assembly | UL-Style 20963 (80°C/30V) | |
| Approvals | | |
| **Note** | | |

### Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 100.0 m | IE-5CC4x2xAWG26/7-PUR | 1 | **8813200000** |
| Cut to metre starting at 110.0 m | IE-C5ES8UG-MW | | **8938880000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-5CC4x2xAWG26/7-PVC | 1 | **8813190000** |
| | IE-C5ES8VG-MW | | **8955490000** |
| | Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

| **Sheathing stripper** | Type | Qty. | Order No. |
|---|---|---|---|
| | AM 12 | 1 | **9030060000** |
| | IE-CST | 1 | **9204350000** |
| | | | |
| **Markers** | | | |
| | TM-I 12 MC NE GE | 320 | **1718411687** |
| | TM-I 18 MC NE GE | 320 | **1718431687** |
| | TM 4/12 HF/HB | 500 | **1719840000** |
| | TM 4/18 HF/HB | 500 | **1719850000** |
| | VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

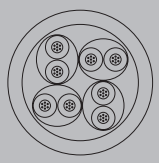
**Note**

## Raw cables

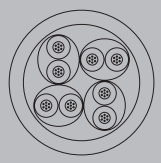
### Connecting cable Cat. 7

In lengths from 100 to 1,000 metres

### 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 mm² | 4*2*AWG 26/7 - 4*2*0.128 mm² |
| Sheath diameter, max. | 6.6 mm | 6.7 mm |
| Material sheath | PUR | PVC |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.03 mm | 0.98 mm |
| Min. bending radius, repetitive | 10 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| 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 | in accordance with IEC 60754-2 | |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | |
| Standard, assembly | UL-Style 20963 (80°C/30V) | UL-Style 2879 (80°C/30V) |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 100.0 m | IE-7CC4x2xAWG26/7-PUR | 1 | **8813180000** |
| Cut to metre starting at 110.0 m | IE-C7ES8UG-MW | | **8954300000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-7CC4x2xAWG26/7-PVC | 1 | **8813170000** |
| | IE-C7ES8VG-MW | | **8955480000** |
| | Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

| **Sheathing stripper** | Type | Qty. | Order No. |
|---|---|---|---|
| | AM 12 | 1 | **9030060000** |
| | IE-CST | 1 | **9204350000** |
| **Markers** | | | |
| | TM-I 12 MC NE GE | 320 | **1718411687** |
| | TM-I 18 MC NE GE | 320 | **1718431687** |
| | TM 4/12 HF/HB | 500 | **1719840000** |
| | TM 4/18 HF/HB | 500 | **1719850000** |
| | VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

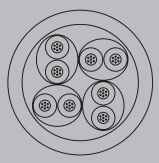
**Note**

## Raw cables

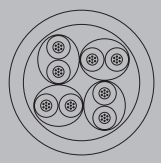
### Connecting cable Cat. 7

- 305 m / 1,000 ft

### LSZH grey



### LSZH blue



## Technical data

| | LSZH grey | LSZH blue |
|---|---|---|
| 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 27/7 - 4*2*0.1 mm² | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm | 5.9 mm |
| Material sheath | LSZH | LSZH |
| Sheathing colour | light grey (RAL 7035) | blue (RAL 5015) |
| Insulation diameter | 1.04 mm | 1.04 mm |
| Min. bending radius, repetitive | 50 mm | 50 mm |
| Min. bending radius, once only | 25 mm | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C | 0 °C...+50 °C |
| Halogen | No | No |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | | |
| Approvals | CULUS | CULUS |
| **Note** | | |

## Ordering data

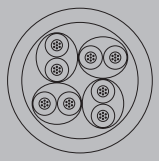
| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 305 m / 1000 ft | IE-C7FS8LD-305M | 1 | **1273090000** | IE-C7FS8LB-305M | 1 | **1326540000** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE 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 NE WS VO | 160 | **1689470001** | VT SF 5/21 NE WS VO | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS VO | 160 | **1730560001** | VT SF 6/21 NE WS VO | 160 | **1730560001** |

**Note**

## LSZH black

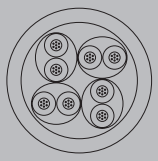


| |
|---|
| System cable |
| Cat.7 (ISO/IEC 11801) |
| S/FTP |
| 4*2*AWG 27/7 - 4*2*0.1 mm² |
| 5.9 mm |
| LSZH |
| Black |
| 1.04 mm |
| 50 mm |
| 25 mm |
| -20 °C...+60 °C |
| 0 °C...+50 °C |
| No |
| in accordance with IEC 60332-1 |
| |
| CULUS |

| Type | Qty. | Order No. |
|---|---|---|
| IE-C7FS8LE-305M | 1 | **1344690000** |

| Type | Qty. | Order No. |
|---|---|---|
| AM 12 | 1 | **9030060000** |
| IE-CST | 1 | **9204350000** |
| | | |
| TM-I 12 MC NE GE | 320 | **1718411687** |
| TM-I 18 MC NE GE | 320 | **1718431687** |
| TM 4/12 HF/HB | 500 | **1719840000** |
| TM 4/18 HF/HB | 500 | **1719850000** |
| VT SF 5/21 NE WS VO | 160 | **1689470001** |
| VT SF 6/21 NE WS VO | 160 | **1730560001** |

## LSZH green

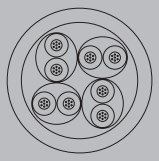


| |
|---|
| System cable |
| Cat.7 (ISO/IEC 11801) |
| S/FTP |
| 4*2*AWG 27/7 - 4*2*0.1 mm² |
| 5.9 mm |
| LSZH |
| Green |
| 1.04 mm |
| 50 mm |
| 25 mm |
| -20 °C...+60 °C |
| 0 °C...+50 °C |
| No |
| in accordance with IEC 60332-1 |
| |
| CULUS |

| Type | Qty. | Order No. |
|---|---|---|
| IE-C7FS8LG-305M | 1 | **1344680000** |

| Type | Qty. | Order No. |
|---|---|---|
| AM 12 | 1 | **9030060000** |
| IE-CST | 1 | **9204350000** |
| | | |
| TM-I 12 MC NE GE | 320 | **1718411687** |
| TM-I 18 MC NE GE | 320 | **1718431687** |
| TM 4/12 HF/HB | 500 | **1719840000** |
| TM 4/18 HF/HB | 500 | **1719850000** |
| VT SF 5/21 NE WS VO | 160 | **1689470001** |
| VT SF 6/21 NE WS VO | 160 | **1730560001** |

## LSZH red



| |
|---|
| System cable |
| Cat.7 (ISO/IEC 11801) |
| S/FTP |
| 4*2*AWG 27/7 - 4*2*0.1 mm² |
| 5.9 mm |
| LSZH |
| Red |
| 1.04 mm |
| 50 mm |
| 25 mm |
| -20 °C...+60 °C |
| 0 °C...+50 °C |
| No |
| in accordance with IEC 60332-1 |
| |
| CULUS |

| Type | Qty. | Order No. |
|---|---|---|
| IE-C7FS8LR-305M | 1 | **1287910000** |

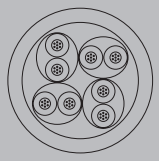
| Type | Qty. | Order No. |
|---|---|---|
| AM 12 | 1 | **9030060000** |
| IE-CST | 1 | **9204350000** |
| | | |
| TM-I 12 MC NE GE | 320 | **1718411687** |
| TM-I 18 MC NE GE | 320 | **1718431687** |
| TM 4/12 HF/HB | 500 | **1719840000** |
| TM 4/18 HF/HB | 500 | **1719850000** |
| VT SF 5/21 NE WS VO | 160 | **1689470001** |
| VT SF 6/21 NE WS VO | 160 | **1730560001** |

## Raw cables

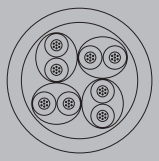
### Connecting cable Cat. 7

- 305 m / 1,000 ft

### LSZH magenta



### LSZH yellow



## Technical data

| | LSZH magenta | LSZH yellow |
|---|---|---|
| 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 27/7 - 4*2*0.1 mm² | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm | 5.9 mm |
| Material sheath | LSZH | LSZH |
| Sheathing colour | Magenta | Yellow |
| Insulation diameter | 1.04 mm | 1.04 mm |
| Min. bending radius, repetitive | 50 mm | 50 mm |
| Min. bending radius, once only | 25 mm | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C | 0 °C...+50 °C |
| Halogen | No | No |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | | |
| Approvals | CULUS | CULUS |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 305 m / 1000 ft | IE-C7FS8LM-305M | 1 | **1333160000** | IE-C7FS8LY-305M | 1 | **1344670000** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE 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 NE WS VO | 160 | **1689470001** | VT SF 5/21 NE WS VO | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS VO | 160 | **1730560001** | VT SF 6/21 NE WS VO | 160 | **1730560001** |

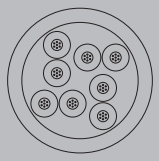
**Note**

## Raw cables

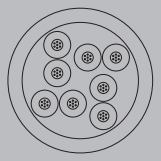
### Dragline cable Cat. 5

- In lengths from 100 to 1,000 metres

### PUR green



### PUR blue



## Technical data

| | PUR green | PUR blue |
|---|---|---|
| Product type | Dragline cable | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Cross-section | 4*2*AWG 26/7 - 4*2*0.128 mm² | 4*2*AWG 26/7 - 4*2*0.128 mm² |
| Sheath diameter, max. | 6.8 mm | 6.8 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | blue (RAL 5015) |
| Insulation diameter | 0.95 mm | 0.95 mm |
| Min. bending radius, repetitive | 7.5 *diameter | 7.5 *diameter |
| Min. bending radius, once only | 4 *diameter | 4 *diameter |
| Bending cycles | 5 Mio | 5 Mio |
| Ambient temperature (operational) | -40 °C...+80 °C | -40 °C...+80 °C |
| Installation temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Storage temperature | -40 °C...+80 °C | -40 °C...+80 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Standard, assembly | UL-Style 20963 (80°C/30V) | UL-Style 20963 (80°C/30V) |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 100.0 m | IE-5TC4x2xAWG26/7-PUR | 1 | **8813210000** |
| Cut to metre starting at 110.0 m | IE-C5ED8UG-MW | | **8936390000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | |

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-C5ED8UB-100M | 1 | **8960670000** |
| | IE-C5ED8UB-MW | | **8949760000** |
| | Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

| **Sheathing stripper** | Type | Qty. | Order No. |
|---|---|---|---|
| | AM 12 | 1 | **9030060000** |
| | IE-CST | 1 | **9204350000** |
| **Markers** | | | |
| | TM-I 12 MC NE GE | 320 | **1718411687** |
| | TM-I 18 MC NE GE | 320 | **1718431687** |
| | TM 4/12 HF/HB | 500 | **1719840000** |
| | TM 4/18 HF/HB | 500 | **1719850000** |
| | VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

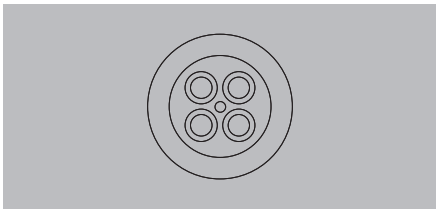
**Note**

## Raw cables

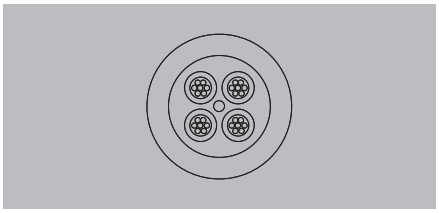
## PROFINET cable

- In lengths from 100 to 1,000 metres

### Installation cable type A, PVC



### Connection cable type B, PVC



## Technical data

| | | |
|---|---|---|
| Product type | Installation cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Cross-section | 4*AWG 22/1 - 0.33 mm² | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PVC | PVC |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive | 7.5 *diameter | 7.5 *diameter |
| Min. bending radius, once only | 3.5 *diameter | 3.5 *diameter |
| 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 | in accordance with IEC 60332-1 / UL 1685 | in accordance with IEC 60332-1 / UL 1685 |
| Standard, assembly | UL-Style 21694 | UL Style 20201 |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 100.0 m | IE-C5AS4V1000 | 1 | **8899000000** | IE-C5DS4V1000 | 1 | **8898990000** |
| Cut to metre starting at 110.0 m | IE-C5AS4VG-MW | | **8955950000** | IE-C5DS4VG-MW | | **8955560000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | | Order example, for cut cable: 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** | VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

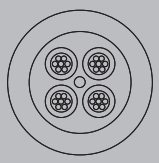
**Note**

## Raw cables

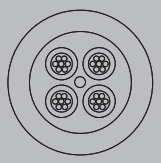
## PROFINET cable

- In lengths from 100 to 1,000 metres

### Dragline cable type C, PUR



### Torsion cable type C, PUR



## Technical data

| | | |
|---|---|---|
| Product type | Dragline cable | Torsion cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | S/UTP |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4* AWG 22/19 - 0.38 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive | 7.5 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| Bending cycles | 3 Mio | |
| Torsion cycles | | 1 mill. |
| Torsion resistance | °/m | 180 °/m |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+80 °C |
| Installation temperature | -20 °C...+60 °C | -40 °C...+80 °C |
| Storage temperature | -50 °C...+70 °C | -40 °C...+80 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Standard, assembly | | UL Style 21161 |
| Approvals | | |
| **Note** | | |

## Ordering data

| Cat. 5 PROFINET. PUR | Type | Qty. | Order No. |
|---|---|---|---|
| 100.0 m | IE-C5DD4U1000 | 1 | **8899010000** |
| Cut to metre starting at 110.0 m | IE-C5DD4UG-MW | | **8947670000** |
| **Note** | Order example, for cut cable: 150 x "article number" = 150 m on drum | | |

| Type | Qty. | Order No. |
|---|---|---|
| | | |
| IE-C5IT4UG-MW | | **1103010000** |
| Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS VO | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS VO | 160 | **1730560001** |

| Type | Qty. | Order No. |
|---|---|---|
| AM 12 | 1 | **9030060000** |
| IE-CST | 1 | **9204350000** |
| | | |
| TM-I 12 MC NE GE | 320 | **1718411687** |
| TM-I 18 MC NE GE | 320 | **1718431687** |
| TM 4/12 HF/HB | 500 | **1719840000** |
| TM 4/18 HF/HB | 500 | **1719850000** |
| VT SF 5/21 NE WS VO | 160 | **1689470001** |
| VT SF 6/21 NE WS VO | 160 | **1730560001** |

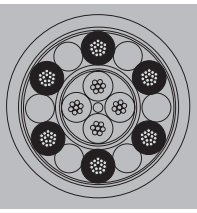
**Note**

## Raw cables

## Hybrid cable

- In lengths from 100 to 1,000 metres

## PVC





## Technical data

| | |
|---|---|
| Product type | Connecting cables |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP |
| Cross-section | 4*AWG 22/7 - 0.36 mm², 6*0.5 mm² |
| Sheath diameter, max. | 9.5 mm |
| Material sheath | PVC |
| Sheathing colour | green (RAL 6018) |
| Insulation diameter | 1.5 mm / 1.75 mm |
| Min. bending radius, repetitive | 7.5 *diameter |
| Min. bending radius, once only | 3.5 *diameter |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C |
| Storage temperature | -40 °C...+70 °C |
| Abrasion resistance | good |
| Halogen | Yes |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1685 |
| Resistance to oils | limited |
| Standard, assembly | |
| Approvals | |
| **Note** | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| Cut to metre starting at 110.0 m | IE-C5DHAG-MW | | **1172250000** |
| **Note** | Order example, for cut cable: 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS V0 | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS V0 | 160 | **1730560001** |

**Note**

## Assembled cables

## CabinetLine Cat. 6 straight patch cable

### LSZH grey


### Technical data

| | |
|---|---|
| Product type | Patch cable |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm |
| Material sheath | LSZH |
| Colour | Grey |
| Insulation diameter | 1.04 mm |
| Min. bending radius, repetitive | 50 mm |
| Min. bending radius, once only | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C |
| Storage temperature | -20 °C...+60 °C |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Approvals | CULUS; GOSTME25 |

**Note**

### Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 0.2 m | IE-C6FP8LD0002M40M40-D | 1 | **1165940002** |
| 0.5 m | IE-C6FP8LD0005M40M40-D | 1 | **1165940005** |
| 1.0 m | IE-C6FP8LD0010M40M40-D | 1 | **1165940010** |
| 1.5 m | IE-C6FP8LD0015M40M40-D | 1 | **1165940015** |
| 2.0 m | IE-C6FP8LD0020M40M40-D | 1 | **1165940020** |
| 3.0 m | IE-C6FP8LD0030M40M40-D | 1 | **1165940030** |
| 5.0 m | IE-C6FP8LD0050M40M40-D | 1 | **1165940050** |
| 7.5 m | IE-C6FP8LD0075M40M40-D | 1 | **1165940075** |
| 10.0 m | IE-C6FP8LD0100M40M40-D | 1 | **1165940100** |
| 15.0 m | IE-C6FP8LD0150M40M40-D | 1 | **1165940150** |
| 20.0 m | IE-C6FP8LD0200M40M40-D | 1 | **1165940200** |
| 25.0 m | IE-C6FP8LD0250M40M40-D | 1 | **1165940250** |

**Note**

Other lengths available on request

### 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** |

**Note**

## Assembled cables

## CabinetLine Cat. 6 straight patch cable

### LSZH blue

### LSZH black



## Technical data

| | | |
|---|---|---|
| Product type | Patch cable | Patch cable |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm | 5.9 mm |
| Material sheath | LSZH | LSZH |
| Colour | Blue | Black |
| Insulation diameter | 1.04 mm | 1.04 mm |
| Min. bending radius, repetitive | 50 mm | 50 mm |
| Min. bending radius, once only | 25 mm | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C | 0 °C...+50 °C |
| Storage temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C6FP8LB0005M40M40-B | 1 | **1165900005** | IE-C6FP8LE0005M40M40-E | 1 | **1251610005** |
| 1.0 m | IE-C6FP8LB0010M40M40-B | 1 | **1165900010** | IE-C6FP8LE0010M40M40-E | 1 | **1251610010** |
| 1.5 m | IE-C6FP8LB0015M40M40-B | 1 | **1165900015** | IE-C6FP8LE0015M40M40-E | 1 | **1251610015** |
| 2.0 m | IE-C6FP8LB0020M40M40-B | 1 | **1165900020** | IE-C6FP8LE0020M40M40-E | 1 | **1251610020** |
| 3.0 m | IE-C6FP8LB0030M40M40-B | 1 | **1165900030** | IE-C6FP8LE0030M40M40-E | 1 | **1251610030** |
| 5.0 m | IE-C6FP8LB0050M40M40-B | 1 | **1165900050** | IE-C6FP8LE0050M40M40-E | 1 | **1251610050** |
| 10.0 m | IE-C6FP8LB0100M40M40-B | 1 | **1165900100** | IE-C6FP8LE0100M40M40-E | 1 | **1251610100** |
| 15.0 m | IE-C6FP8LB0150M40M40-B | 1 | **1165900150** | IE-C6FP8LE0150M40M40-E | 1 | **1251610150** |
| 20.0 m | IE-C6FP8LB0200M40M40-B | 1 | **1165900200** | IE-C6FP8LE0200M40M40-E | 1 | **1251610200** |
| 25.0 m | IE-C6FP8LB0250M40M40-B | 1 | **1165900250** | IE-C6FP8LE0250M40M40-E | 1 | **1251610250** |
| **Note** | | | | | | |

## Accessories

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| **Sheathing stripper** | | | | | | |
| 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cables

## CabinetLine Cat. 6 straight patch cable

### LSZH green

### LSZH red



## Technical data

| | | |
|---|---|---|
| Product type | Patch cable | Patch cable |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm | 5.9 mm |
| Material sheath | LSZH | LSZH |
| Colour | Green | Red |
| Insulation diameter | 1.04 mm | 1.04 mm |
| Min. bending radius, repetitive | 50 mm | 50 mm |
| Min. bending radius, once only | 25 mm | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C | 0 °C...+50 °C |
| Storage temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C6FP8LG0005M40M40-G | 1 | **1251590005** | IE-C6FP8LR0005M40M40-R | 1 | **1166030005** |
| 1.0 m | IE-C6FP8LG0010M40M40-G | 1 | **1251590010** | IE-C6FP8LR0010M40M40-R | 1 | **1166030010** |
| 1.5 m | IE-C6FP8LG0015M40M40-G | 1 | **1251590015** | IE-C6FP8LR0015M40M40-R | 1 | **1166030015** |
| 2.0 m | IE-C6FP8LG0020M40M40-G | 1 | **1251590020** | IE-C6FP8LR0020M40M40-R | 1 | **1166030020** |
| 3.0 m | IE-C6FP8LG0030M40M40-G | 1 | **1251590030** | IE-C6FP8LR0030M40M40-R | 1 | **1166030030** |
| 5.0 m | IE-C6FP8LG0050M40M40-G | 1 | **1251590050** | IE-C6FP8LR0050M40M40-R | 1 | **1166030050** |
| 10.0 m | IE-C6FP8LG0100M40M40-G | 1 | **1251590100** | IE-C6FP8LR0100M40M40-R | 1 | **1166030100** |
| 15.0 m | IE-C6FP8LG0150M40M40-G | 1 | **1251590150** | IE-C6FP8LR0150M40M40-R | 1 | **1166030150** |
| 20.0 m | IE-C6FP8LG0200M40M40-G | 1 | **1251590200** | IE-C6FP8LR0200M40M40-R | 1 | **1166030200** |
| 25.0 m | IE-C6FP8LG0250M40M40-G | 1 | **1251590250** | IE-C6FP8LR0250M40M40-R | 1 | **1166030250** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cables

## CabinetLine Cat. 6 straight patch cable

### LSZH magenta

| RJ45 | | RJ45 |
|---|---|---|
| 1 | white, orange | 1 |
| 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 yellow

| RJ45 | | RJ45 |
|---|---|---|
| 1 | white, orange | 1 |
| 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 | Patch cable | Patch cable |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm | 5.9 mm |
| Material sheath | LSZH | LSZH |
| Colour | Magenta | Yellow |
| Insulation diameter | 1.04 mm | 1.04 mm |
| Min. bending radius, repetitive | 50 mm | 50 mm |
| Min. bending radius, once only | 25 mm | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C | 0 °C...+50 °C |
| Storage temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C6FP8LM0005M40M40-M | 1 | **1201270005** | IE-C6FP8LY0005M40M40-Y | 1 | **1251580005** |
| 1.0 m | IE-C6FP8LM0010M40M40-M | 1 | **1201270010** | IE-C6FP8LY0010M40M40-Y | 1 | **1251580010** |
| 1.5 m | IE-C6FP8LM0015M40M40-M | 1 | **1201270015** | IE-C6FP8LY0015M40M40-Y | 1 | **1251580015** |
| 2.0 m | IE-C6FP8LM0020M40M40-M | 1 | **1201270020** | IE-C6FP8LY0020M40M40-Y | 1 | **1251580020** |
| 3.0 m | IE-C6FP8LM0030M40M40-M | 1 | **1201270030** | IE-C6FP8LY0030M40M40-Y | 1 | **1251580030** |
| 5.0 m | IE-C6FP8LM0050M40M40-M | 1 | **1201270050** | IE-C6FP8LY0050M40M40-Y | 1 | **1251580050** |
| 10.0 m | IE-C6FP8LM0100M40M40-M | 1 | **1201270100** | IE-C6FP8LY0100M40M40-Y | 1 | **1251580100** |
| 15.0 m | IE-C6FP8LM0150M40M40-M | 1 | **1201270150** | IE-C6FP8LY0150M40M40-Y | 1 | **1251580150** |
| 20.0 m | IE-C6FP8LM0200M40M40-M | 1 | **1201270200** | IE-C6FP8LY0200M40M40-Y | 1 | **1251580200** |
| 25.0 m | | | | IE-C6FP8LY0250M40M40-Y | 1 | **1251580250** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cables
## CabinetLine Cat. 6 patch cable
## Angled

### LSZH grey 270°

### LSZH grey 90°



## Technical data

| | | |
|---|---|---|
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Product type | Patch cable | Patch cable |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20, Angled 270° / RJ45 IP 20 | RJ45 IP 20, Angled 90° / RJ45 IP 20 |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm | 5.9 mm |
| Material sheath | LSZH | LSZH |
| Colour | Grey | Grey |
| Insulation diameter | 1.04 mm | 1.04 mm |
| Min. bending radius, repetitive | 50 mm | 50 mm |
| Min. bending radius, once only | 25 mm | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C | 0 °C...+50 °C |
| Storage temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

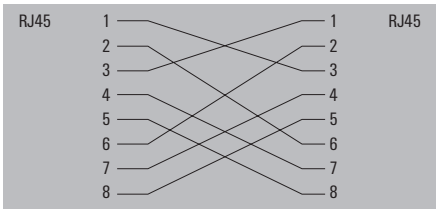
| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C6FP8LD0005M40W40-D | 1 | **1233160005** | IE-C6FP8LD0005M40V40-D | 1 | **1248280005** |
| 1.0 m | IE-C6FP8LD0010M40W40-D | 1 | **1233160010** | IE-C6FP8LD0010M40V40-D | 1 | **1248280010** |
| 1.2 m | IE-C6FP8LD0012M40W40-D | 1 | **1233160012** | IE-C6FP8LD0012M40V40-D | 1 | **1248280012** |
| 1.5 m | IE-C6FP8LD0015M40W40-D | 1 | **1233160015** | IE-C6FP8LD0015M40V40-D | 1 | **1248280015** |
| 2.0 m | IE-C6FP8LD0020M40W40-D | 1 | **1233160020** | IE-C6FP8LD0020M40V40-D | 1 | **1248280020** |
| 3.0 m | IE-C6FP8LD0030M40W40-D | 1 | **1233160030** | IE-C6FP8LD0030M40V40-D | 1 | **1248280030** |
| 5.0 m | IE-C6FP8LD0050M40W40-D | 1 | **1233160050** | IE-C6FP8LD0050M40V40-D | 1 | **1248280050** |
| 10.0 m | IE-C6FP8LD0100M40W40-D | 1 | **1233160100** | IE-C6FP8LD0100M40V40-D | 1 | **1248280100** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cables
## Patch cable CabinetLine Cat. 6
## Crossover

### LSZH grey




### Technical data

| | |
|---|---|
| Product type | Patch cable, crossover |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 5.9 mm |
| Material sheath | LSZH |
| Colour | Grey |
| Insulation diameter | 1.04 mm |
| Min. bending radius, repetitive | 50 mm |
| Min. bending radius, once only | 25 mm |
| Ambient temperature (operational) | -20 °C...+60 °C |
| Installation temperature | 0 °C...+50 °C |
| Storage temperature | -20 °C...+60 °C |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Approvals | CULUS; GOSTME25 |

**Note**

### Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 0.3 m | IE-C6FP8LD0003X40X40-Y | 1 | **1312160003** |
| 0.4 m | IE-C6FP8LD0004X40X40-Y | 1 | **1312160004** |
| 0.5 m | IE-C6FP8LD0005X40X40-Y | 1 | **1312160005** |
| 1.0 m | IE-C6FP8LD0010X40X40-Y | 1 | **1312160010** |
| 2.0 m | IE-C6FP8LD0020X40X40-Y | 1 | **1312160020** |
| 3.0 m | IE-C6FP8LD0030X40X40-Y | 1 | **1312160030** |
| 5.0 m | IE-C6FP8LD0050X40X40-Y | 1 | **1312160050** |
| 10.0 m | IE-C6FP8LD0100X40X40-Y | 1 | **1312160100** |
| 15.0 m | IE-C6FP8LD0150X40X40-Y | 1 | **1312160150** |
| 20.0 m | IE-C6FP8LD0200X40X40-Y | 1 | **1312160200** |

**Note**

### 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** |

**Note**

## Assembled cables

## CabinetLine Cat. 5 straight patch cable

### PVC green

### PUR green



## Technical data

| | | |
|---|---|---|
| Product type | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) | Cat.5 (ISO/IEC 11801) |
| Shielding | S/FTP | SF/UTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 26/7 - 4*2*0.128 mm² | 4*2*AWG 26/7 - 4*2*0.128 mm² |
| Sheath diameter, max. | 6.4 mm | 6 mm |
| Material sheath | PVC | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 0.98 mm | 0.98 mm |
| Min. bending radius, repetitive | 10 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| Ambient temperature (operational) | -40 °C...+75 °C | -40 °C...+75 °C |
| Abrasion resistance | good | very good |
| Halogen | | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | | EN 50305 |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C5ES8VG0005M40M40-G | 1 | **1166020005** | IE-C5ES8UG0005M40M40-G | 1 | **1166000005** |
| 1.0 m | IE-C5ES8VG0010M40M40-G | 1 | **1166020010** | IE-C5ES8UG0010M40M40-G | 1 | **1166000010** |
| 1.5 m | IE-C5ES8VG0015M40M40-G | 1 | **1166020015** | IE-C5ES8UG0015M40M40-G | 1 | **1166000015** |
| 2.0 m | IE-C5ES8VG0020M40M40-G | 1 | **1166020020** | IE-C5ES8UG0020M40M40-G | 1 | **1166000020** |
| 3.0 m | IE-C5ES8VG0030M40M40-G | 1 | **1166020030** | IE-C5ES8UG0030M40M40-G | 1 | **1166000030** |
| 5.0 m | IE-C5ES8VG0050M40M40-G | 1 | **1166020050** | IE-C5ES8UG0050M40M40-G | 1 | **1166000050** |
| 10.0 m | IE-C5ES8VG0100M40M40-G | 1 | **1166020100** | IE-C5ES8UG0100M40M40-G | 1 | **1166000100** |
| 15.0 m | IE-C5ES8VG0150M40M40-G | 1 | **1166020150** | IE-C5ES8UG0150M40M40-G | 1 | **1166000150** |
| 20.0 m | IE-C5ES8VG0200M40M40-G | 1 | **1166020200** | IE-C5ES8UG0200M40M40-G | 1 | **1166000200** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cables

## Patch cable CabinetLine Cat. 6 straight

### PUR green


### Technical data

| | |
|---|---|
| Product type | System cable |
| Category | Cat.6 (ISO/IEC 11801) |
| Shielding | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 |
| Connector standard | IEC 60603-7-51 |
| PoE / PoE+ | conforming to IEEE 802.3at |
| Cross-section | 4*2*AWG 27/7 - 4*2*0.1 mm² |
| Sheath diameter, max. | 6.4 mm |
| Material sheath | PUR |
| Sheathing colour | green (RAL 6018) |
| Insulation diameter | 1.02 mm |
| Min. bending radius, repetitive | 10 *diameter |
| Min. bending radius, once only | 5 *diameter |
| Ambient temperature (operational) | -40 °C...+85 °C |
| Abrasion resistance | very good |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 / UL 1581 FT2 |
| Resistance to oils | in accordance with IEC 60811-2-1 |
| Approvals | |

**Note**

### Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 0.3 m | IE-C6FS8UG0003A40A40-G | 1 | **8941350003** |
| 0.5 m | IE-C6FS8UG0005A40A40-G | 1 | **8941350005** |
| 1.0 m | IE-C6FS8UG0010A40A40-G | 1 | **8941350010** |
| 1.5 m | IE-C6FS8UG0015A40A40-G | 1 | **8941350015** |
| 2.0 m | IE-C6FS8UG0020A40A40-G | 1 | **8941350020** |
| 3.0 m | IE-C6FS8UG0030A40A40-G | 1 | **8941350030** |
| 5.0 m | IE-C6FS8UG0050A40A40-G | 1 | **8941350050** |
| 10.0 m | IE-C6FS8UG0100A40A40-G | 1 | **8941350100** |
| 15.0 m | IE-C6FS8UG0150A40A40-G | 1 | **8941350150** |
| 20.0 m | IE-C6FS8UG0200A40A40-G | 1 | **8941350200** |

**Note** Other lengths available on request

### 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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 NE WS VO | 160 | **1689470001** |
| Wire and cable marker. ø 5.8 - 7.8 mm | VT SF 6/21 NE WS VO | 160 | **1730560001** |

**Note**

## Assembled cable
## Patch cable PROFINET dragline cable (Type C)
## Cat. 5
## IP 20

### RJ45 IP 20



RJ45 — RJ45

| | | |
|---|---|---|
| 1 | yellow | 1 |
| 2 | orange | 2 |
| 3 | white | 3 |
| 6 | blue | 6 |

### RJ45 IP 20 incl. protective cap



RJ45 — RJ45

| | | |
|---|---|---|
| 1 | yellow | 1 |
| 2 | orange | 2 |
| 3 | white | 3 |
| 6 | blue | 6 |

## Technical data

| | | |
|---|---|---|
| Product type | Dragline cable | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | RJ45 IP 20 / RJ45 IP 20 | RJ45 IP 20 with protective cap / RJ45 IP 20 with protective cap |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive / Min. bending radius, once only | 7.5 *diameter / 5 *diameter | 7.5 *diameter / 5 *diameter |
| Bending cycles | 3 Mio | 3 Mio |
| Speed | 180 m/min | 180 m/min |
| Acceleration | 4 m/s² | 4 m/s² |
| Pulling force | ≤ 150 N | ≤ 150 N |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C | -50 °C...+70 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Approvals | GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data

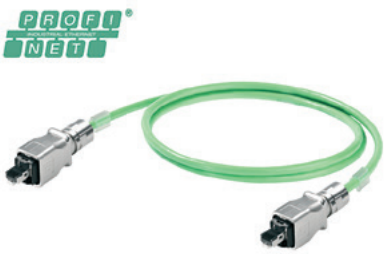
| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C5DD4UG0005A20A20-E | 1 | **1173030005** | IE-C5DD4UG0005A2DA2D-E | 1 | **1376510005** |
| 1.0 m | IE-C5DD4UG0010A20A20-E | 1 | **1173030010** | IE-C5DD4UG0010A2DA2D-E | 1 | **1376510010** |
| 2.0 m | IE-C5DD4UG0020A20A20-E | 1 | **1173030020** | IE-C5DD4UG0020A2DA2D-E | 1 | **1376510020** |
| 3.0 m | IE-C5DD4UG0030A20A20-E | 1 | **1173030030** | IE-C5DD4UG0030A2DA2D-E | 1 | **1376510030** |
| 5.0 m | IE-C5DD4UG0050A20A20-E | 1 | **1173030050** | IE-C5DD4UG0050A2DA2D-E | 1 | **1376510050** |
| 10.0 m | IE-C5DD4UG0100A20A20-E | 1 | **1173030100** | IE-C5DD4UG0100A2DA2D-E | 1 | **1376510100** |
| 15.0 m | IE-C5DD4UG0150A20A20-E | 1 | **1173030150** | IE-C5DD4UG0150A2DA2D-E | 1 | **1376510150** |
| 20.0 m | IE-C5DD4UG0200A20A20-E | 1 | **1173030200** | IE-C5DD4UG0200A2DA2D-E | 1 | **1376510200** |
| **Note** | | | | | | |

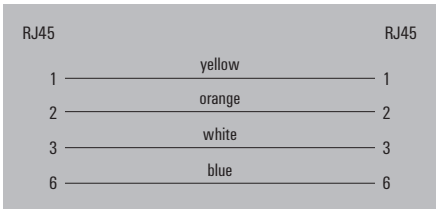
## Accessories

| **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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

**Assembled cable**
**Patch cable PROFINET dragline cable (Type C)**
**Cat. 5**
**IP 67**

## V14 RJ45 IP 67






## Technical data

| | |
|---|---|
| Product type | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Connector standard | IEC 61076-3-117 Var. 14, IEC 60603-7-51 |
| Shielding | SF/UTP |
| Version connector left / Version connector right | RJ45 IP 67 PushPull V14 metal / RJ45 IP 67 PushPull V14 metal |
| Cross-section | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm |
| Material sheath | PUR |
| Insulation diameter | 1.5 mm |
| Min. bending radius, repetitive / Min. bending radius, once only | 7.5 *diameter / 5 *diameter |
| 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 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 |
| Approvals | GOSTME25 |
| **Note** | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.0 m | IE-C5DD4UG0010A2EA2E-X | 1 | **1119730010** |
| 2.0 m | IE-C5DD4UG0020A2EA2E-X | 1 | **1119730020** |
| 3.0 m | IE-C5DD4UG0030A2EA2E-X | 1 | **1119730030** |
| 5.0 m | IE-C5DD4UG0050A2EA2E-X | 1 | **1119730050** |
| 10.0 m | IE-C5DD4UG0100A2EA2E-X | 1 | **1119730100** |
| 15.0 m | IE-C5DD4UG0150A2EA2E-X | 1 | **1119730150** |
| 20.0 m | IE-C5DD4UG0200A2EA2E-X | 1 | **1119730200** |
| **Note** | | | |

## Accessories

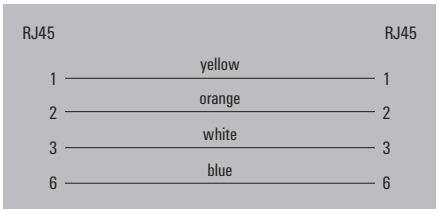
| **Sheathing stripper** | Type | Qty. | Order No. |
|---|---|---|---|
| For UTP and STP data cables | AM 12 | 1 | **9030060000** |
| For coaxial and round data cables | IE-CST | 1 | **9204350000** |
| **Markers** | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** |

**Note**

## Assembled cable
## Patch cable PROFINET (Type C) Cat. 5 moulded IP 67

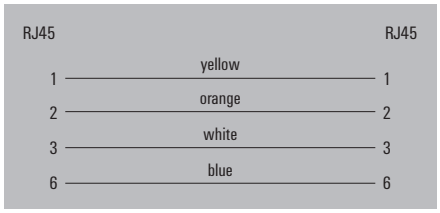
### V14 RJ45 IP 67

**Dragline cable**




### V14 RJ45 IP 67

**Torsion cable**




## Technical data

| | | |
|---|---|---|
| Product type | Dragline cable | Torsion cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Connector standard | IEC 61076-3-107 | IEC 61076-3-107 |
| Shielding | SF/UTP | S/UTP |
| Version connector left / Version connector right | RJ45 IP 67 PushPull moulded V14 metal / RJ45 IP 67 PushPull moulded V14 metal | RJ45 IP 67 PushPull moulded V14 metal / RJ45 IP 67 PushPull moulded V14 metal |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4* AWG 22/19 - 0.38 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive / Min. bending radius, once only | 7.5 *diameter / 5 *diameter | 10 *diameter / 5 *diameter |
| Bending cycles / Pulling force | 3 Mio / ≤ 150 N | |
| Torsion cycles / Torsion resistance | | 1 mill. / 180 °/m |
| Speed / Acceleration | 180 m/min / 4 m/s² | |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+80 °C |
| Installation temperature | -20 °C...+60 °C | -40 °C...+80 °C |
| Storage temperature | -50 °C...+70 °C | -40 °C...+80 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Approvals | GOSTME25 | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 1.0 m | IE-C5DD4UG0010B2EB2E-X | 1 | **1307610010** | IE-C5IT4UG0010B2EB2E-X | 1 | **1312690010** |
| 2.0 m | IE-C5DD4UG0020B2EB2E-X | 1 | **1307610020** | IE-C5IT4UG0020B2EB2E-X | 1 | **1312690020** |
| 3.0 m | IE-C5DD4UG0030B2EB2E-X | 1 | **1307610030** | IE-C5IT4UG0030B2EB2E-X | 1 | **1312690030** |
| 5.0 m | IE-C5DD4UG0050B2EB2E-X | 1 | **1307610050** | IE-C5IT4UG0050B2EB2E-X | 1 | **1312690050** |
| 10.0 m | IE-C5DD4UG0100B2EB2E-X | 1 | **1307610100** | IE-C5IT4UG0100B2EB2E-X | 1 | **1312690100** |
| **Note** | | | | | | |

## 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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cables
## Patch cable PushPull Power

### Power IP 67, PVC

### Power IP 67, PUR

## Technical data

| | Power IP 67, PVC | Power IP 67, PUR |
|---|---|---|
| Connector standard | in accordance with PROFINET specification | in accordance with PROFINET specification |
| Version connector left / Version connector right | PushPull Power / PushPull Power | PushPull Power / PushPull Power |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+80 °C |
| Wire connection cross section AWG, max. | AWG 16 | AWG 16 |
| Sheath diameter, max. | 8.1 mm | 9 mm |
| Material sheath | PVC | PUR |
| Sheathing colour | grey (similar to RAL 7001) | grey (similar to RAL 7001) |
| Insulation | PVC | TPE |
| No. of wires | 5 | 5 |
| Min. bending radius, once only | 4 *diameter | 5 *diameter |
| Rated voltage | 24 V | 24 V |
| Current-carrying capacity at 50 °C | 16 A | 16 A |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Power IP 67, PVC | | | Power IP 67, PUR | | |
|---|---|---|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
| 1.0 m | IE-CSPS5VS0010VAPVAP-X | 1 | **1350120010** | | | |
| 3.0 m | IE-CSPS5VS0030VAPVAP-X | 1 | **1350120030** | | | |
| 5.0 m | IE-CSPS5VS0050VAPVAP-X | 1 | **1350120050** | IE-CSPD5US0050VAPVAP-X | 1 | **1403680050** |
| 10.0 m | IE-CSPS5VS0100VAPVAP-X | 1 | **1350120100** | IE-CSPD5US0100VAPVAP-X | 1 | **1403680100** |
| 15.0 m | IE-CSPS5VS0150VAPVAP-X | 1 | **1350120150** | IE-CSPD5US0150VAPVAP-X | 1 | **1403680150** |
| 20.0 m | IE-CSPS5VS0200VAPVAP-X | 1 | **1350120200** | | | |
| **Note** | Other lengths available on request | | | | | |

## Accessories

| | Power IP 67, PVC | | | Power IP 67, PUR | | |
|---|---|---|---|---|---|---|
| **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** | | | | | | |
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |

**Note**

## Assembled cable

## 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 | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / M12 IP 67 straight male | M12 IP 67 straight male / M12 IP 67 straight socket |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive | 7.5 *diameter | 7.5 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| Bending cycles | 3 Mio | 3 Mio |
| Speed | 180 m/min | 180 m/min |
| Acceleration | 4 m/s² | 4 m/s² |
| Pulling force | ≤ 150 N | ≤ 150 N |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C | -50 °C...+70 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C5DD4UG0005MCSMCS-E | 1 | **1025950005** | | | |
| 1.5 m | IE-C5DD4UG0015MCSMCS-E | 1 | **1025950015** | IE-C5DD4UG0015MSSMCS-E | 1 | **1059330015** |
| 3.0 m | IE-C5DD4UG0030MCSMCS-E | 1 | **1025950030** | IE-C5DD4UG0030MSSMCS-E | 1 | **1059330030** |
| 5.0 m | IE-C5DD4UG0050MCSMCS-E | 1 | **1025950050** | IE-C5DD4UG0050MSSMCS-E | 1 | **1059330050** |
| 10.0 m | IE-C5DD4UG0100MCSMCS-E | 1 | **1025950100** | IE-C5DD4UG0100MSSMCS-E | 1 | **1059330100** |
| **Note** | | | | | | |

## Accessories

| **Markers** | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Mounting tool** | | | | | | |
| Screwty Set | Screwty Set | 1 | **1910000000** | Screwty Set | 1 | **1910000000** |
| Screwty Set-DM | Screwty Set -DM | 1 | **1920000000** | Screwty Set -DM | 1 | **1920000000** |
| Screwty-M12 | Screwty- M12 | 1 | **1900000000** | Screwty- M12 | 1 | **1900000000** |
| Screwty-M12-DM | Screwty-M12-DM | 1 | **1900001000** | Screwty-M12-DM | 1 | **1900001000** |
| **Note** | | | | | | |

## Assembled cable

## Dragline cable M12

- Cat. 5
- PUR
- D-coded
- PROFINET type C

### M12 - open

**Plug / -**

| | M12 |
|---|---|
| yellow | 1 |
| white | 2 |
| orange | 3 |
| blue | 4 |

### M12 - RJ45

**Plug / plug**

| RJ45 | | M12 |
|---|---|---|
| 1 | yellow | 1 |
| 3 | white | 2 |
| 2 | orange | 3 |
| 6 | blue | 4 |

## Technical data

| | | |
|---|---|---|
| Product type | Dragline cable | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / Open | M12 IP 67 straight male / RJ45 IP 20 |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive | 7.5 *diameter | 7.5 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| Bending cycles | 3 Mio | 3 Mio |
| Speed | 180 m/min | 180 m/min |
| Acceleration | 4 m/s² | 4 m/s² |
| Pulling force | ≤ 150 N | ≤ 150 N |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C | -50 °C...+70 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Approvals | CULUS; GOSTME25 | GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 1.0 m | | | | IE-C5DD4UG0010MCSA20-E | 1 | **1044470010** |
| 1.5 m | IE-C5DD4UG0015MCSXXX-X | 1 | **1025940015** | IE-C5DD4UG0015MCSA20-E | 1 | **1044470015** |
| 3.0 m | IE-C5DD4UG0030MCSXXX-X | 1 | **1025940030** | IE-C5DD4UG0030MCSA20-E | 1 | **1044470030** |
| 5.0 m | IE-C5DD4UG0050MCSXXX-X | 1 | **1025940050** | IE-C5DD4UG0050MCSA20-E | 1 | **1044470050** |
| 10.0 m | IE-C5DD4UG0100MCSXXX-X | 1 | **1025940100** | IE-C5DD4UG0100MCSA20-E | 1 | **1044470100** |
| **Note** | | | | | | |

## Accessories

| **Sheathing stripper** | | | | | | |
|---|---|---|---|---|---|---|
| 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 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Mounting tool** | | | | | | |
| Screwty Set | Screwty Set | 1 | **1910000000** | Screwty Set | 1 | **1910000000** |
| Screwty Set-DM | Screwty Set -DM | 1 | **1920000000** | Screwty Set -DM | 1 | **1920000000** |
| Screwty-M12 | Screwty- M12 | 1 | **1900000000** | Screwty- M12 | 1 | **1900000000** |
| Screwty-M12-DM | Screwty-M12-DM | 1 | **1900001000** | Screwty-M12-DM | 1 | **1900001000** |
| **Note** | | | | | | |

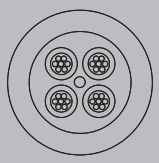
## Assembled cables

## M12 dragline cable, angled

- Cat. 5
- PUR
- D-coded
- PROFINET type C

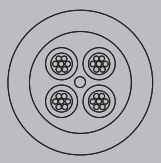
### M12 / M12

**Plug / plug**



### M12 / M12

**Plug / plug**



## Technical data

| | | |
|---|---|---|
| Product type | Dragline cable | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / M12 IP 67 angled male | M12 IP 67 angled male / M12 IP 67 angled male |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter, min. / max. | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive | 7.5 *diameter | 7.5 *diameter |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C | -50 °C...+70 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Fire safety for railway vehicles | | |
| **Note** | | |

## Ordering data

| **Cat. 5 PROFINET. PUR. M12 straight-M12 angled** | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
|---|---|---|---|---|---|---|
| 1.5 m | IE-C5DD4UG0015MCSMCA-E | 1 | **1059770015** | | | |
| 3.0 m | IE-C5DD4UG0030MCSMCA-E | 1 | **1059770030** | | | |
| 5.0 m | IE-C5DD4UG0050MCSMCA-E | 1 | **1059770050** | | | |
| 10.0 m | IE-C5DD4UG0100MCSMCA-E | 1 | **1059770100** | | | |
| **Cat. 5 PROFINET. PUR. M12 angled-M12 angled** | | | | | | |
| 1.5 m | | | | IE-C5DD4UG0015MCAMCA-E | 1 | **1059890015** |
| 3.0 m | | | | IE-C5DD4UG0030MCAMCA-E | 1 | **1059890030** |
| 5.0 m | | | | IE-C5DD4UG0050MCAMCA-E | 1 | **1059890050** |
| 10.0 m | | | | IE-C5DD4UG0100MCAMCA-E | 1 | **1059890100** |
| **Cat. 5. PUR. M12 angled-open** | | | | | | |
| 1.5 m | | | | | | |
| 3.0 m | | | | | | |
| 5.0 m | | | | | | |
| 10.0 m | | | | | | |
| **Note** | | | | | | |

## Accessories

| **Markers** | **Type** | **Qty.** | **Order No.** | **Type** | **Qty.** | **Order No.** |
|---|---|---|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE 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** |

**Note**

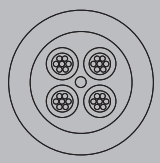
## Assembled cables

## M12 dragline cable, angled

- Cat. 5
- PUR
- D-coded
- PROFINET type C

### M12 / open

**Plug / -**



## Technical data

| | |
|---|---|
| Product type | Dragline cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 angled male / Open |
| Cross-section | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm |
| Material sheath | PUR |
| Sheathing colour | green (RAL 6018) |
| Insulation diameter, min. / max. | 1.5 mm |
| Min. bending radius, repetitive | 7.5 *diameter |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C |
| Abrasion resistance | very good |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with IEC 60811-2-1 |
| Fire safety for railway vehicles | |

**Note**

## Ordering data

| Cat. 5 PROFINET. PUR. M12 straight-M12 angled | Type | Qty. | Order No. |
|---|---|---|---|
| 1.5 m | | | |
| 3.0 m | | | |
| 5.0 m | | | |
| 10.0 m | | | |
| **Cat. 5 PROFINET. PUR. M12 angled-M12 angled** | | | |
| 1.5 m | | | |
| 3.0 m | | | |
| 5.0 m | | | |
| 10.0 m | | | |
| **Cat. 5. PUR. M12 angled-open** | | | |
| 1.5 m | IE-C5DD4UG0015MCAXXX-X | 1 | **1059750015** |
| 3.0 m | IE-C5DD4UG0030MCAXXX-X | 1 | **1059750030** |
| 5.0 m | IE-C5DD4UG0050MCAXXX-X | 1 | **1059750050** |
| 10.0 m | IE-C5DD4UG0100MCAXXX-X | 1 | **1059750100** |

**Note**

## Accessories

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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** |

**Note**

## Assembled cables

### System cable M12 flange

- Cat. 5
- PUR
- D-coded
- PROFINET type B

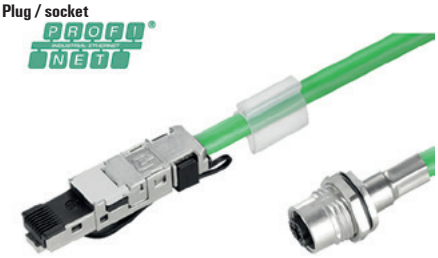
### M12 flange - M12 male

Plug / socket

| M12 | | M12 |
|---|---|---|
| 1 | yellow | 1 |
| 2 | white | 2 |
| 3 | orange | 3 |
| 4 | blue | 4 |

### M12 flange - RJ45

Plug / socket



| M12 | | M12 |
|---|---|---|
| 1 | yellow | 1 |
| 2 | white | 2 |
| 3 | orange | 3 |
| 4 | blue | 4 |

## Technical data

| | | |
|---|---|---|
| Product type | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | 360° shield contact | 360° shield contact |
| Version connector left / Version connector right | M12 flange / M12 - male / straight | M12 flange / RJ45 IP 20 |
| Cross-section | 4*AWG 22/7 - 0.36 mm² | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm | 6.7 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.5 mm | 1.5 mm |
| Min. bending radius, repetitive | 15 x cable diameter | 15 x cable diameter |
| Min. bending radius, once only | 5 x cable diameter | 5 x cable diameter |
| Ambient temperature (operational) | -40 °C...+70 °C | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C | -50 °C...+70 °C |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C5DS4UG0005MBSMCS-E | 1 | **1244130005** | IE-C5DS4UG0005MBSA20-E | 1 | **1234750005** |
| 1.0 m | IE-C5DS4UG0010MBSMCS-E | 1 | **1244130010** | IE-C5DS4UG0010MBSA20-E | 1 | **1234750010** |
| 1.5 m | IE-C5DS4UG0015MBSMCS-E | 1 | **1244130015** | IE-C5DS4UG0015MBSA20-E | 1 | **1234750015** |
| 5.0 m | IE-C5DS4UG0020MBSMCS-E | 1 | **1244130020** | IE-C5DS4UG0020MBSA20-E | 1 | **1234750020** |
| 10.0 m | IE-C5DS4UG0050MBSMCS-E | 1 | **1244130050** | IE-C5DS4UG0050MBSA20-E | 1 | **1234750050** |
| **Note** | | | | | | |

## Accessories

| **Markers** | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Mounting tool** | | | | | | |
| Screwty Set | Screwty Set | 1 | **1910000000** | Screwty Set | 1 | **1910000000** |
| Screwty Set-DM | Screwty Set -DM | 1 | **1920000000** | Screwty Set -DM | 1 | **1920000000** |
| Screwty-M12 | Screwty- M12 | 1 | **1900000000** | Screwty- M12 | 1 | **1900000000** |
| Screwty-M12-DM | Screwty-M12-DM | 1 | **1900001000** | Screwty-M12-DM | 1 | **1900001000** |

**Note**

## Assembled cables

### System cable M12 flange

- Cat. 5
- PUR
- D-coded
- PROFINET type B

### M12 flange - open

**Socket / -**


## Technical data

| | |
|---|---|
| Product type | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | 360° shield contact |
| Version connector left / Version connector right | M12 flange / Open |
| Cross-section | 4*AWG 22/7 - 0.36 mm² |
| Sheath diameter, max. | 6.7 mm |
| Material sheath | PUR |
| Sheathing colour | green (RAL 6018) |
| Insulation diameter | 1.5 mm |
| Min. bending radius, repetitive | 15 x cable diameter |
| Min. bending radius, once only | 5 x cable diameter |
| Ambient temperature (operational) | -40 °C...+70 °C |
| Installation temperature | -20 °C...+60 °C |
| Storage temperature | -50 °C...+70 °C |
| Approvals | |

**Note**

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 0.5 m | IE-C5DS4UG0005MBSXXX-E | 1 | **1234770005** |
| 1.0 m | IE-C5DS4UG0010MBSXXX-E | 1 | **1234770010** |
| 1.5 m | IE-C5DS4UG0015MBSXXX-E | 1 | **1234770015** |
| 5.0 m | IE-C5DS4UG0020MBSXXX-E | 1 | **1234770020** |
| 10.0 m | IE-C5DS4UG0050MBSXXX-E | 1 | **1234770050** |

**Note**

## Accessories

| **Markers** | Type | Qty. | Order No. |
|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** |
| | | | |
| **Mounting tool** | | | |
| Screwty Set | Screwty Set | 1 | **1910000000** |
| Screwty Set-DM | Screwty Set -DM | 1 | **1920000000** |
| Screwty-M12 | Screwty- M12 | 1 | **1900000000** |
| Screwty-M12-DM | Screwty-M12-DM | 1 | **1900001000** |

**Note**

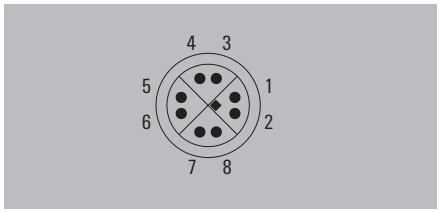
## Assembled cable

## Connecting cable M12

- Cat. 6
- PVC
- X-Type
- PROFINET type B

### M12 - M12

**Plug / plug**





### M12 - open

**Plug / -**


## Technical data

| | | |
|---|---|---|
| Product type | Connecting cables | Connecting cables |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP | S/FTP |
| Version connector left / Version connector right | M12 X-type IP 67 straight male / M12 X-type IP 67 straight male | M12 X-type IP 67 straight male / Open |
| Cross-section | 4*2*AWG 23/7 | 4*2*AWG 23/7 |
| Sheath diameter, max. | 8.8 mm | 8.8 mm |
| Material sheath | PVC | PVC |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1.58 mm | 1.58 mm |
| Min. bending radius, repetitive | 8 *diameter | 8 *diameter |
| Min. bending radius, once only | 4 *diameter | 4 *diameter |
| Pulling force | ≤ 150 N | ≤ 150 N |
| Ambient temperature (operational) | -40 °C...+80 °C | -40 °C...+80 °C |
| Installation temperature | -40 °C...+80 °C | -40 °C...+80 °C |
| Storage temperature | -40 °C...+80 °C | -40 °C...+80 °C |
| Halogen | | |
| Resistance to spread of flame | in accordance with IEC 60332-1-2 | in accordance with IEC 60332-1-2 |
| Standard, assembly | UL-Style 2461 | UL-Style 2461 |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 0.5 m | IE-C6KS8VG0005XCSXCS-E | 1 | **1398070005** | IE-C6KS8VG0005XCSXXX-E | 1 | **1449470005** |
| 1.5 m | IE-C6KS8VG0015XCSXCS-E | 1 | **1398070015** | IE-C6KS8VG0015XCSXXX-E | 1 | **1449470015** |
| 3.0 m | IE-C6KS8VG0030XCSXCS-E | 1 | **1398070030** | | | |
| 5.0 m | IE-C6KS8VG0050XCSXCS-E | 1 | **1398070050** | IE-C6KS8VG0050XCSXXX-E | 1 | **1449470050** |
| 10.0 m | IE-C6KS8VG0100XCSXCS-E | 1 | **1398070100** | IE-C6KS8VG0100XCSXXX-E | 1 | **1449470100** |
| **Note** | | | | | | |

## Accessories

| **Markers** | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

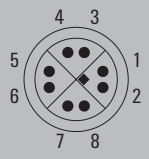
## Assembled cables

## M12 connecting cables

- Cat. 6
- PUR
- X-Type

## M12 - RJ45

**Plug / plug**




| RJ45 | | M12 |
|---|---|---|
| 1 | White, Orange | 1 |
| 2 | Orange | 2 |
| 3 | White, Green | 3 |
| 4 | Green | 8 |
| 5 | White, Blue | 7 |
| 6 | Blue | 4 |
| 7 | White, Brown | 5 |
| 8 | Brown | 6 |

## Technical data

| | |
|---|---|
| Product type | System cable |
| Category | Cat.$6_A$ / Class $E_A$ (ISO/IEC 11801 2010) |
| Shielding | S/FTP |
| Version connector left / Version connector right | RJ45 IP 20 / M12 X-type IP 67 straight male |
| Cross-section | 4*2*AWG 26/7 - 4*2*0.128 mm² |
| Sheath diameter, max. | 6.7 mm |
| Material sheath | PUR |
| Sheathing colour | green (RAL 6018) |
| Insulation diameter | 0.98 mm |
| Min. bending radius, repetitive | 10 *diameter |
| Min. bending radius, once only | 5 *diameter |
| Pulling force | |
| Ambient temperature (operational) | -40 °C...+80 °C |
| Installation temperature | -20 °C...+60 °C |
| Storage temperature | -40 °C...+80 °C |
| Halogen | according to IEC 60754-1 |
| Resistance to spread of flame | in accordance with IEC 60332-1-2 |
| Standard, assembly | UL Style 20963 |
| Approvals | |

**Note**

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.0 m | IE-C6ES8UG0010A40XCS-E | 1 | **1457580010** |
| 2.0 m | IE-C6ES8UG0020A40XCS-E | 1 | **1457580020** |
| 3.0 m | IE-C6ES8UG0030A40XCS-E | 1 | **1457580030** |
| 5.0 m | IE-C6ES8UG0050A40XCS-E | 1 | **1457580050** |
| 10.0 m | IE-C6ES8UG0100A40XCS-E | 1 | **1457580100** |
| 12.0 m | IE-C6ES8UG0120A40XCS-E | 1 | **1457580120** |

**Note**

## Accessories

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** |

**Note**

## Assembled cables

### EtherNet/IP patch cable

- in PUR

### V1 RJ45 IP 67 - metal


| RJ45 | | RJ45 |
|---|---|---|
| 1 | white, orange | 1 |
| 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 IP 67 - plastic


| RJ45 | | RJ45 |
|---|---|---|
| 1 | white, orange | 1 |
| 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 | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | RJ45 IP 67 Baymo V01 metal / RJ45 IP 67 Baymo V01 metal | RJ45 IP 67 Baymo V01 plastic / RJ45 IP 67 Baymo V01 plastic |
| Cross-section | 4*2*AWG 26/7 - 4*2*0.128 mm² | 4*2*AWG 26/7 - 4*2*0.128 mm² |
| Sheath diameter, max. | 6.1 mm | 6.1 mm |
| Material sheath | PUR | PUR |
| Sheathing colour | green (RAL 6018) | green (RAL 6018) |
| Insulation diameter | 1 mm | 1 mm |
| Min. bending radius, repetitive | 10 *diameter | 10 *diameter |
| Min. bending radius, once only | 5 *diameter | 5 *diameter |
| Ambient temperature (operational) | -40 °C...+80 °C | -40 °C...+80 °C |
| Installation temperature | -10 °C...+60 °C | -10 °C...+60 °C |
| Storage temperature | -40 °C...+80 °C | -40 °C...+80 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to spread of flame | in accordance with IEC 60332-1 | in accordance with IEC 60332-1 |
| Resistance to oils | in accordance with IEC 60811-2-1 | in accordance with IEC 60811-2-1 |
| Approvals | CULUS; GOSTME25 | CULUS; GOSTME25 |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 1.0 m | IE-C5ES8UG0010B41B41-E | 1 | **1066850000** | IE-C5ES8UG0010P41P41-E | 1 | **1106010000** |
| 2.0 m | IE-C5ES8UG0020B41B41-E | 1 | **1066860000** | IE-C5ES8UG0020P41P41-E | 1 | **1106020000** |
| 5.0 m | IE-C5ES8UG0050B41B41-E | 1 | **1066870000** | IE-C5ES8UG0050P41P41-E | 1 | **1106030000** |
| 10.0 m | IE-C5ES8UG0100B41B41-E | 1 | **1066880000** | IE-C5ES8UG0100P41P41-E | 1 | **1106040000** |
| **Note** | | | | | | |

## Accessories

| **Markers** | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| | | | | | | |

**Note**

## Assembled cable
## Railway cable M12

- Cat. 5
- Radox
- D-coded

### 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 | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / M12 IP 67 straight male | M12 IP 67 straight male / M12 IP 67 straight socket |
| Cross-section | 2*2*AWG 22/7 - 2*2*0.36 mm² | 2*2*AWG 22/7 - 2*2*0.36 mm² |
| Sheath diameter, max. | 7.55 mm | 7.55 mm |
| Material sheath | Radox GKW S | Radox GKW S |
| Sheathing colour | Black | Black |
| Insulation diameter | 1.95 mm | 1.95 mm |
| Min. bending radius, repetitive | 6 *diameter | 6 *diameter |
| Ambient temperature (operational) | -40 °C...+90 °C | -40 °C...+90 °C |
| Installation temperature | -25 °C...+90 °C | -25 °C...+90 °C |
| Storage temperature | -40 °C...+90 °C | -40 °C...+90 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with EN 50306-3 | in accordance with EN 50306-3 |
| Fire safety for railway vehicles | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |
| Approvals | CULUS | CULUS |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 1.5 m | IE-C5DB4RE0015MCSMCS-E | 1 | **1010850015** | IE-C5DB4RE0015MSSMCS-E | 1 | **1059340015** |
| 3.0 m | IE-C5DB4RE0030MCSMCS-E | 1 | **1010850030** | IE-C5DB4RE0030MSSMCS-E | 1 | **1059340030** |
| 5.0 m | IE-C5DB4RE0050MCSMCS-E | 1 | **1010850050** | IE-C5DB4RE0050MSSMCS-E | 1 | **1059340050** |
| 10.0 m | IE-C5DB4RE0100MCSMCS-E | 1 | **1010850100** | IE-C5DB4RE0100MSSMCS-E | 1 | **1059340100** |
| **Note** | | | | | | |

## Accessories

| **Markers** | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** | TM-I 18 MC NE GE | 320 | **1718431687** |
| **Note** | | | | | | |

## Assembled cable

## Railway cable M12

- Cat. 5
- Radox
- D-coded

### M12 - open

**Plug / -**

| | M12 |
|---|---|
| yellow | 1 |
| white | 2 |
| orange | 3 |
| blue | 4 |

## Technical data

| | |
|---|---|
| Product type | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / Open |
| Cross-section | 2*2*AWG 22/7 - 2*2*0.36 mm² |
| Sheath diameter, max. | 7.55 mm |
| Material sheath | Radox GKW S |
| Sheathing colour | Black |
| Insulation diameter | 1.95 mm |
| Min. bending radius, repetitive | 6 *diameter |
| Ambient temperature (operational) | -40 °C...+90 °C |
| Installation temperature | -25 °C...+90 °C |
| Storage temperature | -40 °C...+90 °C |
| Abrasion resistance | very good |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with EN 50306-3 |
| Fire safety for railway vehicles | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |
| Approvals | CULUS |
| **Note** | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.5 m | IE-C5DB4RE0015MCSXXX-X | 1 | **1010840015** |
| 3.0 m | IE-C5DB4RE0030MCSXXX-X | 1 | **1010840030** |
| 5.0 m | IE-C5DB4RE0050MCSXXX-X | 1 | **1010840050** |
| 10.0 m | IE-C5DB4RE0100MCSXXX-X | 1 | **1010840100** |

**Note**

## 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 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE GE | 320 | **1718431687** |

**Note**

## Assembled cables

## Railway cable M12

- Cat. 5
- Radox
- D-coded

### M12 / M12

**Plug / plug**

| 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 | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / M12 IP 67 angled male | M12 IP 67 angled male / M12 IP 67 angled male |
| Cross-section | 2*2*AWG 22/7 - 2*2*0.36 mm² | 2*2*AWG 22/7 - 2*2*0.36 mm² |
| Sheath diameter, max. | 7.55 mm | 7.55 mm |
| Material sheath | Radox GKW S | Radox GKW S |
| Sheathing colour | Black | Black |
| Insulation diameter, min. / max. | 1.95 mm | 1.95 mm |
| Min. bending radius, repetitive | 6 *diameter | 6 *diameter |
| Ambient temperature (operational) | -40 °C...+90 °C | -40 °C...+90 °C |
| Installation temperature | -25 °C...+90 °C | -25 °C...+90 °C |
| Storage temperature | -40 °C...+90 °C | -40 °C...+90 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with EN 50306-3 | in accordance with EN 50306-3 |
| Fire safety for railway vehicles | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

**Note**

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.5 m | IE-C5DB4RE0015MCSMCA-E | 1 | **1059940015** |
| 3 m | IE-C5DB4RE0030MCSMCA-E | 1 | **1059940030** |
| 5 m | IE-C5DB4RE0050MCSMCA-E | 1 | **1059940050** |
| 10 m | IE-C5DB4RE0100MCSMCA-E | 1 | **1059940100** |

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.5 m | IE-C5DB4RE0015MCAMCA-E | 1 | **1059970015** |
| 3 m | IE-C5DB4RE0030MCAMCA-E | 1 | **1059970030** |
| 5 m | IE-C5DB4RE0050MCAMCA-E | 1 | **1059970050** |
| 10 m | IE-C5DB4RE0100MCAMCA-E | 1 | **1059970100** |

**Note**

## Accessories

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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** |

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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** |

**Note**

## Assembled cables

## Railway cable M12

- Cat. 5
- Radox
- D-coded

### M12 / open

**Plug / -**


## Technical data

| | |
|---|---|
| Product type | System cable |
| Category | Cat.5 (ISO/IEC 11801) / Cat.5e (TIA T568-B) |
| Shielding | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 angled male / Open |
| Cross-section | 2*2*AWG 22/7 - 2*2*0.36 mm² |
| Sheath diameter, max. | 7.55 mm |
| Material sheath | Radox GKW S |
| Sheathing colour | Black |
| Insulation diameter, min. / max. | 1.95 mm |
| Min. bending radius, repetitive | 6 *diameter |
| Ambient temperature (operational) | -40 °C...+90 °C |
| Installation temperature | -25 °C...+90 °C |
| Storage temperature | -40 °C...+90 °C |
| Abrasion resistance | very good |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with EN 50306-3 |
| Fire safety for railway vehicles | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |

**Note**

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.5 m | IE-C5DB4RE0015MCAXXX-X | 1 | **1059900015** |
| 3 m | IE-C5DB4RE0030MCAXXX-X | 1 | **1059900030** |
| 5 m | IE-C5DB4RE0050MCAXXX-X | 1 | **1059900050** |
| 10 m | IE-C5DB4RE0100MCAXXX-X | 1 | **1059900100** |

**Note**

## Accessories

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Insertion label. yellow. 12 mm | TM-I 12 MC NE GE | 320 | **1718411687** |
| Insertion label. yellow. 18 mm | TM-I 18 MC NE 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** |

**Note**

## Assembled cables

## Railway cable RW M12

- Cat. 5
- Radox
- D-coded
- RW (reduced wire): suitable for RJ45 plug-in connectors

### M12 open

**Plug / -**

| | M12 |
|---|---|
| yellow | 1 |
| white | 2 |
| orange | 3 |
| blue | 4 |

### M12 - RJ45

**Plug / plug**

| RJ45 | | M12 |
|---|---|---|
| 1 | yellow | 1 |
| 3 | white | 2 |
| 2 | orange | 3 |
| 6 | blue | 4 |

## Technical data

| | | |
|---|---|---|
| Product type | System cable | System cable |
| Category | Cat.5 (ISO/IEC 11801) | Cat.5 (ISO/IEC 11801) |
| Shielding | SF/UTP | SF/UTP |
| Version connector left / Version connector right | M12 IP 67 straight male / Open | M12 IP 67 straight male / RJ45 IP 20 no tools needed |
| Cross-section | 2*2*AWG 22/7 - 2*2*0.36 mm² | 2*2*AWG 22/7 - 2*2*0.36 mm² |
| Sheath diameter, max. | 7 mm | 7 mm |
| Material sheath | Radox GKW S | Radox GKW S |
| Sheathing colour | Black | Black |
| Insulation diameter | 1.58 mm | 1.58 mm |
| Min. bending radius, repetitive | 6 *diameter | 6 *diameter |
| Ambient temperature (operational) | -40 °C...+90 °C | -40 °C...+90 °C |
| Storage temperature | -40 °C...+90 °C | -40 °C...+90 °C |
| Abrasion resistance | very good | very good |
| Halogen | in accordance with IEC 60754-2 | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with EN 50306-3 | in accordance with EN 50306-3 |
| Fire safety for railway vehicles | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |
| Approvals | | |
| **Note** | | |

## Ordering data

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| 4.0 m | | | | IE-C5DB4WE0040MCSA20-E | 1 | **1220310040** |
| 5.0 m | IE-C5DB4WE0050MCSXXX-E | 1 | **1269740050** | | | |
| 10.0 m | IE-C5DB4WE0100MCSXXX-E | 1 | **1269740100** | | | |
| **Note** | | | | | | |

## Accessories

| **Sheathing stripper** | Type | Qty. | Order No. | 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** | | | | | | |
| 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** |
| **Note** | | | | | | |

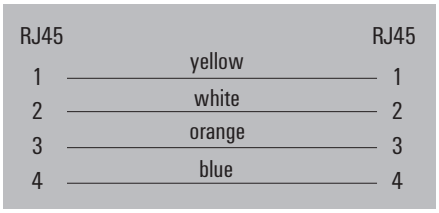
## Assembled cables

## Railway cable RW RJ45 - RJ45

- Cat. 5
- Radox
- RW (reduced wire)

### RJ45 - RJ45

**Plug / plug**




## Technical data

| | |
|---|---|
| Product type | System cable |
| Category | Cat.5 (ISO/IEC 11801) |
| Shielding | SF/UTP |
| Version connector left / Version connector right | RJ45 IP 20 no tools needed / RJ45 IP 20 no tools needed |
| Cross-section | 2*2*AWG 22/7 - 2*2*0.36 mm² |
| Sheath diameter, max. | 7 mm |
| Material sheath | Radox GKW S |
| Sheathing colour | Black |
| Insulation diameter | 1.58 mm |
| Min. bending radius, repetitive | 6 *diameter |
| Ambient temperature (operational) | -40 °C...+90 °C |
| Storage temperature | -40 °C...+90 °C |
| Abrasion resistance | very good |
| Halogen | in accordance with IEC 60754-2 |
| Resistance to oils | in accordance with EN 50306-3 |
| Fire safety for railway vehicles | According to DIN 5510-2 fire safety levels 1,2,3,4, According to BS 6853, According to EN50288-2-2 |
| Approvals | |

**Note**

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| 1.0 m | IE-C5DB4WE0010A20A20-E | 1 | **1421710010** |
| 2.0 m | IE-C5DB4WE0020A20A20-E | 1 | **1421710020** |
| 3.0 m | IE-C5DB4WE0030A20A20-E | 1 | **1421710030** |
| 5.0 m | IE-C5DB4WE0050A20A20-E | 1 | **1421710050** |
| 10.0 m | IE-C5DB4WE0100A20A20-E | 1 | **1421710100** |
| 20.0 m | IE-C5DB4WE0200A20A20-E | 1 | **1421710200** |

**Note**

## Accessories

| Markers | Type | Qty. | Order No. |
|---|---|---|---|
| Transparent sleeves. 12-mm length | TM 4/12 HF/HB | 500 | **1719840000** |
| Transparent sleeves. 18-mm length | TM 4/18 HF/HB | 500 | **1719850000** |

**Note**

# Fibre-optic cabling solutions
## Overview

# Overview – Fibre-optic cables
## First choice for industry

Fibre-optic cables are the best option for working in harsh industrial environments, especially 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

### Raw cables

#### Industrial fibre-optic dragline cable

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

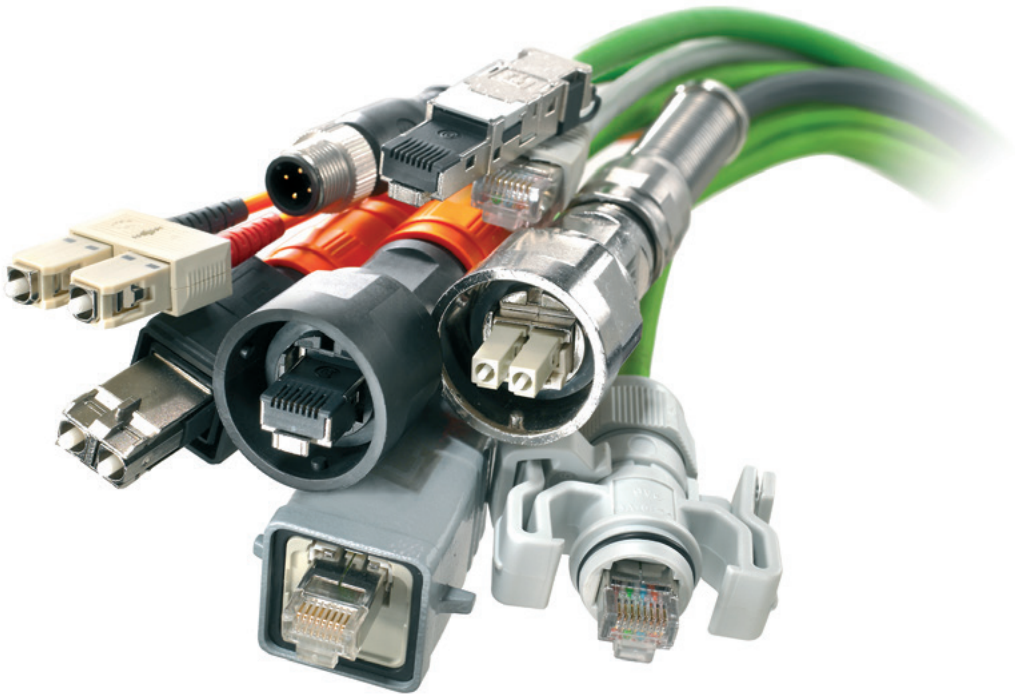
#### Industrial fibre-optic dragline cable

...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), sold by the metre

| Type | Breakout/ Zipcord | Plug-in connector left | Plug-in connector right | Length | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **GOF dragline, standard temperature range** | | | | **Metre goods** | | | | | | |
| IE-FM5D2UE-MW | Breakout | - | - | **8946000000** | | | | | | |
| IE-FM6D2UE-MW | Breakout | - | - | **8956060000** | | | | | | |
| **GOF dragline, extended temperature range** | | | | | | | | | | |
| IE-FM5C2UE-MW | Breakout | - | - | **8956070000** | | | | | | |
| IE-FM6C2UE-MW | Breakout | - | - | **8956050000** | | | | | | |
| **POF** | | | | | | | | | | |
| IE-FPOZ2EE-MW | Zipcord | - | - | **1242820000** | | | | | | |
| IE-FPOD2UE-MW | Breakout, black | - | - | **1172280000** | | | | | | |
| IE-FPOD2UG-MW | Breakout, green | - | - | **1398770000** | | | | | | |



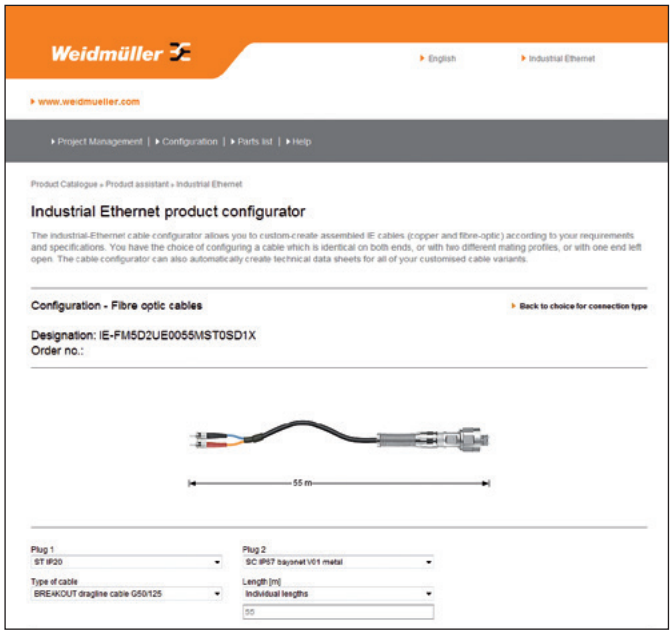
# Configurators for fibre-optic cables
## Tailor-made connections

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.

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.
- Variant 14, metal with SC or LC Duplex plugs




When selecting the cable, the following types are available:

- Zipcord, inner conductor 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, inner conductor G50 µm/125 µm and G62.5 µm/125 µm with PUR sheath.
- Zipcord inner conductor POF 980/1000 µm with PE sheathing

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.

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.

# Passive components
## Overview of accessories

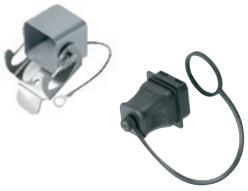
# Overview of accessories
## Everything from a single source

### Copper cabling tools

For assembling
- RJ45 crimp
- Hybrid insert

for stripping
to test the wiring

### Protective caps



to protect all IE-LINE connectors with ***STEADY****TEC*® technology

### Fibre-optic cabling tools

For assembling

- SC-GOF
- ST-GOF

### Marker

... for identifying conductors, plugs and devices

- Line markers
- Housing and plug marker

### General tools

... for pressing conductors into IDC terminals and pressing RJ45 contacts

- Indentation tool
- Pressing tool

### Surge protection for data interfaces

For the protection of Cat. 5 and Cat. 6 data lines - also in PoE and PoE + applications

### Cabtite

System-based cable entry

- Cable entry strips
- Cable grommets

## Stripping tools

### IE-CST

**1- and 2- step stripping in one operation**


Stripping tool for round (shielded) data cables of Ø 2.5...8 mm

- Specially designed for Ethernet cables
- Strips sheathing and cuts shield in one operation
- Blue blade cartridge included in delivery

### AM 12

**For UTP and STP data cables**

- Cutting of UTP and STP data cables and other flexible copper cables with a diameter of up to 4 mm² (~AWG11)
- Stripping of the outer insulations of UTP and STP data cables and other round cables with Ø 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 | | IE-CST | AM 12 |
|---|---|---|---|
| Cable model | | coaxial & round data cables | UTP and STP data cables |
| Conductor cross-section | AWG | | |
| Conductor diameter | mm | 2.5 ... 8 | 0.5...12.5 |
| Adjustable depth of cut | mm | | adjustable |
| **Cutting performance** | | | |
| Non-shielded & shielded data cables | mm | | 8 |
| Flexible copper cable | mm² | | 4 |
| **Tool data** | | | |
| Length | mm | 100 | 97 |
| Weight | g | 85 | 36 |
| **Note** | | | |

## Ordering data

| | Type | Qty. | Order No. |
|---|---|---|---|
| IE-CST | IE-CST | 1 | 9204350000 |
| AM 12 | AM 12 | 1 | 9030060000 |

## Accessories

| | Type | Qty. | Order No. |
|---|---|---|---|
| IE-CST | Spare cutter cassette | 1 | 9032020000 |
| AM 12 | | | |

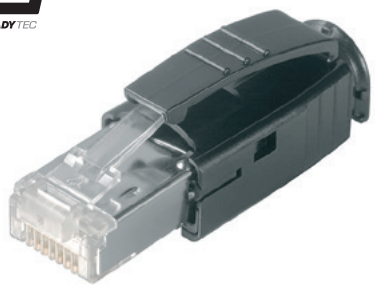
## Pressing tools

- Press (punch-down) tool for Ethernet connectors
- Ratchet for precise crimping
- Release option in the event of incorrect operationg

### TT 8 RS MP 8

For 8-pole shielded RJ45 plug

- AWG 27...24



## Technical data

| Description of contact | | TT 8 RS MP 8 |
|---|---|---|
| No. of poles | | 8 |
| **Tool data** | | |
| Length | mm | 255 |
| Weight | g | 1251 |
| **Note** | | |

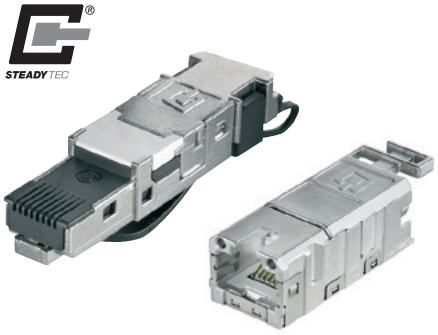
## Ordering data

| 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 RJ45 plug/module

## PWZ RJ45




## Technical data

| Tool data | | PWZ RJ45 |
|---|---|---|
| Weight | g | 367 |

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

## Ordering data

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

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

N

## Cable Tester

Test devices for testing Ethernet cables, including remote box

### LAN USB TESTER

- Indication of connection errors:
  Connection error
  Interrupt
  Short-circuit
  Permutation
- Network cable tester for LAN and USB connections

### IE-CT

- Indication of connection errors:
  Connection error
  Interrupt
  Short-circuit
  Permutation
  Wire mix-up (split pair)
  External voltage
- External voltage resistance: 80 V AC / DC

## Technical data

| | | | |
|---|---|---|---|
| Display | | LED | 7-segment display |
| Supply | | 9 V battery | 9 V battery |
| Type of connection | | RJ45, USB A, USB B | RJ45 |
| Remote box dimensions | | 65 x 28 x 27 mm | 30 x 68 x 23 mm |
| Remote box weight | | 30 g | 31 g |
| Length / Width / Height | mm | 135 / 65 / 27 | 140 / 70 / 36 |
| Weight | | 174 g | 185 g |
| **Note** | | | |

## Ordering data

| Version | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | LAN USB TESTER | 1 | **9205400000** | IE-CT | 1 | **8808420000** |
| **Note** | Battery, accessories and bag included in delivery. | | | Battery, accessories and bag included in delivery.<br>Further test boxes on request | | |

N

## 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 mm²

max. 16 mm²

max. 16 mm²

## Technical data

| | | KT8 |
|---|---|---|
| **Max. cutting performance, copper cable** | | |
| Copper cable - single-core, max. | mm²/- | 16 / 6 |
| Copper cable - stranded, max. | mm²/- | 16 / 6 |
| Copper cable - flexible, max. | mm²/- | 16 / 6 |
| Copper cable, max. diameter | mm | 8 |
| **Max. cutting performance, aluminium cable** | | |
| Stranded aluminium cable, max (mm²) | mm²/- | 16 / 6 |
| Stranded aluminium cable, max. diameter | mm | 8 |
| Single-core aluminium cable, max.(mm²) | mm² | 16 |
| **Data / telephone / control cable** | | |
| Data / telephone / control cable, max. diameter | mm | 8 |
| **Tool data** | | |
| Length / Width / Height | mm | 165 / 65 / 25 |
| Weight | g | 180 |
| **Note** | | Tool closed |

## Ordering data

| Version | Type | Qty. | Order No. |
|---|---|---|---|
| | KT 8 | 1 | 9002650000 |
| **Note** | | | |

## 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 16

**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 16

**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

Cutting, stripping and crimping tools
for processing POF fibres in compliance with
IEC 60793-2 A4A fibres (1000 µm/980 µm POF)

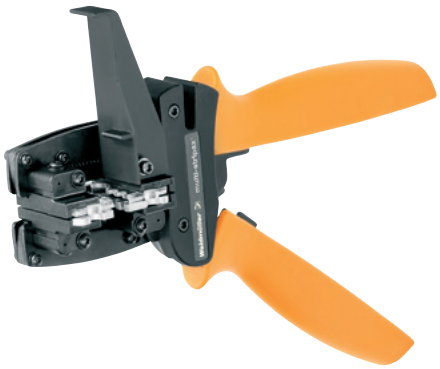
- Multifunction tool for POF fibres
- Processing the duplex POF fibres
- Stripping tool for processing POF fibres and cables
- The new set of blades for POF cables makes stripping the outer covering and the POF fibres simple
- Cable shears specially designed for aramid fibres
- Only for cutting aramid fibres (strain relief in fibre-optic cables)

## Tool-Set IE-POF

**Contents:**

- Assortment case PSC 80
- Kevlar scissors for aramid fibres
- Multifunction tool HTX-IE-POF
- Stripping tool multi-stripax® IE-POF

## multi-stripax® POF



- Excellent stripping quality for industrial applications
- Specially shaped blades enable stripping of special types of insulation and conductor configurations
- Stripping length with end stop, adjustable from 2.3...30 mm
- Very versatile thanks to interchangeable stripping units
- Stripping results reproduced accurately over and over again
- No damage to the conductor
- A long-lasting, reliable tool thanks to its sturdy design
- Integrated cutting function up to 6 mm²

## Technical data

| | | | |
|---|---|---|---|
| Length / Width / Height | mm | 241 / 338 / 79 | 250 / 85 / 40 |
| Weight | g | 1,800 | 250 |
| **Note** | | | |

## Ordering data

| Version | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | TOOL SET IE-POF | 1 | **1208930000** | MULTI-STRIPAX IE-POF | 1 | **1208880000** |
| **Note** | | | | | | |

## Accessories

| | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | HTX-IE-POF | 1 | **1208870000** | Replacement cutting blade | 1 | **9203100000** |
| | MULTI-STRIPAX IE-POF | 1 | **1208880000** | Replacement stop set | 1 | **9203070000** |
| | KEVLAR SCISSORS | 1 | **1208910000** | AIE MULTI-STRIPAX POF | 1 | **1212770000** |
| **Note** | | | | | | |

N

## Crimping tools

- Ratchet 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 processing 1 mm thick polymer optical fibres, especially for the PROFINET and EtherNet/IP-SC-RJ connectors
- For stripping Duplex polymer optical fibres
- The plug is crimped and the polymer optical fibres are separated, all in a single step
- Cut surfaces do not need to be polished after cutting
- Locator for precise positioning of the SC-RJ plugs
- Ergonomic handles
- High repeat accuracy

Three steps to produce IP 67 connectors:
1) Strip the Duplex polymer optical fibres
2) Crimp and separate
3) Crimp the strain relief

### SCISSOR Kevlar

- Cable shears specially designed for aramid fibres
- Only for cutting aramid fibres (strain relief in fibre-optic cables)
- Do not use for other materials
- Special blade geometry
- Blades ground
- With teeth on the cutting edge
- Riveted joint
- Hand-friendly, impact-resistant plastic handles

## Technical data

| Material data | HTX-IE-POF | SCISSORS KEVLAR |
|---|---|---|
| Length | 220 | 147 |
| Weight | 450 | 100 |
| **Note** | | |

## Ordering data

| Version | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | HTX-IE-POF | 1 | 1208870000 | SCISSORS KEVLAR | 1 | 1208910000 |
| **Note** | | | | | | |

## Assembly case for fibre-optic connectors

Our fibre-optic assembly case is an indispensible set for helping you to assemble fibre-optic cables on-site.

## IE-CTC-SCST-GOF

**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 |

**Note**

## Accessories

| Type | Qty. | Order No. |
|---|---|---|
| Accessory set for LC plugs | | |
| IE-CTC-AS-LC-GOF | 1 | 1033350000 |

**Note**

N

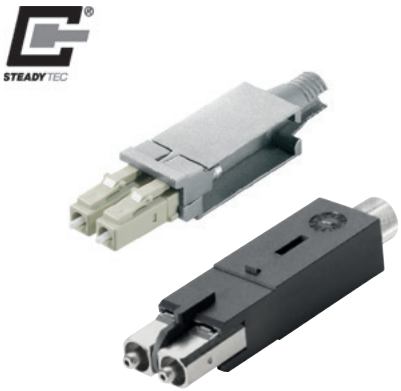
## Crimping tools for other contacts

- Ratchet for precise crimping
- Release option in the event of incorrect operation

## IE-CT-SC-GOF / IE-CT-LC-GOF

**Crimping tools for IP 20 + 67 connectors**

- For fibre-optic SC/ST, IP 20 and IP 67 connectors
- For fibre-optic LC and IP 67 connectors



## Technical data

| Tool data | IE-CT-SC-GOF | IE-CT-LC-GOF |
|---|---|---|
| Length | 250 | 250 |
| Weight | 730 | 730 |
| **Note** | | |

## Ordering data

| Version | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-CT-SC-GOF | 1 | 9205320000 |
| | IE-CT-LC-GOF | 1 | 9205330000 |
| **Note** | | | |

## Accessories

| | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-CTI-LC-GOF | 1 | 9205290000 |
| | IE-CTI-SC-GOF | 1 | 9205280000 |
| **Note** | | | |

## Crimping tool for other contacts

- Ratchet for precise crimping
- Release option in the event of incorrect operation
- With end stop for exact positioning of the contacts
- Contact and insulation are crimped in one step

## HTF HYB

**0.08...1.0 mm²**

For Weidmüller hybrid sockets and pins

- ~AWG 28...AWG 17

## Technical data

| Description of contact | | HTF HYB |
|---|---|---|
| Type of contact | | Hybrid sockets / plugs |
| Crimping range | mm² | 0.08...1 |
| Crimping range 1 (with multiple crimping positions) | mm² | 0.08....0.2 |
| Crimping range 2 (with multiple crimping positions) | mm² | 0.2...0.5 |
| Crimping range 3 (with multiple crimping positions) | mm² | 0.75...1 |
| **Tool data** | | |
| Length | mm | 200 |
| Weight | g | 438 |
| **Note** | | |

## Ordering data

| Version | Type | Qty. | Order No. |
|---|---|---|---|
| | HTF HYB | 1 | 1119580000 |
| **Note** | | | |

N

## 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 | | M-D-STRIPAX LWL |
|---|---|---|
| Cable type | | POF conductor with an inner conductor of 1 mm Ø |
| Conductor diameter | – | ...1 |
| Stripping length, max. | – | 7.5 |
| **Tool data** | | |
| Length | mm | 135 |
| Weight | g | 110 |
| **Note** | | POF: polymer optical fibre |

## Ordering data

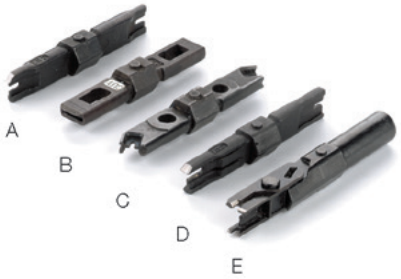
| Version | Type | Qty. | Order No. |
|---|---|---|---|
| | M-D-STRIPAX LWL | 1 | **9003750000** |
| **Note** | | | |

## Accessories

| | Type | Qty. | Order No. |
|---|---|---|---|
| | Spare stripping blades | 1 | **9003760000** |
| **Note** | | | |

## Incision 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 ***STEADY**TEC*® V4 flange and FrontCom® Micro.

### Technical data

| | | PUNCH DOWN TOOL PDT | Fixing tool |
|---|---|---|---|
| Length / Width / Height | mm | 160 / 37 / 29 | 115 / 28 / 28 |
| Weight | g | 142 | 21 |
| **Note** | | | |

### Ordering data

| Version | Type | Qty. | Order No. | Type | Qty. | Order No. |
|---|---|---|---|---|---|---|
| | PUNCH DOWN TOOL PDT | 1 | **9013970000** | IE-FISP-V4 | 2 | **9204370000** |
| **Note** | (without blade) | | | | | |

### Accessories

| Type | Qty. | Order No. | 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** | | | |
| **Note** | | | | | |

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## Hydraulic sheet holes

Incl. accessories:

- 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

## IE-KO-HAT

- Overpressure valve protects against overloading
- Cylinder head angled 90°
- Angled head can be rotated through 360°
- Ergonomic handle springs back automatically
- The piece of waste no longer becomes jammed thanks to 3-fold cleaving
- Hydraulic punch manufactured from high-strength aluminium (approx. 40 % less weight)

### Technical data

| Maximum steel-sheet punching performance | | IE-KO-HAT |
|---|---|---|
| Round holes from 1 to Ø 85 mm | - | 2.0 mm F = 370 N/mm² |
| Round holes from 2 to Ø 64 mm | | 3.0 mm F = 370 N/mm² |
| Square holes up to | - | 68 x 68 mm; 2.0 mm F = 370 N/mm² |
| Rectangular holes up to | - | 36 x 112 mm; 2.0 mm F = 370 N/mm² |
| **Maximum stainless steel sheet punching performance** | | |
| Round holes from 3 to Ø 64 mm | | 2.5 mm F = 600 N/mm² |
| **Tool data** | | |
| Length x width x height | mm | 290 / 120 / 70 |
| Weight | kg | 1.9 |
| Punching force | kN | 75 |
| Max. operating pressure | bar | 650 |
| **Note** | | |

### Ordering data

| Version | Type | Qty. | Order No. |
|---|---|---|---|
| | IE-KO-HAT | 1 | **1966810000** |
| **Note** | | | |

### Accessories

| | Type | Qty. | Order No. |
|---|---|---|---|
| | KOHS 19 | 1 | **9205010000** |
| | KOHS 9.5+19 | 1 | **9205000000** |
| | KOPD 10.0 | 1 | **9205020000** |
| **Note** | | | |

### Custom stamp for Industrial Ethernet connections

| Type | Description | Dimensions | Qty. | Order No. |
|---|---|---|---|---|
| IE-KOK-V1 | Custom shape for Bajonet 01 metal | Diameter 27 mm x 1 side 25.9 mm | 1 | **1966780000** |
| IE-KOK-V4 | Custom shape for Push Pull V04 plastic | Diameter 23.2 mm x 2 sides 20.2 mm | 1 | **1966790000** |
| IE-KOK-V5 | Custom shape for RockStar® V05 metal | 22.0 x 22.0 mm | 1 | **9204790000** |
| IE-KOK-V14 | Custom shape for V14 flange | 22.0 x 18.5 mm | 1 | **1135240000** |

## HDC KT – Cable grommets, small

Cable grommets, small, grey

## HDC KT – Cable grommets, small

Cable grommets, small, black

### Technical data

| | | |
|---|---|---|
| Material | free from elastomers, halogens and silicone | elastomers with very high chemical resistance |
| Colour | grey | black |
| Temperature range | -40 °C to +90 °C (static) | -30 °C to +90 °C (static) |
| Ingress protection class | | |
| UL 94 flammability rating | V0 | HB |
| **Note** | | |

### Ordering data

| Type | Clamping range [mm] | Qty. | Order No. |
|---|---|---|---|
| HDC KT 5 | 5-6 | 10 | **1826480000** |
| HDC KT 6 | 6-7 | 10 | **1826490000** |
| HDC KT 7 | 7-8 | 10 | **1826500000** |
| HDC KT 8 | 8-9 | 10 | **1826510000** |
| **Blanking plugs, small** | | | |
| HDC BTK | | 10 | **1828170000** |

| Type | Clamping range [mm] | Qty. | Order No. |
|---|---|---|---|
| HDC KT 5 | 5-6 | 10 | **1827810000** |
| HDC KT 6 | 6-7 | 10 | **1827830000** |
| HDC KT 7 | 7-8 | 10 | **1827840000** |
| HDC KT 8 | 8-9 | 10 | **1827850000** |
| **Blanking plugs, small** | | | |
| HDC BTK | | 10 | **1828200000** |

**Note**

## 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 | -40 °C to +140 °C (static) |
| Ingress protection class | IP 54, when correct cable grommet is used |
| UL 94 flammability rating | V0 |
| **Note** | |

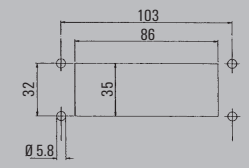
### Ordering data

| Type | No. of grommet positions small | large | Qty. | Order No. |
|---|---|---|---|---|
| HDC KEL 16/8 | 8 | - | 10 | **1825910000** |
| HDC KEL 16/4 | 4 | -*) | 10 | **1825900000** |
| **Blanking plugs, small** | | | | |
| HDC KEL 16 SNAP | | | 10 | **1827770000** |

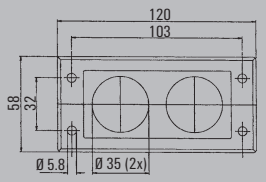
*) with closed half-shell

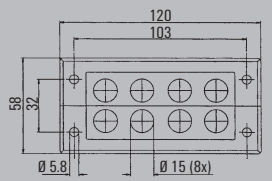
**Note**

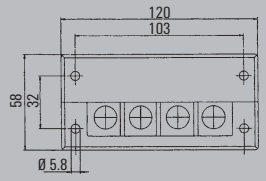
### Dimensioned drawings




Cut-out size 16
35 x 86 mm

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## KVT 32

KVT 32 and locknut for D-Sub 9

KVT 32

Locknut for D-Sub 9
KGM-SUB-D9

### Technical data

| | |
|---|---|
| Material | Polycarbonate, free from halogens and silicone |
| Colour | grey, similar to RAL 7035 |
| Temperature range | -30 °C to +100 °C (static) |
| Ingress protection class | IP 54, when the correct cable grommet is selected |
| UL 94 flammability rating | V0 |
| **Note** | |

### Ordering data

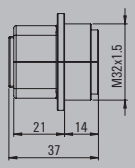
| Type | Thread | For grommet small | large | Qty. | Order No. |
|---|---|---|---|---|---|
| HDC KVT 32 | M 32 x 1.5 | 1 | – | 10 | **1826670000** |
| **Locknut for D-Sub 9** | | | | | |
| KGM-SUB-D9 | M 32 x 1.5 | | | 10 | **1828250000** |

**Note**

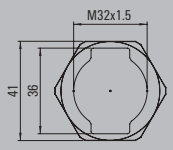
Please refer to catalogue 5 for the complete range.

### Dimensioned drawings

HDC KVT 32




KGM-SUB-D9

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## Protective caps

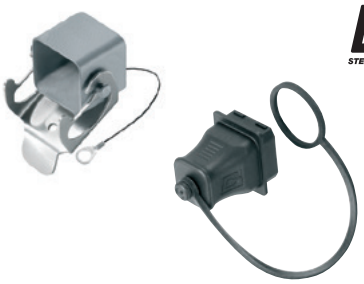
### Dust-protection plugs for protecting empty ports

- RJ45
- ***STEADY****TEC*® variants
- M12

### Dust Cap RJ45

- Dust Cap RJ45 with finger grip

### Protective caps IP 67



- Protective caps for all ***STEADY****TEC*® variants and for M12 plug-in connectors

### Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| IE-DPC | 100 | **8813490000** |

**Note**

| 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** |
| M12 plug | 1 | **2330260000** |
| M12 flange | 1 | **8425960000** |

N

# The advanced inkjet printer
## Our PrintJet ADVANCED for exacting standards

### Flexible printing of plastic and metal markers

The PrintJet ADVANCED is an inkjet printer which prints plastic markers in MultiCard format and metal markers from the MetalliCard family. Thanks to its high magazine capacity, it is ideal for printing large volumes in continuous operation. The precise colour printing and thermal fixing guarantee optimum print results for durable equipment identification. With these properties, the PrintJet ADVANCED brings efficiency to the operating process – whether operated with our M-Print® PRO software or as a stand-alone solution with pre-installed print templates.

### The advantages for you at a glance:

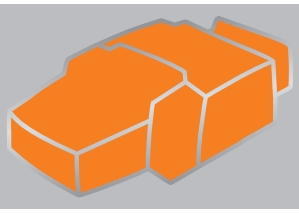
- Precise colour printing
- Printing of metal markers as standard
- High level of automation thanks to magazine capacity of 30 MultiCards
- Durable and robust markers thanks to thermal fixing
- User-friendly thanks to intuitive touch display
- Can be used as stand-alone solution

### Technical data

| | Description | |
|---|---|---|
| Intended use | Printing Weidmüller MultiCards and MetalliCards | |
| Technology | Inkjet procedure with integrated thermal fixing unit | |
| Feed | Automatic magazine for max. 30 MultiCards<br>Individual feed for MetalliCards and MultiCards | |
| Fuses | Right fuse: 10 ATH 240/120 V<br>Left fuse: 2.5 ATH 240/120 V | |
| Application site | Office conditions | |
| Ambient temperature | 10 °C – 35 °C<br>0 °F – 95 °F | |
| Dimensions | Length including output rail:<br>Length not including output rail:<br>Width:<br>Height with touch panel folded down:<br>Height with touch panel folded up: | approx. 1.138 mm (44.80")<br>approx. 945 mm (37.20")<br>554 mm (21.81")<br>328 mm (12.91")<br>422 mm (16.61") |
| Weight | 57.8 kg (127.43 lb) with packaging<br>37.2 kg (82.01 lb) without packaging | |
| Ink system | Colour system – black, cyan, magenta, yellow | |
| Included in delivery | • PrintJet ADVANCED<br>• Mains cable<br>• USB cable<br>• One MultiCard DEK 5/5<br>• Ten MetalliCards CC-M 85/54 AL<br>• Ten primer cloths | • One inlay<br>• One output rail<br>• DVD with M-Print® PRO software<br>• Quick start guide<br>• Operating manual |
| | The ink cartridges and ink collector tray are installed in the printer. | |

## Ink-jet printer

## PrintJet Advanced



### Technical data

| | |
|---|---|
| EAN | 4032248140121 |
| Length | 950 mm |
| Width | 555 mm |
| Height | 310 mm |
| Weight | 58 kg |
| Net weight | 37.2 kg |
| Printing method | Ink jet technology |
| Printer driver | Windows XP, Windows Vista, Windows 7 |
| Printing speed | Depends on printing quality |
| Print quality | 1200 dpi |
| Marker type | Multicard |
| Interface | LAN, USB |
| System requirements | Windows XP, Windows Vista, Windows 7 |
| Fueling system | Ink cartridge, CMYK |
| Supply voltage | 230 V AC / 16 A, 115 V AC / 20 A |
| Operating system | Windows XP, Windows Vista, Windows 7 |
| Software | M-Print® PRO |
| **Note** | |

### Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| PRINTJET ADVANCED 230V | 1 | 1324380000 |
| PRINTJET ADVANCED 115V | 1 | 1338700000 |

**Note**

### Accessories

| PrintJet Advanced | Type | Qty. | Order No. |
|---|---|---|---|
| Software | M-PRINT PRO | 1 | 1905490000 |
| Ink collecting tray | PJ ADV TNAW | 1 | 1338710000 |
| Cyan ink | PJ ADV TNTK INK C | 1 | 1338680000 |
| Magenta ink | PJ ADV TNTK INK M | 1 | 1338670000 |
| Yellow ink | PJ ADV TNTK INK Y | 1 | 1338650000 |
| Black ink | PJ ADV TNTK INK K | 1 | 1338690000 |
| Ink set | PJ ADV TNTK INK SET | 1 | 1338720000 |
| **PrintJet** | | | |
| Ink collecting tray | PJ PRO TNAW | 1 | 1024140000 |
| Cyan ink | PJ PRO TNTK INK C | 1 | 1027050000 |
| Magenta ink | PJ PRO TNTK INK M | 1 | 1027060000 |
| Yellow ink | PJ PRO TNTK INK Y | 1 | 1027070000 |
| Black ink | PJ PRO TNTK INK K | 1 | 1027040000 |
| Ink set | PJ PRO TINTENSET FARBE | 1 | 1027110000 |
| | Tintentank PrintJet II | 1 | 1858920000 |
| | CleanUnit PrintJet II | 1 | 1858950000 |

**Note**

## 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

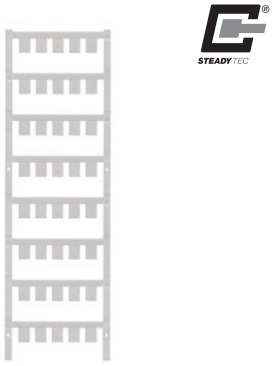
| Type | Qty. | Order No. |
|---|---|---|
| VT SF 5/21 NE WS V0 | 160 | **1689470001** |
| VT SF 6/21 NE WS V0 | 160 | **1730560001** |

**Note:** Can be printed with PrintJet PRO.

### Accessories

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

## Markers for IE-Line STEADYTEC®



MultiCard ESG 9/11 K for IE-Line STEADYTEC®

- 9 x 11 mm
- White

### Ordering data

| Type | Qty. | Order No. |
|---|---|---|
| ESG 9/11 K MC NE WS | 200 | **1857440000** |

**Note:** Can be printed with PrintJet PRO.

### Accessories

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

## TM-I for pre-assembled M12 cables

MultiCard markers for labelling transparent M12 TM-I sleeves

- Tag length: 18 mm
- Tag width: 4 mm

### Ordering data

| Type | | Qty. | Order No. |
|---|---|---|---|
| TM-I 18 MC NE WS | | 320 | **1718431044** |
| TM-I 18 MC NE GE | | 320 | **1718431687** |

### Accessories

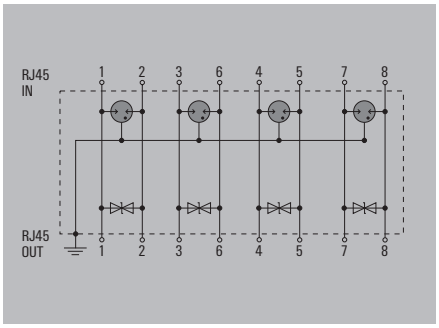
| Type | | Qty. | Order No. |
|---|---|---|---|
| TM 4/12 HF/HB | Length 12 mm | 500 | **1719840000** |
| TM 4/18 HF/HB | Length 18 mm | 500 | **1719850000** |

**Note:** Can be printed with PrintJet PRO.

## V DATA Cat. 6 - surge protection for 8 wires with RJ45 socket

- RJ45 connection
- All 4 lines are protected
- Robust and compact metal housing
- Suitable for Cat. 5 (to 100 MHz) and Cat. 6 to 250 MHz (class E)
- Suitable for PoE (IEEE 802.3af) and PoE + (IEEE 802.3at)

## V DATA CAT6




## Technical data

| | |
|---|---|
| Requirements category acc. to IEC 61643-21 | C2, D1 |
| Surge current-carrying capacity C2 | 5 kA |
| Surge current-carrying capacity D1 | 1 kA |
| Discharge current $I_n$ (8/20 µs) wire-wire/wire-PE/GND-PE | 150 A / 1.25 kA |
| Discharge $I_{max}$ (8/20 µs) wire-wire/wire-PE/GND-PE | 10 kA / 5 kA |
| Lightning test $I_{imp}$ (10/350 µs) wire-wire/wire-PE/GND-PE | 1 kA / 1 kA |
| Type of connection | RJ45-Port |
| Storage temperature | -40 ... +85 °C |
| Ambient temperature (operational) | -40 ... +80 °C |
| Protection degree | IP 20 |
| Rated voltage (AC) | 60 V |
| Rated current | 1 A |
| Insertion loss @ 250 MHz | < 1 dB |
| Protection level $U_P$ typical | 550 V |
| **Approvals** | |
| Standards | According to IEC61643-21 |
| **Dimensions of complete module (arrester + base element)** | |
| Height x width x depth | 75 / 19 / 46 mm |
| **Note** | Can also be used for Cat.5 applications |

## Ordering data

| | | | |
|---|---|---|---|
| | **Type** | **Qty.** | **Order No.** |
| | VDATA CAT6 | 1 ST | **1348590000** |
| **Note** | | | |

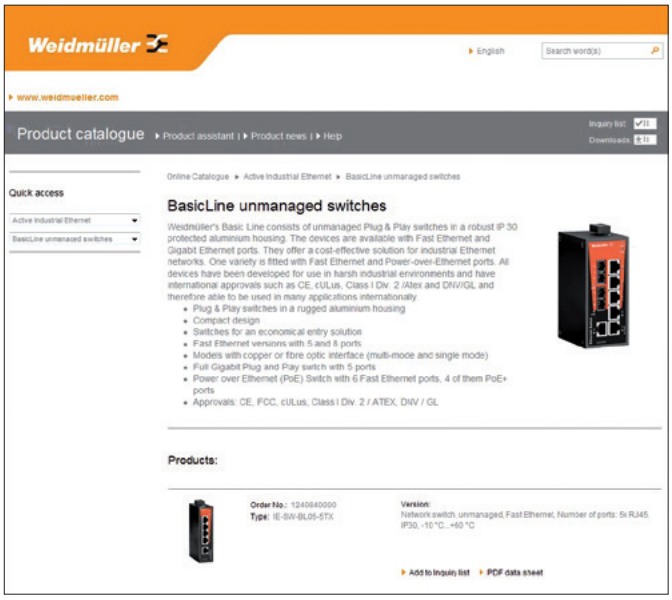
# Technical appendix
## Added value for your application

# Online product catalogue
## Your digital information source

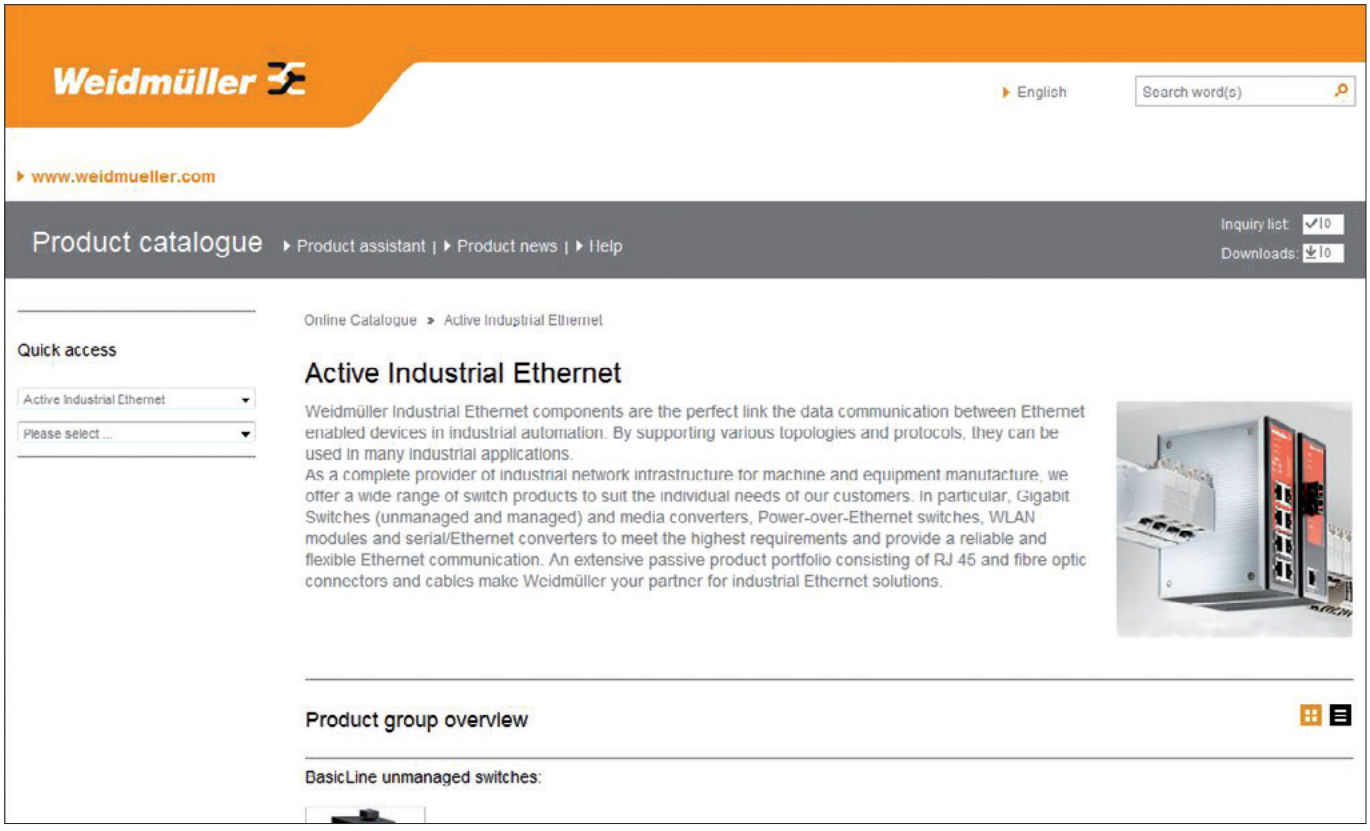
If you have questions about the specifications and details of our products, even when outside normal working hours,

then our online catalogue at:
**http://catalog.weidmueller.com**
is open 24 hours a day, 365 days a year. As well as product features and part numbers, it contains extensive information on all our product groups.
For further information, simply visit our Weidmuller website at:

**www.weidmueller.com**




With one-click selection for the product data sheet of your choice.



# Cable configurator
## Tailor-made connections

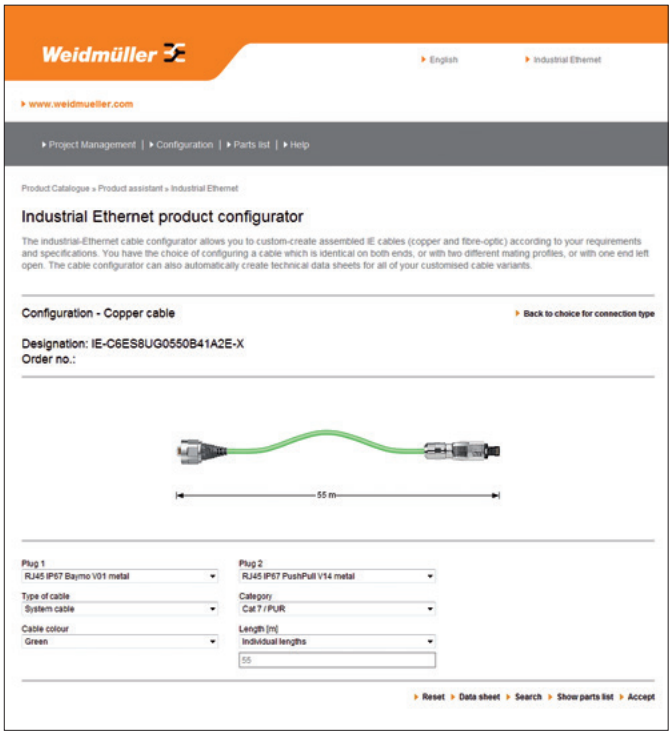
The cable configurator allows you to configure your specific cable with comfort, speed and simplicity. Just select, request order – and you are finished!

Make your selection from the list of available cables (material for cable sheathing, category, colour, ...). Next, choose the connector for both the right and left cable ends and 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.

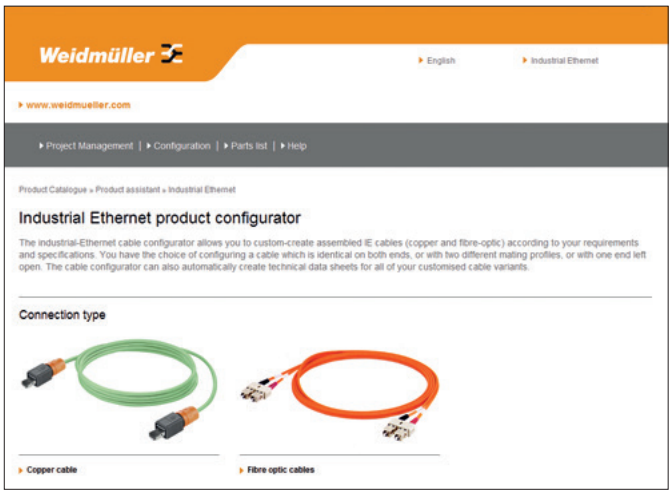
A variety of cables and connectors are available from our Industrial Ethernet product line. These selections include category 5 or 7 cable, with PVC sheathing, in PUR, and of course PROFINET-specific cable. A number of versions are available on the plug side of the RJ45, including: IP 20, an extra-strong IP 67 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. IP 67 versions are also available.

After you have made your selection, there are several available options:

- Locate and display 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 to obtain a quote or to 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.

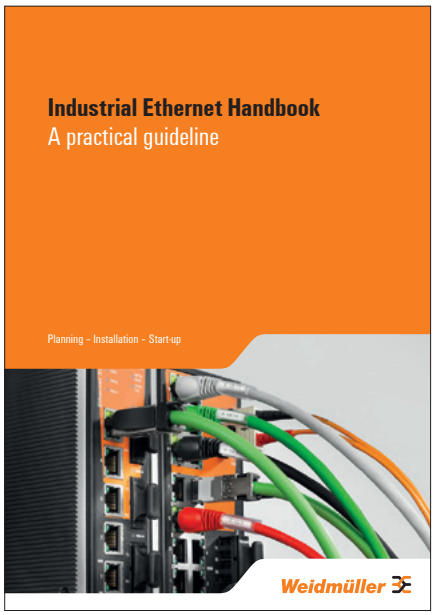
# Practical service
## In-depth planning support

### Practical Guidelines for Industrial Ethernet

Are you an electrical engineer, installer or contractor working on Industrial Ethernet installations and in search of assistance, tips or checklists? Our practical guidelines provide detailed descriptions for the implementation of industrial networks.

- You'll find helpful tips and recommendations for selecting the proper components and for documenting your network
- 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.

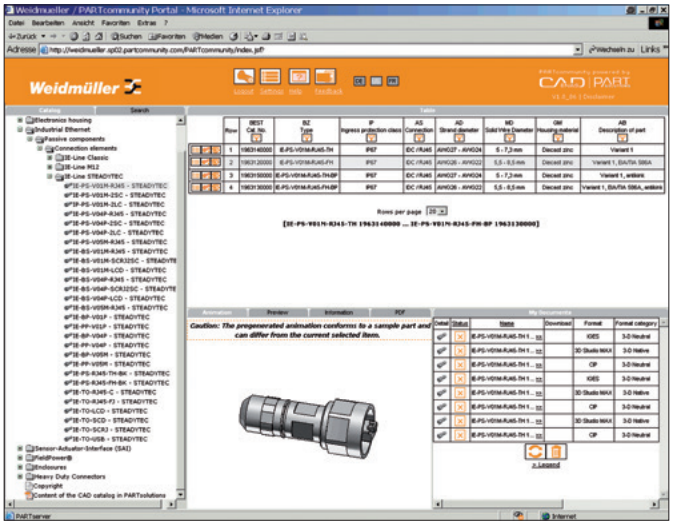



### 3-D data

Do you require 3-D models of your components so you can design them into your application? And accurately portrayed in your own CAD format?

Each component part is located in our Online Catalogue with a direct link to the Partserver (www.partserver.com). You simply input your product specification, CAD format and e-mail address and you will then receive a rapid e-mail response from us with your 3-D model attached.

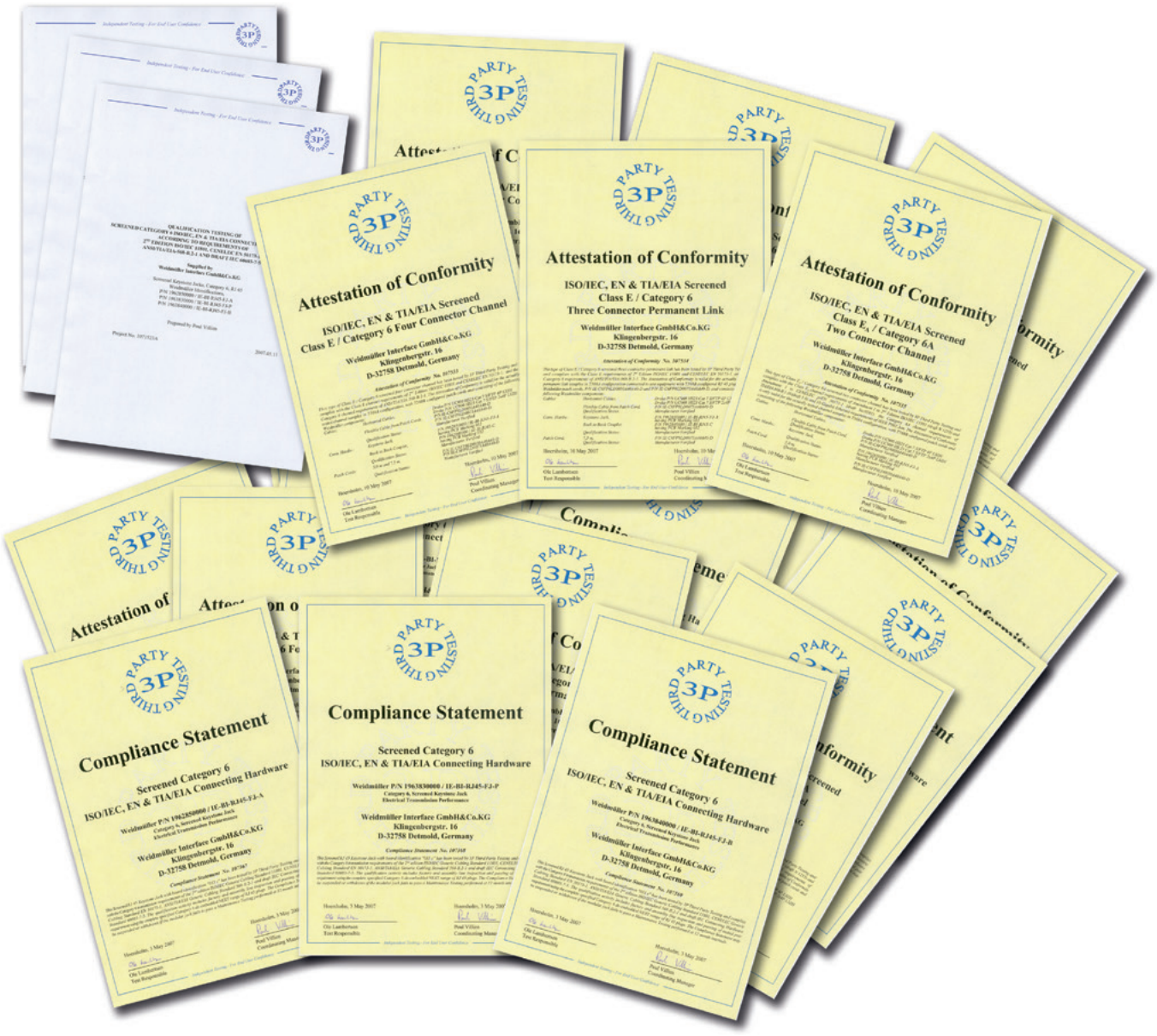

You can also login at the web site http://weidmueller.partcommunity.com/portal/portal/weidmueller to view and download 3-D files.



# Quality through certification
## Certified reliability of our solutions

Do you want to prove to your customer that you have installed only the highest quality components? The GHMT (Society for High-frequency Measuring Technology) and the 3P (Third Party Testing) are independent testing institutes and recognised specialists for industrial cabling. These institutes support the industry by means of test certifications for communication cables, connection hardware, patch cords and permanent links and channels.

Their other primary functions are brand testing, safety testing, quality analyses, and error analyses.
These certificates of are solid proof of the superior quality and performance expectations from our products. Please ask your personal sales partner if you would like to see a copy of our certifications. You can also download the individual certificates from our online catalogue.



# Glossary
## Specialist vocabulary for Industrial Ethernet

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 Mpbs 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. The focus of this working group is on 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 to 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.

**Cable material / properties**

- **LSZH**
  LSZH is the abbreviation for Low Smoke Zero Halogen. This material is used in the wire and cable industry for cable sheathing. It consists of a thermoplastic or duroplastic compound. In the event of fire, the LSZH cable only releases very small quantities of toxic and corrosive gases and no halogens. It is mainly used in offices and the IP 20 part of the electrical cabinet. The cable is light and environmentally friendly.
- **FRNC**
  FRNC is the abbreviation for Flame Retardant Non Corrosive. FRNC cables are specified, fire-retardant, special cables with low waste gas levels according to IEC standards 60332, 60754 and VDE0472/804. The FRNC cable contains no halogen and so only produces very little waste gas and a low fire load. One disadvantage of the cables is that they are not resistant to oil or chemicals and absorb a lot of water.
- **PUR (polyurethane)**
  PUR is one of the so-called thermoplastic elastomers and possesses properties similar to rubber. PUR contains no halogen, is self-extinguishing and has very good resistance to UV light, chemicals and oil. It is suited to outdoor use and for heavily polluted, industrial environments. Compared with PVC, PUR offers major advantages in terms of its high tensile strength, wear resistance and increased resistance to chemical substances. Examples include mineral oils, alcohol-free benzine and many solvents.
- **PVC (polyvinyl chloride)**
  PVC is an amorphous, thermoplastic synthetic material. It burns with a yellow, sooty flame and goes out quickly without further external sources of flame. Given its high chlorine content, unlike other technical synthetic materials such as polyethylene or polypropylene, PVC is flame-resistant. PVC is not halogen-free and releases toxic and corrosive gases in the event of fire. PVC is an easily processed material, is cheap and has good insulating properties.

**Category 5**
Signifies compliance to features specified in EIA/TIA–T568-5. 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-T568A-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 Cat. 5e 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 is 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, 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 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 Ethernet with 100 Mbps over a 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.

**FO (Fibre-optic cables)**
Fibre-optic cables provide an alternative transmission medium to copper. A distinction is made between pure glass fibres (GOF: multimode/singlemode), combined fibres (PCF/HCS) and plastic fibres (POF). They are primarily used because of their insensitivity to electromagnetic interference, but also, in the case GOF, on account of the significantly longer cable lengths compared to copper.
The fibres are usually defined according to the core/sheathing diameter in microns (µm):
GOF/MM: 50/125 or 62.5/125
GOF/SM: 9/125
PCF: 200/230
POF: 980/1000
Conventional fibre-optic connector standards include SC Duplex, SC-RJ, LC Duplex and ST (also BFOC).

**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 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 Ethernet operating at a data transmission rate of 1000 Mbps.

**Hub**
A hub is a 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 predictable 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 can be helpful but does not guarantee that the link is fully functional.

**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 IP 67 protection.

**MAC Adress**
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 and maintain the structure and 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 by using fibre-optic routes. In addition, 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).

**Multimode**
Refer to FO

**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 ie. the channel 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.

**PCF**
Refer to FO

**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.

**PoE (Power over Ethernet)**
Power over Ethernet (PoE) is a procedure which allows power to be supplied to a network compatible device over the 8-wire Ethernet cable. The first version of the procedure is defined under IEEE802.3af and includes performance classes up to max. 15.4 W. There has since been a further development called PoE +. The respective standard is IEEE802.at and it primarily involves an increase in max. power to 30 W.

**Overview of PoE/PoE Plus**

| | PoE | PoE Plus |
|---|---|---|
| Minimum cable type | Cat. 5e | Cat. 5e |
| IEEE standard definition | 802.3af | 802.3at |
| Maximum power per PSE port | 15.4 W | 30 W |
| Maximum power to PD | 12.95 W | 25.5 W |
| Twisted pair used | 2-pair | 2-pair |

**POF**
Refer to FO

**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 can be 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 dial-up access user model from PPP. It allows individual PCs to establish PPP sections 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, but 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 which arrives at the receiver is of 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 used 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 and 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 a skew angle coupler are used instead of an 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, it means the transmission section between two neighbouring data stations. 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.

**Singlemode**
Refer to FO

**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 cable 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 IEE 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.

**Web server**
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 web server what type of files it supplies. Each time a website 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 84 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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| 1018840000 | IE-FCM-USB-A | I.4 |
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| 1025940030 | IE-C5DD4UG0030MCSXXX-X | L.30 |
| 1025940050 | IE-C5DD4UG0050MCSXXX-X | L.30 |
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| 1025950030 | IE-C5DD4UG0030MCSMCS-E | L.29 |
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| 1044470030 | IE-C5DD4UG0030MCSA20-E | L.30 |
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| 1047940000 | IE-BHD-V14M | J.3 |
| 1047950000 | IE-BHC-V14M-RJA | J.3 |
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| 1049910000 | IE-PPA19-24P-RJ45-FJ-A | H.14 |
| 1049920000 | IE-PPA19-24P-RJ45-FJ-B | H.14 |
| 1049930000 | IE-PPA19-24P-RJ45-C | H.14 |

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| 1059750015 | IE-C5DD4UG0015MCAXXX-X | L.32 |
| 1059750030 | IE-C5DD4UG0030MCAXXX-X | L.32 |
| 1059750050 | IE-C5DD4UG0050MCAXXX-X | L.32 |
| 1059750100 | IE-C5DD4UG0100MCAXXX-X | L.32 |
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| 1059900030 | IE-C5DB4RE0030MCAXXX-X | L.41 |
| 1059900050 | IE-C5DB4RE0050MCAXXX-X | L.41 |
| 1059900100 | IE-C5DB4RE0100MCAXXX-X | L.41 |
| 1059940015 | IE-C5DB4RE0015MCSMCA-E | L.40 |
| 1059940030 | IE-C5DB4RE0030MCSMCA-E | L.40 |
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| 1059970015 | IE-C5DB4RE0015MCAMCA-E | L.40 |
| 1059970030 | IE-C5DB4RE0030MCAMCA-E | L.40 |
| 1059970050 | IE-C5DB4RE0050MCAMCA-E | L.40 |
| 1059970100 | IE-C5DB4RE0100MCAMCA-E | L.40 |

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| 1062570000 | IE-FM5Z2V00002MLD0LD0X | M.11 |
| 1062580000 | IE-FM5Z2V00010MLD0LD0X | M.11 |
| 1062590000 | IE-BSC-V14M-SCRJ-MM-C | J.11 |
| 1062600000 | IE-BSC-V14M-SCRJ-SM-C | J.11 |
| 1062610000 | IE-BSC-V14M-LCD-MM-C | J.11 |
| 1062620000 | IE-BSC-V14M-LCD-SM-C | J.11 |
| 1063320000 | IE-C5ES8UG0100A45A40-X | G.8 |
| 1066850000 | IE-C5ES8UG0010B41B41-E | L.37 |
| 1066860000 | IE-C5ES8UG0020B41B41-E | L.37 |
| 1066870000 | IE-C5ES8UG0050B41B41-E | L.37 |
| 1066880000 | IE-C5ES8UG0100B41B41-E | L.37 |
| 1067380000 | IE-PI-SCRJ-MM | J.10 |
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| 1068840000 | IE-CD-V14MHYB-10P-C-MA | K.7 |
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| 1068870000 | IE-CD-V14MRJ-C-MA | K.3 |
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| 1068920000 | IE-BHD-VAPM | J.55 |
| 1068930000 | IE-BP-VAPP | N.20 |
| 1068950000 | IE-PIC-HYB-S-0,75-300 | J.6 |
| 1068970000 | IE-BIC-HYB-P-0,75-300 | J.7 |
| 1068990000 | IE-PI-HYB-10P | J.46 |
| 1069010000 | IE-BI-HYB-10P | J.47 |
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| 1072910000 | IE-PS-V14M-HYB-10P | J.6 |
| 1077300000 | IE-PS-V05M-A-RJ45-FH | J.30 |

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| 1085260000 | IE-BSS-V14M-RJ45-FJ-P | J.3 |

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| 1096150000 | IE-BIC-HYB-P-0,5-300 | J.7 |
| 1096180000 | IE-PIC-HYB-S-0,5-300 | J.6 |
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| 1106030000 | IE-C5ES8UG0050P41P41-E | L.37 |
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| 1119730020 | IE-C5DD4UG0020A2EA2E-X | L.26 |
| 1119730030 | IE-C5DD4UG0030A2EA2E-X | L.26 |
| 1119730050 | IE-C5DD4UG0050A2EA2E-X | L.26 |
| 1119730100 | IE-C5DD4UG0100A2EA2E-X | L.26 |
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| 1135150000 | IE-PIC-HYB-S-0,2-300 | J.6 |
| 1135240000 | IE-KOK-V14 | N.16 |
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|---|---|---|
| 1165900005 | IE-C6FP8LB0005M40M40-B | L.18 |
| 1165900010 | IE-C6FP8LB0010M40M40-B | L.18 |
| 1165900015 | IE-C6FP8LB0015M40M40-B | L.18 |
| 1165900020 | IE-C6FP8LB0020M40M40-B | L.18 |
| 1165900030 | IE-C6FP8LB0030M40M40-B | L.18 |
| 1165900050 | IE-C6FP8LB0050M40M40-B | L.18 |
| 1165900100 | IE-C6FP8LB0100M40M40-B | L.18 |
| 1165900150 | IE-C6FP8LB0150M40M40-B | L.18 |
| 1165900200 | IE-C6FP8LB0200M40M40-B | L.18 |
| 1165900250 | IE-C6FP8LB0250M40M40-B | L.18 |
| 1165940002 | IE-C6FP8LD0002M40M40-D | L.17 |
| 1165940005 | IE-C6FP8LD0005M40M40-D | L.17 |
| 1165940010 | IE-C6FP8LD0010M40M40-D | L.17 |
| 1165940015 | IE-C6FP8LD0015M40M40-D | L.17 |
| 1165940020 | IE-C6FP8LD0020M40M40-D | L.17 |
| 1165940030 | IE-C6FP8LD0030M40M40-D | L.17 |
| 1165940050 | IE-C6FP8LD0050M40M40-D | L.17 |
| 1165940075 | IE-C6FP8LD0075M40M40-D | L.17 |
| 1165940100 | IE-C6FP8LD0100M40M40-D | L.17 |
| 1165940150 | IE-C6FP8LD0150M40M40-D | L.17 |
| 1165940200 | IE-C6FP8LD0200M40M40-D | L.17 |
| 1165940250 | IE-C6FP8LD0250M40M40-D | L.17 |
| 1166000005 | IE-C5ES8UG0005M40M40-G | L.23 |
| 1166000010 | IE-C5ES8UG0010M40M40-G | L.23 |
| 1166000015 | IE-C5ES8UG0015M40M40-G | L.23 |
| 1166000020 | IE-C5ES8UG0020M40M40-G | L.23 |
| 1166000030 | IE-C5ES8UG0030M40M40-G | L.23 |
| 1166000050 | IE-C5ES8UG0050M40M40-G | L.23 |
| 1166000100 | IE-C5ES8UG0100M40M40-G | L.23 |
| 1166000150 | IE-C5ES8UG0150M40M40-G | L.23 |
| 1166000200 | IE-C5ES8UG0200M40M40-G | L.23 |
| 1166020005 | IE-C5ES8VG0005M40M40-G | L.23 |
| 1166020010 | IE-C5ES8VG0010M40M40-G | L.23 |
| 1166020015 | IE-C5ES8VG0015M40M40-G | L.23 |
| 1166020020 | IE-C5ES8VG0020M40M40-G | L.23 |
| 1166020030 | IE-C5ES8VG0030M40M40-G | L.23 |
| 1166020050 | IE-C5ES8VG0050M40M40-G | L.23 |
| 1166020100 | IE-C5ES8VG0100M40M40-G | L.23 |
| 1166020150 | IE-C5ES8VG0150M40M40-G | L.23 |
| 1166020200 | IE-C5ES8VG0200M40M40-G | L.23 |
| 1166030005 | IE-C6FP8LR0005M40M40-R | L.19 |
| 1166030010 | IE-C6FP8LR0010M40M40-R | L.19 |
| 1166030015 | IE-C6FP8LR0015M40M40-R | L.19 |
| 1166030020 | IE-C6FP8LR0020M40M40-R | L.19 |
| 1166030030 | IE-C6FP8LR0030M40M40-R | L.19 |
| 1166030050 | IE-C6FP8LR0050M40M40-R | L.19 |
| 1166030100 | IE-C6FP8LR0100M40M40-R | L.19 |
| 1166030150 | IE-C6FP8LR0150M40M40-R | L.19 |
| 1166030200 | IE-C6FP8LR0200M40M40-R | L.19 |
| 1166030250 | IE-C6FP8LR0250M40M40-R | L.19 |

## 1170000000

| | | |
|---|---|---|
| 1172250000 | IE-C5DHAG-MW | J.6 |
| 1172280000 | IE-FPOD2UE-MW | M.6 |
| 1173030005 | IE-C5DD4UG0005A20A20-E | L.25 |
| 1173030010 | IE-C5DD4UG0010A20A20-E | L.25 |
| 1173030020 | IE-C5DD4UG0020A20A20-E | L.25 |
| 1173030030 | IE-C5DD4UG0030A20A20-E | L.25 |
| 1173030050 | IE-C5DD4UG0050A20A20-E | L.25 |
| 1173030100 | IE-C5DD4UG0100A20A20-E | L.25 |
| 1173030150 | IE-C5DD4UG0150A20A20-E | L.25 |
| 1173030200 | IE-C5DD4UG0200A20A20-E | L.25 |
| 1174830000 | IE-FM6D2UE0020MLD0LD0X | M.13 |

## 1190000000

| | | |
|---|---|---|
| 1191550000 | IE-PS-V14M-2SC-POF | J.10 |

## 1200000000

| | | |
|---|---|---|
| 1201270005 | IE-C6FP8LM0005M40M40-M | L.20 |
| 1201270010 | IE-C6FP8LM0010M40M40-M | L.20 |
| 1201270015 | IE-C6FP8LM0015M40M40-M | L.20 |
| 1201270020 | IE-C6FP8LM0020M40M40-M | L.20 |
| 1201270030 | IE-C6FP8LM0030M40M40-M | L.20 |
| 1201270050 | IE-C6FP8LM0050M40M40-M | L.20 |
| 1201270100 | IE-C6FP8LM0100M40M40-M | L.20 |
| 1201270150 | IE-C6FP8LM0150M40M40-M | L.20 |
| 1201270200 | IE-C6FP8LM0200M40M40-M | L.20 |
| 1206720000 | IE-PS-SCRJ1-POF | H.4 |
| 1206730000 | IE-PS-SCRJ1-MM | H.4 |
| 1206740000 | IE-PS-SCRJ1-SM | H.4 |
| 1208870000 | HTX-IE-POF | N.10 |
| 1208880000 | multi-stripax IE-POF | N.9 |
| 1208910000 | SCISSORS KEVLAR | N.9 |
| 1208930000 | TOOL SET IE-POF | N.9 |

## 1210000000

| | | |
|---|---|---|
| 1212770000 | AIE MULTI-STRIPAX POF | N.9 |

## 1220000000

| | | |
|---|---|---|
| 1220310040 | IE-C5DB4WE0040MCSA20-E | L.42 |
| 1220930000 | IE-FM6D2UE0005MLD0LD0X | M.13 |
| 1221010000 | IE-BS-V01M-SCRJ-MM | J.15 |
| 1221020000 | IE-BS-V01M-SCRJ-SM | J.15 |
| 1221030000 | IE-BHD-V01M-SCA | J.15 |
| 1222550000 | IE-FCM-USB-AB | I.4 |

## 1230000000

| | | |
|---|---|---|
| 1233160005 | IE-C6FP8LD0005M40W40-D | L.21 |
| 1233160010 | IE-C6FP8LD0010M40W40-D | L.21 |
| 1233160012 | IE-C6FP8LD0012M40W40-D | L.21 |
| 1233160015 | IE-C6FP8LD0015M40W40-D | L.21 |
| 1233160020 | IE-C6FP8LD0020M40W40-D | L.21 |
| 1233160030 | IE-C6FP8LD0030M40W40-D | L.21 |
| 1233160050 | IE-C6FP8LD0050M40W40-D | L.21 |
| 1233160100 | IE-C6FP8LD0100M40W40-D | L.21 |
| 1234750005 | IE-C5DS4UG0005MBSA20-E | L.33 |
| 1234750010 | IE-C5DS4UG0010MBSA20-E | L.33 |
| 1234750015 | IE-C5DS4UG0015MBSA20-E | L.33 |
| 1234750020 | IE-C5DS4UG0020MBSA20-E | L.33 |
| 1234750050 | IE-C5DS4UG0050MBSA20-E | L.33 |
| 1234770005 | IE-C5DS4UG0005MBSXXX-E | L.34 |
| 1234770010 | IE-C5DS4UG0010MBSXXX-E | L.34 |
| 1234770015 | IE-C5DS4UG0015MBSXXX-E | L.34 |
| 1234770020 | IE-C5DS4UG0020MBSXXX-E | L.34 |
| 1234770050 | IE-C5DS4UG0050MBSXXX-E | L.34 |

## 1240000000

| | | |
|---|---|---|
| 1240840000 | IE-SW-BL05-5TX | B.3 |
| 1240850000 | IE-SW-BL05T-5TX | B.3 |
| 1240870000 | IE-SW-BL05-4TX-1SCS | B.3 |
| 1240880000 | IE-SW-BL05-4TX-1ST | B.3 |
| 1240890000 | IE-SW-BL05-4TX-1SC | B.3 |
| 1240900000 | IE-SW-BL08-8TX | B.3 |
| 1240910000 | IE-SW-BL08-6TX-2SC | B.3 |
| 1240920000 | IE-SW-BL08T-6TX-2SC | B.3 |
| 1240930000 | IE-SW-BL08-6TX-2ST | B.3 |
| 1240940000 | IE-SW-VL08MT-8TX | B.11 |
| 1240950000 | IE-SW-BL08-7TX-1SCS | B.3 |
| 1240970000 | IE-SW-VL08MT-5TX-3SC | B.11 |
| 1240980000 | IE-SW-VL09T-6TX-3SC | B.4 |
| 1240990000 | IE-SW-VL08MT-6TX-2ST | B.11 |
| 1241000000 | IE-SW-VL16-16TX | B.4 |
| 1241020000 | IE-SW-VL08MT-6TX-2SCS | B.11 |
| 1241030000 | IE-SW-VL16-14TX-2SC | B.4 |
| 1241040000 | IE-SW-PL08M-8TX | B.12 |
| 1241050000 | IE-SW-VL16-14TX-2ST | B.4 |
| 1241070000 | IE-SW-PL08M-6TX-2SC | B.12 |
| 1241080000 | IE-SW-PL08M-6TX-2ST | B.12 |
| 1241090000 | IE-SW-PL08M-6TX-2SCS | B.12 |
| 1241100000 | IE-SW-PL16M-16TX | B.12 |
| 1241120000 | IE-SW-PL16M-14TX-2SC | B.12 |
| 1241130000 | IE-SW-PL16M-14TX-2ST | B.12 |
| 1241250000 | IE-SW-BL05-5GT | B.5 |
| 1241270000 | IE-SW-VL08-8GT | B.5 |
| 1241280000 | IE-SW-VL08-6GT-2GS | B.5 |
| 1241290000 | IE-SW-PL10M-3GT-7TX | B.13 |
| 1241300000 | IE-SW-PL10M-1GT-2GS-7TX | B.13 |
| 1241320000 | IE-SW-PL18M-2GC-16TX | B.14 |
| 1241330000 | IE-SW-PL18M-2GC14TX2SC | B.14 |
| 1241340000 | IE-SW-PL18M-2GC14TX2ST | B.14 |
| 1241350000 | IE-SW-PL18M-2GC14TX2SCS | B.14 |
| 1241370000 | IE-SW-PL09M-5GC-4GT | B.15 |
| 1241380000 | IE-SW-BL06-2TX-4POE | B.17 |
| 1241390000 | IE-SW-PL06M-2TX-4POE | B.18 |
| 1241400000 | IE-MC-VL-1TX-1SC | D.3 |
| 1241410000 | IE-MC-VL-1TX-1ST | D.3 |
| 1241420000 | IE-MC-VL-1TX-1SCS | D.3 |
| 1241430000 | EBR-MODULE RS232 | F.7 |
| 1241440000 | RM-KIT | F.7 |
| 1241450000 | IE-SFP-1FEMLC-T | F.6 |
| 1241470000 | IE-SFP-1FESLC-T | F.6 |
| 1241480000 | IE-SFP-1FELLC-T | F.6 |
| 1241490000 | IE-SFP-1GSXLC | F.6 |
| 1241500000 | IE-SFP-1GLSXLC | F.6 |
| 1241510000 | IE-SFP-1GLXLC | F.6 |
| 1241520000 | IE-SFP-1GLHXLC | F.6 |
| 1241530000 | IE-SFP-1G10ALC | F.6 |
| 1241540000 | IE-SFP-1G10BLC | F.6 |
| 1241550000 | IE-SFP-1G20ALC | F.6 |
| 1241570000 | IE-SFP-1G20BLC | F.6 |
| 1242080000 | IE-CS-2TX-1RS232/485 | D.5 |
| 1242090000 | IE-CS-2TX-2RS232/485 | D.5 |
| 1242100000 | IE-WL-AP-BR-CL-ABG-EU | E.5 |
| 1242110000 | IE-WL-AP-BR-CL-ABG-US | E.5 |
| 1242820000 | IE-FPOZ2EE-MW | M.6 |
| 1244130005 | IE-C5DS4UG0005MBSMCS-E | L.33 |
| 1244130010 | IE-C5DS4UG0010MBSMCS-E | L.33 |
| 1244130015 | IE-C5DS4UG0015MBSMCS-E | L.33 |
| 1244130020 | IE-C5DS4UG0020MBSMCS-E | L.33 |
| 1244130050 | IE-C5DS4UG0050MBSMCS-E | L.33 |

| Order No. | Type | Page |
|---|---|---|
| 1248280005 | IE-C6FP8LD0005M40V40-D | L.21 |
| 1248280010 | IE-C6FP8LD0010M40V40-D | L.21 |
| 1248280012 | IE-C6FP8LD0012M40V40-D | L.21 |
| 1248280015 | IE-C6FP8LD0015M40V40-D | L.21 |
| 1248280020 | IE-C6FP8LD0020M40V40-D | L.21 |
| 1248280030 | IE-C6FP8LD0030M40V40-D | L.21 |
| 1248280050 | IE-C6FP8LD0050M40V40-D | L.21 |
| 1248280100 | IE-C6FP8LD0100M40V40-D | L.21 |

## 1250000000

| | | |
|---|---|---|
| 1251580005 | IE-C6FP8LY0005M40M40-Y | L.20 |
| 1251580010 | IE-C6FP8LY0010M40M40-Y | L.20 |
| 1251580015 | IE-C6FP8LY0015M40M40-Y | L.20 |
| 1251580020 | IE-C6FP8LY0020M40M40-Y | L.20 |
| 1251580030 | IE-C6FP8LY0030M40M40-Y | L.20 |
| 1251580050 | IE-C6FP8LY0050M40M40-Y | L.20 |
| 1251580100 | IE-C6FP8LY0100M40M40-Y | L.20 |
| 1251580150 | IE-C6FP8LY0150M40M40-Y | L.20 |
| 1251580200 | IE-C6FP8LY0200M40M40-Y | L.20 |
| 1251580250 | IE-C6FP8LY0250M40M40-Y | L.20 |
| 1251590005 | IE-C6FP8LG0005M40M40-G | L.19 |
| 1251590010 | IE-C6FP8LG0010M40M40-G | L.19 |
| 1251590015 | IE-C6FP8LG0015M40M40-G | L.19 |
| 1251590020 | IE-C6FP8LG0020M40M40-G | L.19 |
| 1251590030 | IE-C6FP8LG0030M40M40-G | L.19 |
| 1251590050 | IE-C6FP8LG0050M40M40-G | L.19 |
| 1251590100 | IE-C6FP8LG0100M40M40-G | L.19 |
| 1251590150 | IE-C6FP8LG0150M40M40-G | L.19 |
| 1251590200 | IE-C6FP8LG0200M40M40-G | L.19 |
| 1251590250 | IE-C6FP8LG0250M40M40-G | L.19 |
| 1251610005 | IE-C6FP8LE0005M40M40-E | L.18 |
| 1251610010 | IE-C6FP8LE0010M40M40-E | L.18 |
| 1251610015 | IE-C6FP8LE0015M40M40-E | L.18 |
| 1251610020 | IE-C6FP8LE0020M40M40-E | L.18 |
| 1251610030 | IE-C6FP8LE0030M40M40-E | L.18 |
| 1251610050 | IE-C6FP8LE0050M40M40-E | L.18 |
| 1251610100 | IE-C6FP8LE0100M40M40-E | L.18 |
| 1251610150 | IE-C6FP8LE0150M40M40-E | L.18 |
| 1251610200 | IE-C6FP8LE0200M40M40-E | L.18 |
| 1251610250 | IE-C6FP8LE0250M40M40-E | L.18 |
| 1253240000 | IE-CDR-V14MSCPOF/VAPM-C | K.8 |

## 1260000000

| | | |
|---|---|---|
| 1269740050 | IE-C5DB4WE0050MCSXXX-E | L.42 |
| 1269740100 | IE-C5DB4WE0100MCSXXX-E | L.42 |

## 1270000000

| | | |
|---|---|---|
| 1271240000 | IE-PS-V04P-RJ45-FH-B | J.22 |
| 1271250000 | IE-PS-V05M-RJ45-FH-B | J.30 |
| 1272000000 | IE-FM6Z2V00001MSTOSD0X | M.11 |
| 1273090000 | IE-C7FS8LD-305M | L.10 |
| 1273430010 | IE-FPOZ2EE0001MSJOSJO-X | M.12 |
| 1273430030 | IE-FPOZ2EE0003MSJOSJO-X | M.12 |
| 1273430050 | IE-FPOZ2EE0005MSJOSJO-X | M.12 |
| 1273430100 | IE-FPOZ2EE0010MSJOSJO-X | M.12 |
| 1273430200 | IE-FPOZ2EE0020MSJOSJO-X | M.12 |
| 1276880000 | IE-FM5Z2V00001MLD0LD0X | M.11 |
| 1278420000 | IE-SCRJ1-IP20-POF-100 | H.4 |
| 1278430000 | IE-SCRJ-IP67-POF-100 | J.10 |

## 1280000000

| | | |
|---|---|---|
| 1285830000 | IE-CST-2TX-1RS232/485 | D.5 |
| 1285840000 | IE-CST-2TX-2RS232/485 | D.5 |
| 1286480000 | IE-WLT-AP-BR-CL-ABG-EU | E.5 |
| 1286490000 | IE-WLT-AP-BR-CL-ABG-US | E.5 |
| 1286530000 | IE-SW-BL05T-4TX-1SCS | B.3 |
| 1286540000 | IE-SW-BL05T-4TX-1ST | B.3 |
| 1286550000 | IE-SW-BL05T-4TX-1SC | B.3 |
| 1286560000 | IE-SW-BL08T-8TX | B.3 |
| 1286570000 | IE-SW-BL08T-6TX-2ST | B.3 |
| 1286580000 | IE-SW-BL08T-7TX-1SCS | B.3 |
| 1286590000 | IE-SW-VL16T-16TX | B.4 |
| 1286610000 | IE-SW-VL16T-14TX-2SC | B.4 |
| 1286620000 | IE-SW-VL16T-14TX-2ST | B.4 |
| 1286700000 | IE-SFP-1GSXLC-T | F.6 |
| 1286710000 | IE-SFP-1GLSXLC-T | F.6 |
| 1286720000 | IE-SFP-1GLXLC-T | F.6 |
| 1286730000 | IE-SFP-1GLHXLC-T | F.6 |
| 1286740000 | IE-SFP-1G10ALC-T | F.6 |
| 1286750000 | IE-SFP-1G10BLC-T | F.6 |
| 1286760000 | IE-SFP-1G20ALC-T | F.6 |
| 1286770000 | IE-SFP-1G20BLC-T | F.6 |
| 1286780000 | IE-SW-PL08MT-8TX | B.12 |
| 1286790000 | IE-SW-PL08MT-6TX-2SC | B.12 |
| 1286800000 | IE-SW-PL08MT-6TX-2ST | B.12 |
| 1286810000 | IE-SW-PL08MT-6TX-2SCS | B.12 |
| 1286820000 | IE-SW-PL16MT-16TX | B.12 |
| 1286830000 | IE-SW-PL16MT-14TX-2SC | B.12 |
| 1286840000 | IE-SW-PL16MT-14TX-2ST | B.12 |
| 1286850000 | IE-SW-BL05T-5GT | B.5 |
| 1286860000 | IE-SW-VL08T-8GT | B.5 |
| 1286870000 | IE-SW-VL08T-6GT-2GS | B.5 |
| 1286880000 | IE-MC-VLT-1TX-1SC | D.3 |
| 1286890000 | IE-MC-VLT-1TX-1ST | D.3 |
| 1286900000 | IE-MC-VLT-1TX-1SCS | D.3 |

| Order No. | Type | Page |
|---|---|---|
| 1286910000 | IE-SW-PL06MT-2TX-4POE | B.18 |
| 1286920000 | IE-SW-BL06T-2TX-4POE | B.17 |
| 1286930000 | IE-SW-PL10MT-3GT-7TX | B.13 |
| 1286940000 | IE-SW-PL10MT-1GT-2GS-7TX | B.13 |
| 1286970000 | IE-SW-PL18MT-2GC-16TX | B.14 |
| 1286990000 | IE-SW-PL18MT-2GC14TX2SC | B.14 |
| 1287000000 | IE-SW-PL18MT-2GC14TX2ST | B.14 |
| 1287010000 | IE-SW-PL18MT-2GC14TX2SCS | B.14 |
| 1287020000 | IE-SW-PL09MT-5GC-4GT | B.15 |
| 1287910000 | IE-C7FS8LR-305M | L.11 |

## 1290000000

| | | |
|---|---|---|
| 1296450000 | IE-FM6Z2V00001MLD0LD0X | M.11 |
| 1296710000 | IE-BHS-V14M-RJA-45 | J.8 |
| 1297010000 | IE-CD-VAPM24V-Y-MA | K.5 |

## 1300000000

| | | |
|---|---|---|
| 1302000000 | IE-AD-BHS-V14M-RJA | J.8 |
| 1307610010 | IE-C5DD4UG0010B2EB2E-X | L.27 |
| 1307610020 | IE-C5DD4UG0020B2EB2E-X | L.27 |
| 1307610030 | IE-C5DD4UG0030B2EB2E-X | L.27 |
| 1307610050 | IE-C5DD4UG0050B2EB2E-X | L.27 |
| 1307610100 | IE-C5DD4UG0100B2EB2E-X | L.27 |

## 1310000000

| | | |
|---|---|---|
| 1312160003 | IE-C6FP8LD0003X40X40-Y | L.22 |
| 1312160004 | IE-C6FP8LD0004X40X40-Y | L.22 |
| 1312160005 | IE-C6FP8LD0005X40X40-Y | L.22 |
| 1312160010 | IE-C6FP8LD0010X40X40-Y | L.22 |
| 1312160020 | IE-C6FP8LD0020X40X40-Y | L.22 |
| 1312160030 | IE-C6FP8LD0030X40X40-Y | L.22 |
| 1312160050 | IE-C6FP8LD0050X40X40-Y | L.22 |
| 1312160100 | IE-C6FP8LD0100X40X40-Y | L.22 |
| 1312160150 | IE-C6FP8LD0150X40X40-Y | L.22 |
| 1312160200 | IE-C6FP8LD0200X40X40-Y | L.22 |
| 1312690010 | IE-C5IT4UG0010B2EB2E-X | L.27 |
| 1312690020 | IE-C5IT4UG0020B2EB2E-X | L.27 |
| 1312690030 | IE-C5IT4UG0030B2EB2E-X | L.27 |
| 1312690050 | IE-C5IT4UG0050B2EB2E-X | L.27 |
| 1312690100 | IE-C5IT4UG0100B2EB2E-X | L.27 |
| 1318011000 | IE-FM6C2UE0100MSD1SD1X | M.15 |
| 1318011800 | IE-FM6C2UE0180MSD1SD1X | M.15 |
| 1318012000 | IE-FM6C2UE0200MSD1SD1X | M.15 |
| 1318012500 | IE-FM6C2UE0250MSD1SD1X | M.15 |
| 1318013000 | IE-FM6C2UE0300MSD1SD1X | M.15 |
| 1318013500 | IE-FM6C2UE0350MSD1SD1X | M.15 |
| 1318015000 | IE-FM6C2UE0500MSD1SD1X | M.15 |
| 1318150000 | IE-CD-V14MSCRJ-MM-C-MA | K.4 |

## 1320000000

| | | |
|---|---|---|
| 1323940000 | IE-PS-VAPM-400V | J.54 |
| 1323950000 | IE-BSS-VAPM-400V | J.55 |
| 1324010000 | IE-PCB-M12X-S-180 | J.41 |
| 1324020000 | IE-PS-M12X-P-FH | J.40 |
| 1324380000 | PRINTJET ADVANCED 230V | N.23 |
| 1324440000 | IE-CDM-V14MRJSCP/VAPM-C | K.8 |
| 1326540000 | IE-C7FS8LB-305M | L.10 |

## 1330000000

| | | |
|---|---|---|
| 1333160000 | IE-C7FS8LM-305M | L.12 |
| 1338650000 | PJ ADV TNTK INK Y | N.23 |
| 1338670000 | PJ ADV TNTK INK M | N.23 |
| 1338680000 | PJ ADV TNTK INK C | N.23 |
| 1338690000 | PJ ADV TNTK INK K | N.23 |
| 1338700000 | PRINTJET ADVANCED 115V | N.23 |
| 1338710000 | PJ ADV TNAW | N.23 |
| 1338720000 | PJ ADV TNTK INK SET | N.23 |
| 1339610000 | IE-CFK-05 | F.8 |

## 1340000000

| | | |
|---|---|---|
| 1344670000 | IE-C7FS8LY-305M | L.12 |
| 1344680000 | IE-C7FS8LG-305M | L.11 |
| 1344690000 | IE-C7FS8LE-305M | L.11 |
| 1344760000 | IE-MCT-1RS232/485-1SC | D.7 |
| 1344770000 | IE-SW-VL08MT-6TX-2SC | B.11 |
| 1345020000 | IE-BI-BNC-C | H.6 |
| 1345240000 | IE-SW-VL08MT-5TX-1SC-2SCS | B.11 |
| 1345250000 | IE-SR-2GT-UMTS/3G | C.6 |
| 1345270000 | IE-SR-2GT-LAN | C.6 |
| 1348590000 | VDATA CAT6 | N.25 |

## 1350000000

| | | |
|---|---|---|
| 1350120010 | IE-CSPS5VSO010VAPVAP-X | L.28 |
| 1350120030 | IE-CSPS5VSO030VAPVAP-X | L.28 |
| 1350120050 | IE-CSPS5VSO050VAPVAP-X | L.28 |
| 1350120100 | IE-CSPS5VSO100VAPVAP-X | L.28 |
| 1350120150 | IE-CSPS5VSO150VAPVAP-X | L.28 |
| 1350120200 | IE-CSPS5VSO200VAPVAP-X | L.28 |

## 1360000000

| | | |
|---|---|---|
| 1362950000 | IE-MCT-1RS232/485-1ST | D.7 |

| Order No. | Type | Page |
|---|---|---|
| 1367090000 | IE-ANT-O-BG-360-6-NF | F.2 |
| 1367100000 | IE-CC-NM-RPSMAM-4M | F.4 |
| 1367110000 | IE-CC-NM-RPSMAM-2M | F.4 |
| 1367120000 | IE-ANT-O-AH-360-5-NF | F.2 |
| 1367130000 | IE-ANT-O-ABG-360-7-NF | F.3 |
| 1367140000 | IE-ANT-P-ABG-75-9-NF | F.3 |

## 1370000000

| | | |
|---|---|---|
| 1376510005 | IE-C5DD4UG0005A2DA2D-E | L.25 |
| 1376510010 | IE-C5DD4UG0010A2DA2D-E | L.25 |
| 1376510020 | IE-C5DD4UG0020A2DA2D-E | L.25 |
| 1376510030 | IE-C5DD4UG0030A2DA2D-E | L.25 |
| 1376510050 | IE-C5DD4UG0050A2DA2D-E | L.25 |
| 1376510100 | IE-C5DD4UG0100A2DA2D-E | L.25 |
| 1376510150 | IE-C5DD4UG0150A2DA2D-E | L.25 |
| 1376510200 | IE-C5DD4UG0200A2DA2D-E | L.25 |

## 1390000000

| | | |
|---|---|---|
| 1393080000 | IE-PCB2-M12X-S-180 | J.41 |
| 1393470000 | IE-M12-PCBCE-PANEL-A | J.39 |
| 1397690000 | IE-CD-VAPM24V-C-MA | K.5 |
| 1398070005 | IE-C6KS8VG0005XCSXCS-E | L.35 |
| 1398070015 | IE-C6KS8VG0015XCSXCS-E | L.35 |
| 1398070030 | IE-C6KS8VG0030XCSXCS-E | L.35 |
| 1398070050 | IE-C6KS8VG0050XCSXCS-E | L.35 |
| 1398070100 | IE-C6KS8VG0100XCSXCS-E | L.35 |
| 1398770000 | IE-FPOD2UG-MW | M.6 |

## 1400000000

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|---|---|---|
| 1400610000 | IE-AD-M12XRJ45-90 | J.40 |
| 1400620000 | IE-AD-M12XRJ45-180 | J.40 |
| 1403680050 | IE-CSPD5USO050VAPVAP-X | L.28 |
| 1403680100 | IE-CSPD5USO100VAPVAP-X | L.28 |
| 1403680150 | IE-CSPD5USO150VAPVAP-X | L.28 |

## 1410000000

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|---|---|---|
| 1412070000 | IE-SW-BL08-7TX-1SC | B.3 |
| 1412080000 | IE-SW-BL08T-7TX-1SC | B.3 |
| 1412090000 | IE-SW-BL08-7TX-1ST | B.3 |
| 1412100000 | IE-SW-BL08T-7TX-1ST | B.3 |
| 1412110000 | IE-SW-BL08-6TX-2SCS | B.3 |
| 1412120000 | IE-SW-BL08T-6TX-2SCS | B.3 |

## 1420000000

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|---|---|---|
| 1421710010 | IE-C5DB4WE0010A20A20-E | L.43 |
| 1421710020 | IE-C5DB4WE0020A20A20-E | L.43 |
| 1421710030 | IE-C5DB4WE0030A20A20-E | L.43 |
| 1421710050 | IE-C5DB4WE0050A20A20-E | L.43 |
| 1421710100 | IE-C5DB4WE0100A20A20-E | L.43 |
| 1421710200 | IE-C5DB4WE0200A20A20-E | L.43 |
| 1427670000 | IE-PCBR-M12X-S-180 | J.41 |
| 1427960000 | IE-FCM-USB-3.0-A | I.4 |

## 1430000000

| | | |
|---|---|---|
| 1433930005 | IE-FM6Z2L00005DLD0LD0-X | M.8 |
| 1433930010 | IE-FM6Z2L00001MLD0LD0-X | M.8 |
| 1433930020 | IE-FM6Z2L00002MLD0LD0-X | M.8 |
| 1433930030 | IE-FM6Z2L00003MLD0LD0-X | M.8 |
| 1433930050 | IE-FM6Z2L00005MLD0LD0-X | M.8 |
| 1433930100 | IE-FM6Z2L00010MLD0LD0-X | M.8 |
| 1433940005 | IE-FM5Z2L00005DLD0LD0-X | M.8 |
| 1433940010 | IE-FM5Z2L00001MLD0LD0-X | M.8 |
| 1433940020 | IE-FM5Z2L00002MLD0LD0-X | M.8 |
| 1433940030 | IE-FM5Z2L00003MLD0LD0-X | M.8 |
| 1433940050 | IE-FM5Z2L00005MLD0LD0-X | M.8 |
| 1433940100 | IE-FM5Z2L00010MLD0LD0-X | M.8 |
| 1433950005 | IE-FSMZ2LY0005DLD0LD0-X | M.9 |
| 1433950010 | IE-FSMZ2LY0001MLD0LD0-X | M.9 |
| 1433950020 | IE-FSMZ2LY0002MLD0LD0-X | M.9 |
| 1433950030 | IE-FSMZ2LY0003MLD0LD0-X | M.9 |
| 1433950050 | IE-FSMZ2LY0005MLD0LD0-X | M.9 |
| 1433950100 | IE-FSMZ2LY0010MLD0LD0-X | M.9 |
| 1433960005 | IE-FM6Z2L00005DSD0SD0-X | M.7 |
| 1433960010 | IE-FM6Z2L00001MSD0SD0-X | M.7 |
| 1433960020 | IE-FM6Z2L00002MSD0SD0-X | M.7 |
| 1433960030 | IE-FM6Z2L00003MSD0SD0-X | M.7 |
| 1433960050 | IE-FM6Z2L00005MSD0SD0-X | M.7 |
| 1433960100 | IE-FM6Z2L00010MSD0SD0-X | M.7 |
| 1433970005 | IE-FM5Z2L00005DSD0SD0-X | M.7 |
| 1433970010 | IE-FM5Z2L00001MSD0SD0-X | M.7 |
| 1433970020 | IE-FM5Z2L00002MSD0SD0-X | M.7 |
| 1433970030 | IE-FM5Z2L00003MSD0SD0-X | M.7 |
| 1433970050 | IE-FM5Z2L00005MSD0SD0-X | M.7 |
| 1433970100 | IE-FM5Z2L00010MSD0SD0-X | M.7 |
| 1433980005 | IE-FM6Z2L00005DSTOST0-X | M.7 |
| 1433980010 | IE-FM6Z2L00001MSTOST0-X | M.7 |
| 1433980020 | IE-FM6Z2L00002MSTOST0-X | M.7 |
| 1433980030 | IE-FM6Z2L00003MSTOST0-X | M.7 |
| 1433980050 | IE-FM6Z2L00005MSTOST0-X | M.7 |
| 1433980100 | IE-FM6Z2L00010MSTOST0-X | M.7 |
| 1433990005 | IE-FM5Z2L00005DSTOST0-X | M.7 |
| 1433990010 | IE-FM5Z2L00001MSTOST0-X | M.7 |
| 1433990020 | IE-FM5Z2L00002MSTOST0-X | M.7 |

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|---|---|---|
| 1433990030 | IE-FM5Z2L00003MSTOST0-X | M.7 |
| 1433990050 | IE-FM5Z2L00005MSTOST0-X | M.7 |
| 1433990100 | IE-FM5Z2L00010MSTOST0-X | M.7 |
| 1438180000 | IE-TO-USB-AB | H.11 |

## 1440000000

| | | |
|---|---|---|
| 1444650000 | IE-PCBR2-M12X-S-180 | J.41 |
| 1449420050 | IE-FSMD2UE0005MSDESDEX | M.16 |
| 1449420200 | IE-FSMD2UE0020MSDESDEX | M.16 |
| 1449420250 | IE-FSMD2UE0025MSDESDEX | M.16 |
| 1449420400 | IE-FSMD2UE0040MSDESDEX | M.16 |
| 1449470005 | IE-C6KS8VG0005XCSXXX-E | L.35 |
| 1449470015 | IE-C6KS8VG0015XCSXXX-E | L.35 |
| 1449470050 | IE-C6KS8VG0050XCSXXX-E | L.35 |
| 1449470100 | IE-C6KS8VG0100XCSXXX-E | L.35 |

## 1450000000

| | | |
|---|---|---|
| 1457580010 | IE-C6ES8UG0010A40XCS-E | L.36 |
| 1457580020 | IE-C6ES8UG0020A40XCS-E | L.36 |
| 1457580030 | IE-C6ES8UG0030A40XCS-E | L.36 |
| 1457580050 | IE-C6ES8UG0050A40XCS-E | L.36 |
| 1457580100 | IE-C6ES8UG0100A40XCS-E | L.36 |
| 1457580120 | IE-C6ES8UG0120A40XCS-E | L.36 |

## 1680000000

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|---|---|---|
| 1689470001 | VT SF 5/21 NE WS V0 | N.24 |

## 1690000000

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|---|---|---|
| 1699860000 | SM 27/18 MC NE WS | I.2 |

## 1710000000

| | | |
|---|---|---|
| 1716630000 | SM-H 27/18 SW | I.2 |
| 1718411687 | TM-I 12 MC NE GE | L.6 |
| 1718431044 | TM-I 18 MC NE WS | N.24 |
| 1718431687 | TM-I 18 MC NE GE | N.24 |
| 1719840000 | TM 4/12 HF/HB | N.24 |
| 1719850000 | TM 4/18 HF/HB | N.24 |

## 1730000000

| | | |
|---|---|---|
| 1730560001 | VT SF 6/21 NE WS V0 | N.24 |

## 1800000000

| | | |
|---|---|---|
| 1803930001 | SAISW-4/8S-M12 4P D-ZF | J.36 |

## 1820000000

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|---|---|---|
| 1825900000 | CABTITE KEL 16/4 | N.18 |
| 1825910000 | CABTITE KEL 16/8 | N.18 |
| 1826480000 | CABTITE KT 5 | N.17 |
| 1826490000 | CABTITE KT 6 | N.17 |
| 1826500000 | CABTITE KT 7 | N.17 |
| 1826510000 | CABTITE KT 8 | N.17 |
| 1826670000 | CABTITE KVT 32 | N.19 |
| 1827770000 | CABTITE KEL SNAP 16 | N.18 |
| 1827810000 | CABTITE KT 5 b | N.17 |
| 1827830000 | CABTITE KT 6 b | N.17 |
| 1827840000 | CABTITE KT 7 b | N.17 |
| 1827850000 | CABTITE KT 8 b | N.17 |
| 1828170000 | CABTITE KT BTK | N.17 |
| 1828200000 | CABTITE KT BTK b | N.17 |
| 1828250000 | CABTITE SUBD9 | N.19 |

## 1850000000

| | | |
|---|---|---|
| 1857440000 | ESG 9/11 K MC NE WS | N.24 |
| 1858920000 | Tintentank PrintJet II | N.23 |
| 1858950000 | CleanUnit PrintJet II | N.23 |

## 1890000000

| | | |
|---|---|---|
| 1892120000 | SAISM-4/8S-M12-4P D-COD | J.37 |
| 1892120001 | SAISM-4/8S-M12 4P D-ZF | J.36 |
| 1892130000 | SAIBM-4/8S-M12-4P D-COD | J.37 |
| 1892130001 | SAIBM-4/8S-M12 4P D-ZF | J.36 |

## 1900000000

| | | |
|---|---|---|
| 1900000000 | Screwty- M12 | L.29 |
| 1900001000 | Screwty-M12-DM | L.29 |
| 1905490000 | M-PRINT PRO | N.23 |

## 1910000000

| | | |
|---|---|---|
| 1910000000 | Screwty Set | L.29 |

## 1920000000

| | | |
|---|---|---|
| 1920000000 | Screwty Set -DM | L.29 |

## 1960000000

| | | |
|---|---|---|
| 1962430000 | IE-PH-RJ45-TH-WH | H.3 |

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|---|---|---|
| 1962440000 | IE-PH-RJ45-TH-GY | H.3 |
| 1962450000 | IE-PH-RJ45-TH-OG | H.3 |
| 1962470000 | IE-PH-RJ45-TH-BU | H.3 |
| 1962480000 | IE-PH-RJ45-TH-YE | H.3 |
| 1962490000 | IE-PH-RJ45-TH-GN | H.3 |
| 1962500000 | IE-PH-RJ45-TH-BK | H.3 |
| 1962520000 | IE-PH-V04P | J.22 |
| 1962530000 | IE-PH-V04P-BP | J.22 |
| 1962540000 | IE-PH-V05M | J.30 |
| 1962550000 | IE-PH-V01M | J.12 |
| 1962560000 | IE-PH-V01M-BP | J.12 |
| 1962720000 | IE-PI-RJ45-TH | J.43 |
| 1962730000 | IE-PI-RJ45-FH | J.42 |
| 1962780000 | IE-PI-2LC-MM | J.51 |
| 1962790000 | IE-PI-2LC-SM | J.51 |
| 1962840000 | IE-BI-RJ45-C | J.45 |
| 1962850000 | IE-BI-RJ45-FJ-A | H.14 |
| 1962870000 | IE-BI-SCRJ2SC-SM-C | J.50 |
| 1962880000 | IE-BI-LCD-SM-C | J.52 |
| 1962970000 | IE-PS-LCD-MM | H.5 |
| 1962980000 | IE-PS-LCD-SM | H.5 |
| 1963050000 | IE-CR-IP20-RJ45-FH-WH | H.2 |
| 1963060000 | IE-CR-IP20-RJ45-FH-GY | H.2 |
| 1963070000 | IE-CR-IP20-RJ45-FH-OG | H.2 |
| 1963080000 | IE-CR-IP20-RJ45-FH-BU | H.2 |
| 1963090000 | IE-CR-IP20-RJ45-FH-YE | H.2 |
| 1963100000 | IE-CR-IP20-RJ45-FH-GN | H.2 |
| 1963110000 | IE-PS-V05M-RJ45-TH | J.30 |
| 1963120000 | IE-PS-V01M-RJ45-FH | G.16 |
| 1963130000 | IE-PS-V01M-RJ45-FH-BP | J.12 |
| 1963140000 | IE-PS-V01M-RJ45-TH | J.12 |
| 1963150000 | IE-PS-V01M-RJ45-TH-BP | J.12 |
| 1963160000 | IE-PS-V04P-RJ45-FH | J.22 |
| 1963170000 | IE-PS-V04P-RJ45-FH-BP | J.22 |
| 1963180000 | IE-PS-V04P-RJ45-TH | J.22 |
| 1963190000 | IE-PS-V04P-RJ45-TH-BP | J.22 |
| 1963200000 | IE-PS-V05M-RJ45-FH | J.30 |
| 1963220000 | IE-PS-V01M-2LC-MM | J.16 |
| 1963230000 | IE-PS-V01M-2LC-MM-BP | J.16 |
| 1963240000 | IE-PS-V01M-2LC-SM | J.16 |
| 1963250000 | IE-PS-V01M-2LC-SM-BP | J.16 |
| 1963260000 | IE-PS-V01M-2SC-MM | G.16 |
| 1963270000 | IE-PS-V01M-2SC-MM-BP | J.14 |
| 1963280000 | IE-PS-V01M-2SC-POF | J.14 |
| 1963290000 | IE-PS-V01M-2SC-POF-BP | J.14 |
| 1963300000 | IE-PS-V01M-2SC-SM | J.14 |
| 1963310000 | IE-PS-V01M-2SC-SM-BP | J.14 |
| 1963320000 | IE-PS-V04P-2LC-MM | J.28 |
| 1963330000 | IE-PS-V04P-2LC-MM-BP | J.28 |
| 1963340000 | IE-PS-V04P-2LC-SM | J.28 |
| 1963350000 | IE-PS-V04P-2LC-SM-BP | J.28 |
| 1963360000 | IE-PS-V04P-2SC-MM | J.26 |
| 1963370000 | IE-PS-V04P-2SC-MM-BP | J.26 |
| 1963380000 | IE-PS-V04P-2SC-POF | J.26 |
| 1963390000 | IE-PS-V04P-2SC-POF-BP | J.26 |
| 1963400000 | IE-PS-V04P-2SC-SM | J.26 |
| 1963410000 | IE-PS-V04P-2SC-SM-BP | J.26 |
| 1963420000 | IE-BS-V04P-SCRJ2SC-SM-C | J.27 |
| 1963430000 | IE-BS-V01M-LCD-SM-C | J.17 |
| 1963440000 | IE-BS-V01M-SCRJ2SC-SM-C | G.9 |
| 1963450000 | IE-BS-V04P-LCD-SM-C | J.29 |
| 1963460000 | IE-BS-V05M-RJ45-FJ-A | J.31 |
| 1963470000 | IE-BS-V01M-RJ45-C | J.13 |
| 1963480000 | IE-BS-V01M-RJ45-FJ-A | J.13 |
| 1963490000 | IE-BS-V04P-RJ45-C | J.23 |
| 1963500000 | IE-BS-V04P-RJ45-FJ-A | G.9 |
| 1963510000 | IE-BS-V05M-RJ45-C | J.31 |
| 1963520000 | IE-BH-V04P | J.23 |
| 1963530000 | IE-BH-V05M | J.31 |
| 1963540000 | IE-BH-V01M | J.13 |
| 1963580000 | IE-PM-RJ45-TH | H.3 |
| 1963590000 | IE-PS-RJ45-TH-BK | H.3 |
| 1963600000 | IE-PS-RJ45-FH-BK | H.2 |
| 1963700000 | IE-BS-V05M-RJ45-FJ-P | J.31 |
| 1963730000 | IE-BS-V04P-RJ45-FJ-B | J.23 |
| 1963830000 | IE-BI-RJ45-FJ-P | H.14 |
| 1963840000 | IE-BI-RJ45-FJ-B | G.17 |
| 1963890000 | IE-PP-V04P | N.20 |
| 1963900000 | IE-BP-V04P | N.20 |
| 1964410000 | IE-PS-SCD-SM | H.5 |
| 1964420000 | IE-BI-LCD-MM-C | J.52 |
| 1964430000 | IE-BI-SCRJ2SC-MM-C | J.50 |
| 1964440000 | IE-BS-V01M-LCD-MM-C | J.17 |
| 1964450000 | IE-BS-V01M-SCRJ2SC-MM-C | G.9 |
| 1964460000 | IE-BS-V04P-LCD-MM-C | J.29 |
| 1964470000 | IE-BS-V04P-SCRJ2SC-MM-C | J.27 |
| 1964480000 | IE-PS-SCD-MM | H.5 |
| 1965690000 | IE-PP-V01P | N.20 |
| 1965700000 | IE-BP-V01P | N.20 |
| 1966780000 | IE-KOK-V1 | N.16 |
| 1966790000 | IE-KOK-V4 | N.16 |
| 1966810000 | IE-KO-HAT | N.16 |
| 1968150000 | IE-PS-ST-MM | H.4 |
| 1968920000 | IE-PP-V05M | N.20 |
| 1968930000 | IE-BP-V05M | N.20 |

## 2330000000

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|---|---|---|
| 2330260000 | SAI-SK-M12-UNI | N.20 |

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

## 8420000000

| | | |
|---|---|---|
| 8425960000 | SAI-SK-M12 BU | N.20 |

## 8800000000

| | | |
|---|---|---|
| 8808330000 | IE-XRJ45/IDC | J.33 |
| 8808340000 | IE-XM-ST/ST | H.13 |
| 8808360000 | IE-XM-RJ45/IDC | H.9 |
| 8808370000 | IE-S-IP67 | K.11 |
| 8808380000 | IE-P-IP67 | J.32 |
| 8808420000 | IE-CT | N.6 |
| 8808440000 | IE-XM-RJ45/IDC-IP67 | J.33 |
| 8808450000 | IE-XM-RJ45/RJ45-IP67 | J.33 |

## 8810000000

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|---|---|---|
| 8813090000 | IE-C-IP67 | J.34 |
| 8813110000 | IE-P63 | H.3 |
| 8813120000 | IE-P70 | H.3 |
| 8813130000 | IE-7IC4x2xAWG23/1-PVC | L.7 |
| 8813140000 | IE-7IC4x2xAWG23/1-PUR | L.7 |
| 8813150000 | IE-5IC4x2xAWG24/1-PVC | L.6 |
| 8813160000 | IE-5IC4x2xAWG24/1-PUR | L.6 |
| 8813170000 | IE-7CC4x2xAWG26/7-PVC | L.9 |
| 8813180000 | IE-7CC4x2xAWG26/7-PUR | L.9 |
| 8813190000 | IE-5CC4x2xAWG26/7-PVC | L.8 |
| 8813200000 | IE-5CC4x2xAWG26/7-PUR | L.8 |
| 8813210000 | IE-5TC4x2xAWG26/7-PUR | L.13 |
| 8813240000 | IE-FM5Z2V00001MSTOSTOX | M.10 |
| 8813250000 | IE-FM5Z2V00002MSTOSTOX | M.10 |
| 8813260000 | IE-FM5Z2V00003MSTOSTOX | M.10 |
| 8813270000 | IE-FM6Z2V00001MSTOSTOX | M.10 |
| 8813280000 | IE-FM6Z2V00002MSTOSTOX | M.10 |
| 8813290000 | IE-FM6Z2V00003MSTOSTOX | M.10 |
| 8813300000 | IE-FM5Z2V00001MSDOSD0X | M.10 |
| 8813310000 | IE-FM5Z2V00002MSDOSD0X | M.10 |
| 8813320000 | IE-FM5Z2V00003MSDOSD0X | M.10 |
| 8813330000 | IE-FM6Z2V00001MSDOSD0X | M.10 |
| 8813340000 | IE-FM6Z2V00002MSDOSD0X | M.10 |
| 8813350000 | IE-FM6Z2V00003MSDOSD0X | M.10 |
| 8813390000 | IE-FM5Z2V00002MSTOSD0X | M.11 |
| 8813400000 | IE-FM6Z2V00002MSTOSD0X | M.11 |
| 8813490000 | IE-DPC | N.20 |
| 8813500000 | IE-DM | H.9 |

## 8820000000

| | | |
|---|---|---|
| 8829440000 | IE-XM-6U-RJ45/RJ45-IP67 | J.33 |
| 8829450000 | IE-XM-6D-RJ45/RJ45-IP67 | J.33 |

## 8870000000

| | | |
|---|---|---|
| 8876350050 | IE-FM5Z2V00005MSDOSD0X | M.10 |
| 8876350100 | IE-FM5Z2V00010MSDOSD0X | M.10 |
| 8876360050 | IE-FM6Z2V00005MSDOSD0X | M.10 |
| 8876360100 | IE-FM6Z2V00010MSDOSD0X | M.10 |
| 8876370050 | IE-FM5Z2V00005MSTOSTOX | M.10 |
| 8876370100 | IE-FM5Z2V00010MSTOSTOX | M.10 |
| 8876380050 | IE-FM6Z2V00005MSTOSTOX | M.10 |
| 8876380100 | IE-FM6Z2V00010MSTOSTOX | M.10 |
| 8876430010 | IE-FM5D2UE0001MSDOSD0X | M.14 |
| 8876430030 | IE-FM5D2UE0003MSDOSD0X | M.14 |
| 8876430050 | IE-FM5D2UE0005MSDOSD0X | M.14 |
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| 8876440010 | IE-FM6D2UE0001MSDOSD0X | M.14 |
| 8876440030 | IE-FM6D2UE0003MSDOSD0X | M.14 |
| 8876440050 | IE-FM6D2UE0005MSDOSD0X | M.14 |
| 8876440100 | IE-FM6D2UE0010MSDOSD0X | M.14 |
| 8876450010 | IE-FM5D2UE0001MSTOSTOX | M.14 |
| 8876450030 | IE-FM5D2UE0003MSTOSTOX | M.14 |
| 8876450050 | IE-FM5D2UE0005MSTOSTOX | M.14 |
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| 8876460100 | IE-FM6D2UE0010MSTOSTOX | M.14 |
| 8879050000 | IE-XM-RJ45/RJ45 | H.10 |

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| 8898990000 | IE-C5DS4V1000 | L.14 |
| 8899000000 | IE-C5AS4V1000 | L.14 |
| 8899010000 | IE-C5DD4U1000 | L.15 |

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| 8941350005 | IE-C6FS8UG0005A40A40-G | L.24 |
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| 8946000000 | IE-FM5D2UE-MW | M.5 |
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| 8947020000 | IE-TO-LCD-SM | H.13 |
| 8947670000 | IE-C5DD4UG-MW | L.15 |
| 8949760000 | IE-C5ED8UB-MW | L.13 |

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| 8952950000 | IE-XR-RJ45/RJ45-2 | J.33 |
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| 8956070000 | IE-FM5C2UE-MW | M.5 |

## 8960000000

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| 8960670000 | IE-C5ED8UB-100M | L.13 |

## 8970000000

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| 8979020000 | IE-FM5D2UE0010MLD0LD0X | M.13 |
| 8979030000 | IE-FM5D2UE0100MLD0LD0X | M.13 |
| 8979040000 | IE-FM5D2UE0050MLD0LD0X | M.13 |

## 8990000000

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| 8992990000 | IE-FM6Z2V00100MLD0LD0X | M.11 |
| 8993220000 | IE-FM6D2UE0050MLD0LD0X | M.13 |

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