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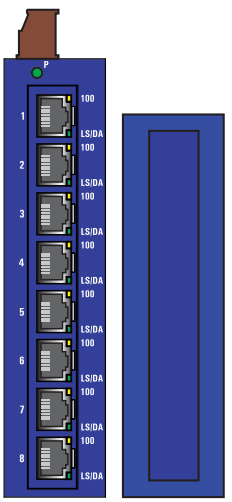
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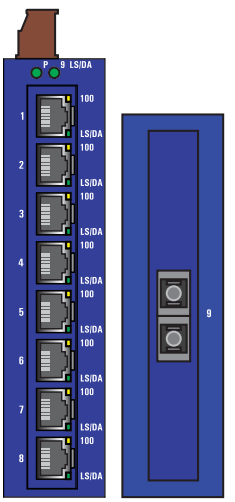
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User Manual

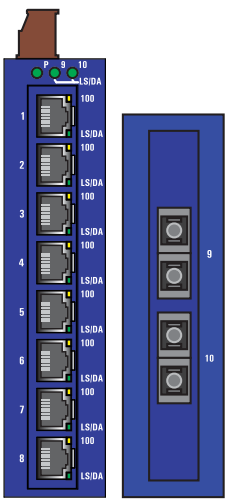
Installation
Industrial Ethernet Rail Switch
SPIDER II, SPIDER II Giga, SPIDER II PoE



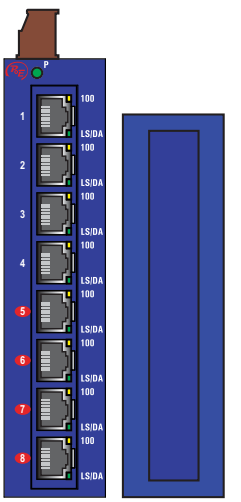
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SPIDER II 8TX EEC



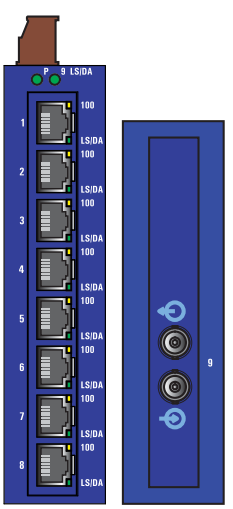
SPIDER II 8TX/1FX EEC
SPIDER II 8TX/1FX-SM EEC



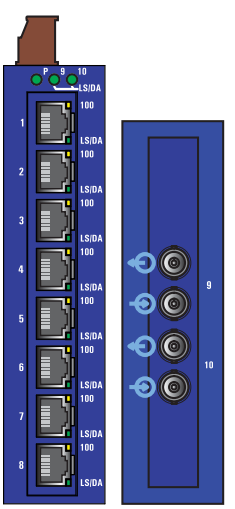
SPIDER II 8TX/2FX EEC
SPIDER II 8TX/2FX-SM EEC



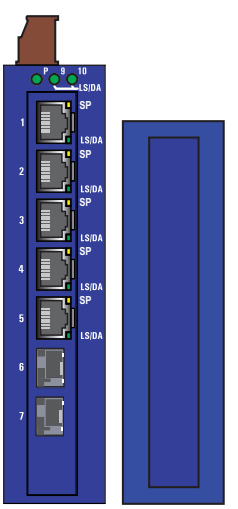
SPIDER II 8TX PoE



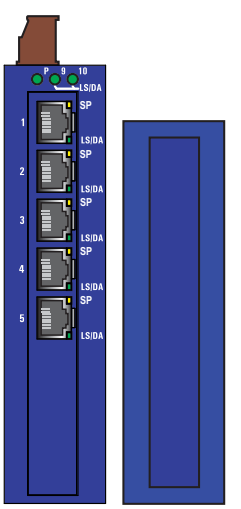
SPIDER II 8TX/1FX-ST EEC



SPIDER II 8TX/2FX-ST EEC



SPIDER II Giga 5T/2S EEC



SPIDER II Giga 5T EEC

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Safety instructions

Correct usage

Only use the device for those purposes specified in the catalog and in the technical description. Only operate the device with external devices and components that are recommended and permitted by the manufacturer. The proper and safe operation of this product depends on proper handling during transport, proper storage, assembly and installation, and conscientious operation and maintenance procedures.

Supply voltage

⚠ CAUTION

ELECTRIC SHOCK
Solely connect a supply voltage that corresponds to the type plate of your device.

Failure to follow these instructions can result in injury or equipment damage.

- ☐ The power supply inputs are designed for operation with safety extra-low voltage. Solely connect SELV circuits with voltage restrictions in line with IEC/EN 60950-1 to the supply voltage connections.
- ☐ Use undamaged parts.
- ☐ If you are operating the module with an external voltage, only supply the system with a safety extra-low voltage in compliance with IEC/EN 60950-1.
- ☐ Connect the ground connector before you set up the other connections. When removing the connections, you remove the ground connector last.
- ☐ Relevant for North America: To be used in class 2 circuits.
  The device may only be connected to a supply voltage of class 2 that fulfills the requirements of the National Electrical Code, Table 11(b).
- ☐ Relevant for North America: For use in Class 2 circuits
  Use copper wire/conductors of class 1 60/75 °C or 75 °C or 90 °C exclusively.
- ☐ Relevant for North America
  for devices certified for hazardous locations:
  Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods [Article 501-4(b) of the National Electrical Code, NFPA 70] and in accordance with the authority having jurisdiction.
- ☐ Only switch on the device when the housing is closed.

Shielding ground

☐ Beware of possible short circuits when connecting a cable section with conductive shielding braiding.

Housing

⚠ CAUTION

ELECTRIC SHOCK
Solely connect a supply voltage that corresponds to the type plate of your device.

Never insert sharp objects (small screwdrivers, wires, etc.) into the inside of the device.

Failure to follow these instructions can result in injury or equipment damage.

⚠ CAUTION

OVERHEATING OF THE DEVICE
When installing the device, ensure that the ventilation slots are not covered. Make sure there is at least 10 cm (3.94 in) of space.

Failure to follow these instructions can result in injury or equipment damage.

Only technicians authorized by the manufacturer are permitted to open the housing.

Note: The device is grounded by means of a 3-pin terminal block.

☐ Verify that the electrical installation meets locally or nationally applicable safety regulations.

☐ The device must be installed in the vertical position.
☐ If installed in a living area or office environment, the device must be operated exclusively in switch cabinets with fire protection characteristics in accordance with EN 60950-1.

Environment

- ☐ Only operate the device at the specified ambient temperature (temperature of the surrounding air at a distance of up to 5 cm from the device) and at the specified relative humidity.
- ☐ When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.
- ☐ Use the device in an environment with a maximum pollution degree that complies with the specifications in the technical data.
- ☐ The equipment is designed for in building installation only and is not intended to be connected to exposed (outside plant) networks.

Qualification requirements for personnel

Qualified personnel as understood in this manual and the warning signs, are persons who are familiar with the setup, assembly, startup, and operation of this product and are appropriately qualified for their job. This includes, for example, those persons who have been:

- ▶ trained or directed or authorized to switch on and off, to ground and to label power circuits and devices or systems in accordance with current safety engineering standards;
- ▶ trained or directed in the care and use of appropriate safety equipment in accordance with the current standards of safety engineering;
- ▶ trained in providing first aid.

General safety instructions

This device is operated by electricity. You must follow precisely the prescribed safety requirements for the voltage connections in this document.

See “Supply voltage” on page 5.

Non-observance of these safety instructions can cause material damage and/or injuries.

- ▶ Only appropriately qualified personnel should work on this device or in its vicinity. The personnel must be thoroughly familiar with all the warnings and maintenance procedures outlined in this operating manual.
- ▶ The proper and safe operation of this device depends on proper handling during transportation, proper storage and assembly, and conscientious operation and maintenance procedures.
- ▶ Never start operation with damaged components.
- ▶ Only use the devices in accordance with this manual. In particular, observe all warnings and safety-related information.
- ▶ Any work that may be required on the electrical installation may only be carried out by personnel trained for this purpose.

Relevant for SPIDER II 8 TX/...FX... EEC and SPIDER II Giga 5T/2S EEC:

Note: LED or LASER components in compliance with IEC 60825-1 (2007):
CLASS 1 LASER PRODUCT
CLASS 1 LED PRODUCT

National and international safety regulations

☐ Make sure that the electrical installation meets local or nationally applicable safety regulations.

CE marking

The labeled devices comply with the regulations contained in the following European directive(s):

2011/65/EU (RoHS)
Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

2004/108/EC (EMC)
Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility.

In accordance with the above-named EU directive(s), the EU conformity declaration will be at the disposal of the relevant authorities at the following address:

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72654 Neckartenzlingen
Germany
Tel.: +49 1805 141538

The device can be used in the industrial sector.

- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55022

Warning! This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.

Note: The assembly guidelines provided in these instructions must be strictly adhered to in order to observe the EMC threshold values.

E marking

The labeled devices comply with the regulations contained in the following European directive(s):

72/245/EWG, 2009/19/EG
Guideline for standardizing the regulations of member states relating to radio interference from motor vehicles. Certified devices are marked with an e1 type approval indicator.

Rule No. 10 of the Economic Commission for Europe (ECE): Devices with a certification are labelled with the E type-approval mark.

Note: For use in connection with a suitable type approved power supply only.

FCC note

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; (2) this device must accept any interference received, including interference that may cause undesired operation.
Appropriate testing has established that this device fulfills the requirements of a class A digital device in line with part 15 of the FCC regulations.
These requirements are designed to provide sufficient protection against interference when the device is being used in a business environment. The device creates and uses high frequencies and can also radiate high frequencies, and if it is not installed and used in accordance with this operating manual, it can cause radio transmission interference. The use of this device in a living area can also cause interference, and in this case the user is obliged to cover the costs of removing the interference.

Recycling note

After usage, this device must be disposed of properly as electronic waste, in accordance with the current disposal regulations of your county, state, and country.

About this Manual

The “Installation User Manual” document contains a device description, safety instructions, a display description and other information that you require to install the device before starting with the configuration of the device.

Legend

The symbols used in this manual have the following meanings:

▶	Listing
☐	Work step
■	Subheading

1 Description

1.1 General device description

The SPIDER II devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The devices allow you to set up switched industrial Ethernet networks that conform to the IEEE 802.3 standard.

The devices are mounted very quickly by snapping them onto the DIN rail.

The devices work without a fan.

You have the option of choosing various media to connect terminal devices and other network components:

- twisted pair cable
- multimode F/O
- singlemode F/O

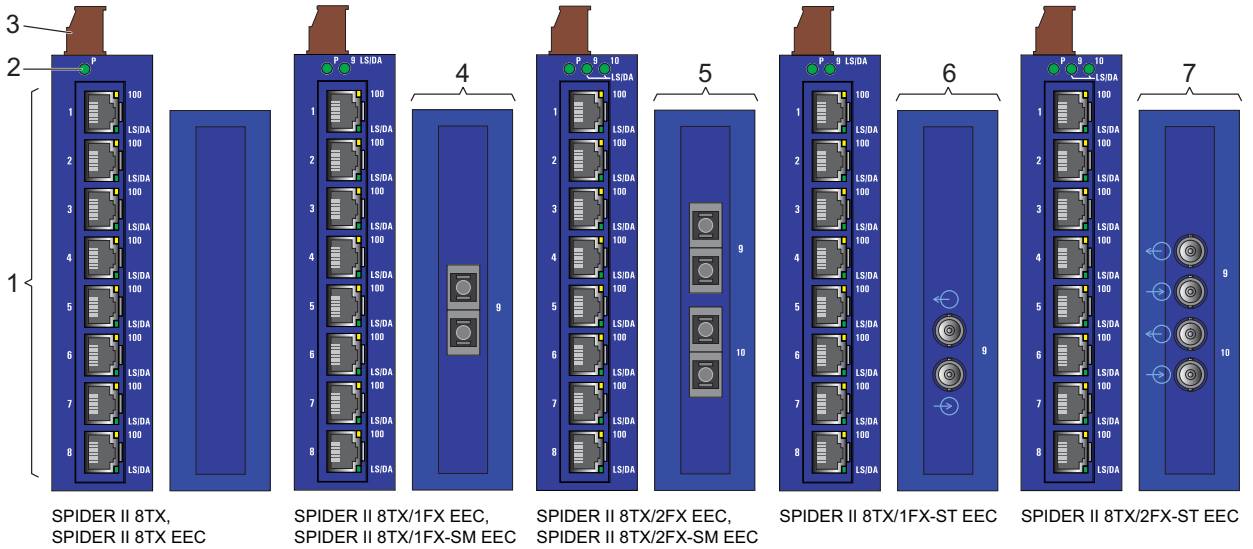
The Hirschmann network components help you ensure continuous communication across all levels of the company.

1.2 Description of the device variants

The devices differ with regard to the number of interfaces and the media type for connecting segments.
The table below shows the number and type of ports for each device variant. The abbreviations F/O (optical fiber) and TP (twisted pair) indicate the media type. The abbreviations DSC, ST, SFP and RJ45 indicate the socket type. The abbreviations MM (Multimode) and SM (Singlemode) indicate the optical fiber type.

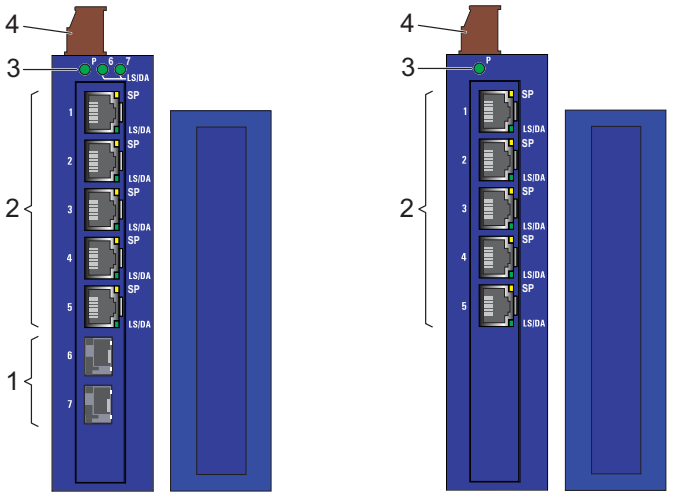
Variant	RJ45 socket for 10/100 Mbit/s twisted-pair port	RJ-45 socket for 10/100 Mbit/s PoE port	DSC multimode socket for 100 Mbit/s F/O port	DSC singlemode socket for 100 Mbit/s F/O port	ST multimode socket for 100 Mbit/s F/O port	RJ45 socket for 10/100/1000 Mbit/s twisted-pair port	SFP slot for 1000 Mbit/s F/O port
SPIDER II 8TX	8						
SPIDER II 8TX EEC	8						
SPIDER II 8TX/1FX EEC	8		1				
SPIDER II 8TX/1FX-SM EEC	8			1			
SPIDER II 8TX/2FX EEC	8		2				
SPIDER II 8TX/2FX-SM EEC	8			2			
SPIDER II 8TX/1FX-ST EEC	8				1		
SPIDER II 8TX/2FX-ST EEC	8				2		
SPIDER II Giga 5T EEC						5	
SPIDER II Giga 5T/2S EEC						5	2
SPIDER II Giga 5T EEC PRO						5	
SPIDER II Giga 5T/2S EEC PRO						5	2
SPIDER II Giga 5T EEC Jumbo						5	
SPIDER II Giga 5T/2S EEC Jumbo						5	2
SPIDER II 8TX PoE	4	4					

Table 1: Number and type of ports



1	port 1 to 8		RJ45 socket for 10/100 Mbit/s twisted-pair port
2	LED display element		
3	3-pin terminal block for supply voltage		
4	Port 9	SPIDER II 8TX/1FX EEC	DSC multimode socket for 100 Mbit/s F/O port
		SPIDER II 8TX/1FX-SM EEC	DSC singlemode socket for 100 Mbit/s F/O port
5	Ports 9 to 10	SPIDER II 8TX/2FX EEC	DSC multimode socket for 100 Mbit/s F/O port
		SPIDER II 8TX/2FX-SM EEC	DSC singlemode socket for 100 Mbit/s F/O port
6	Port 9		ST multimode socket for 100 Mbit/s F/O port
7	Ports 9 to 10		ST multimode socket for 100 Mbit/s F/O port

Table 2: Overview of the device variants without gigabit ports (SPIDER II 8TX...)



SPIDER II Giga 5T/2S EEC

SPIDER II Giga 5T EEC

1	Ports 6 to 7	SFP slot for 1000 Mbit/s F/O port
2	Ports 1 to 5	RJ45 socket for 10/100/1000 Mbit/s twisted-pair port
3	LED display element	
4	3-pin terminal block for supply voltage	

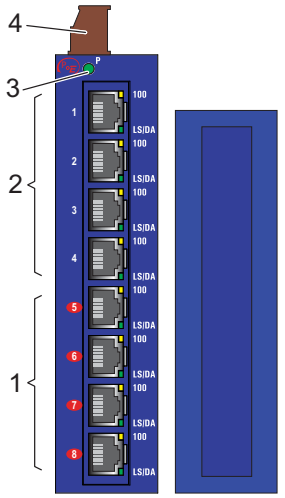
Table 3: Overview of the device variants with gigabit ports (SPIDER II Giga...)

The device variants Giga PRO support Quality of Service (QoS) according to IEEE 802.1D. The devices always transfers data packets with higher priority first. They are suitable for PROFINET or other applications, that require prioritization.

Port priority	Traffic classes	IEEE 802.1D traffic type
0	1	Best Effort (default)
1	0	Background
2	0	Standard
3	1	Excellent Effort (business critical)
4	2	Controlled load (streaming multimedia)
5	2	Video, less than100 ms latency and jitter
6	3	Voice, less than 10 ms latency and jitter
7	3	Network Control reserved traffic

Table 4: SPIDER II Giga PRO – Assignment of the port priority to the traffic classes

The device variants Giga Jumbo support jumbo frames. In jumbo frames, up to 9014 bytes of user data fits into one ethernet frame. Jumbo frame is especially suitable for video applications.



1	Ports 5 to 8	RJ-45 socket for 10/100 Mbit/s PoE port
2	Ports 1 to 4	RJ45 socket for 10/100 Mbit/s twisted-pair port
3	LED display element	
4	3-pin terminal block for supply voltage	

Table 5: Overview of the device variants with PoE (SPIDER II 8TX PoE)

Device variants SPIDER II 8TX PoE support Power over Ethernet (PoE) in accordance with IEEE 802.3af.

They allow the connection and remote supply of, for example, IP telephones (Voice over IP), webcams, sensors, printer servers and WLAN access points via 10BASE-T/100BASE-TX. With PoE, these terminal devices are powered by the twisted-pair cable.

The SPIDER II 8TX PoE provides four 10BASE-T/100BASE-TX-PoE ports (RJ45 sockets) for connecting network segments or PoE terminal devices (PD, Powered Device) for all IEEE 802.3af performance classes up to a maximum output power of 15.4 W.

The 4 PoE-capable ports are the 4 bottom ports of the device (see figure 3 on page 21). The PoE ports are indicated in red on the device).

The voltage is supplied through the wire pairs transmitting the signal (phantom voltage). The individual ports are not electrically insulated from each other.
The following conditions are met in accordance with IEEE 802.3af:

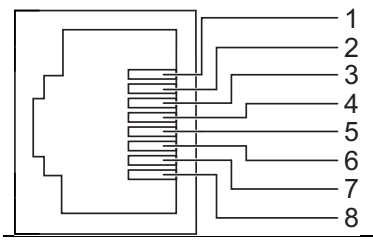
- Endpoint PSE
- Alternative A

1.3 Ethernet ports

1.3.1 10/100 Mbit/s twisted pair port

This port is an RJ45 socket.
The 10/100 Mbit/s twisted pair port offers you the ability to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard.
This port supports:

- Autonegotiation
- Autopolarity
- Autocrossing
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode



Pin	Function	
1	RD+	Receive path
2	RD−	Receive path
3	TD+	Transmission path
6	TD−	Transmission path
4,5,7,8	—	

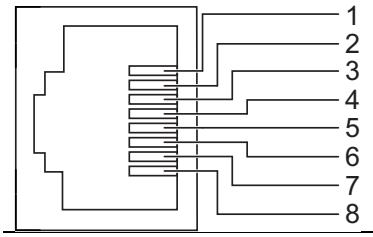
Table 6: Pin assignment of the 10/100 Mbit/s twisted pair port, RJ45 socket, MDI-X mode

1.3.2 10/100 Mbit/s PoE port

The socket housing is electrically connected with the front panel.
This port is an RJ45 socket.
The 10/100 Mbit/s PoE port allows you to connect network components as a PoE voltage sink according to the standard IEEE 802.3 10BASE-T/100BASE-TX and IEEE 802.3af.
This port supports:

- Autonegotiation
- Autopolarity
- Autocrossing
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- Power over Ethernet (PoE, at the last four ports of the device)

The PoE voltage is supplied via the wire pairs transmitting the signal (phantom voltage).



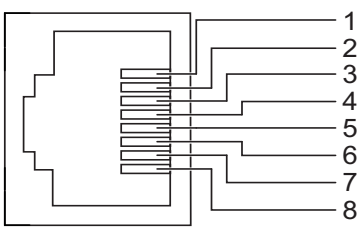
Pin	Function		PoE voltage
1	RD+	Receive path	Minus terminal
2	RD−	Receive path	Minus terminal
3	TD+	Transmission path	Plus terminal
6	TD−	Transmission path	Plus terminal
4,5,7,8	—		

Table 7: Pin assignment of the 10/100 Mbit/s PoE port, RJ45 socket, MDI-X mode, phantom voltage

1.3.3 10/100/1000 Mbit/s twisted pair port

This port is an RJ45 socket.
The 10/100/1000 Mbit/s twisted pair port offers you the ability to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T standard.
This port supports:

- Autonegotiation
- Autopolarity
- Autocrossing
- 1000 Mbit/s full duplex
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode



Pin	Function
1	BI_DB+
2	BI_DB−
3	BI_DA+
4	BI_DD+
5	BI_DD−
6	BI_DA−
7	BI_DC+
8	BI_DC−

Table 8: Pin assignment of the 10/100/1000 Mbit/s twisted pair port, RJ45 socket, MDI-X mode

1.3.4 100 Mbit/s F/O port

For the device variants 8TX/1FX EEC, 8TX/1FX-SM EEC, 8TX/2FX EEC and 8TX/2FX-SM EEC, these ports are DSC connectors.
For the device variants 8TX/1FX-ST EEC and 8TX/2FX-ST EEC, these ports are ST connectors.
The 100 Mbit/s F/O port offers you the ability to connect network components according to the IEEE 802.3 100BASE-FX standard.
This port supports:

- Full duplex mode

Note: Verify that you connect solely optical ports with the same optical transmission properties with each other.

1.3.5 1000 Mbit/s F/O port

This port is an SFP slot.
The 1000 Mbit/s F/O port offers you the ability to connect network components according to the IEEE 802.3 1000BASE-SX/1000BASE-LX standard.
This port supports:

- Autonegotiation
- Full duplex mode

Note: Verify that you connect solely optical ports with the same optical transmission properties with each other.

1.4 Display elements

1.4.1 Device state

These LEDs provide information about conditions which affect the operation of the whole device.

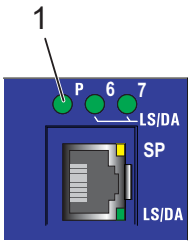


Figure 1: Device status LEDs
1 – Power LED (P)

LED	Display	Color	Activity	Meaning
P	Power	Green	Lights up	The supply voltage is on.
			None	The supply voltage is too low.

1.4.2 Port state

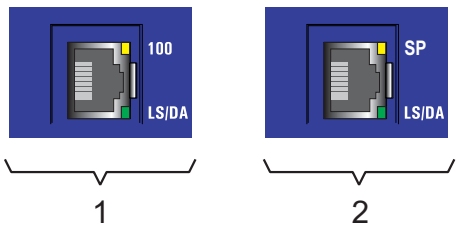
Along with the LED for the device status, there is an LED for the port status in the devices with an F/O port.



1	1 port status LED (LS/DA) for devices with 1 F/O port
2	2 port status LEDs (LS/DA) for devices with 2 F/O ports

Table 9: Port status LEDs for F/O ports on the top edge of the front of the device

The green and yellow LEDs at the individual TP ports display port-related information.



1	Port status LEDs for 10/100 Mbit/s twisted-pair ports
2	Port status LEDs for 10/100/1000 Mbit/s twisted-pair ports

Table 10: Port status LEDs for TP ports

LED	Display	Color	Activity	Meaning
LS/DA	Link status data	Green	Lights up	The device detects a valid connection.
			Flashing	The device is sending and/or receiving data.
			None	The device detects an invalid or missing connection.
100	Data rate	Yellow	Lights up	100 Mbit/s connection
			None	10 Mbit/s connection
SP	Data rate	Yellow	None	The device detects an invalid or missing connection.
			Flashes 1 time a period	10 Mbit/s connection
			Flashing 2 times a period	100 Mbit/s connection
			Flashes 3 times a period	1000 Mbit/s connection

2 Installation

The devices have been developed for practical application in a harsh industrial environment.
On delivery, the device is ready for operation.

The following steps should be performed to install and configure a device:

- Unpacking the package and checking the content
- Installing an SFP transceiver (optional)
- Connecting the terminal block for the supply voltage and the grounding
- Mounting the device on the DIN rail
- Installing the terminal block, start-up procedure
- Connecting network cables

2.1 Unpacking the package and checking the content

☐ Check whether the package includes all items named in section “Scope of delivery” on page 29.
☐ Check the individual parts for transport damage.

2.2 Installing an SFP transceiver (optional)

☐ Before attaching an SFP or XFP transceiver, first remove the protective cap of the SFP/XFP transceiver.
☐ Push the SFP/XFP transceiver with the lock closed into the socket until it latches audibly in place.



Figure 2: F/O SFP transceiver

Note: Only use Hirschmann SFP transceivers. See “Accessories” on page 29.

2.3 Connecting the terminal block for the supply voltage and the grounding

CAUTION

ELECTRIC SHOCK
Solely connect a supply voltage that corresponds to the type plate of your device.

Failure to follow these instructions can result in injury or equipment damage.

A 3-pin terminal block is used for the grounding and for connecting the supply voltage.

Note: Relevant for North America:
The tightening torque of the terminal screws is max. 4.4 lb in. (0.5 Nm).

The torque for tightening the supply voltage terminal block on the device is 4.5 lb in (0.51 Nm).

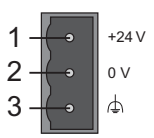
Figure	Pin	Assignment	Voltage range DC
	1	+24 V	9,6 V ... 32 V
	2	0 V	
	3	Ground connection	SPIDER II 8TX PoE 18 V ... 32 V

Table 11: Pin assignment of the 3-pin terminal block for the supply voltage

☐ Pull the terminal block off the device.
☐ Connect the ground connection.
☐ Connect the supply voltage lines.

2.4 Mounting the device on the DIN rail

CAUTION

TRANSIENT OR ELECTROSTATIC DISCHARGES
Do not open the housing.

Failure to follow these instructions can result in injury or equipment damage.

Note: The device is grounded by means of a 3-pin terminal block.

Note: The shielding ground of the connectable twisted pair lines is connected to the ground connection as a conductor.

To mount the device onto a horizontally mounted 35 mm DIN rail according to DIN EN 60715, proceed as follows:

☐ Slide the upper snap-in guide of the device into the DIN rail.
☐ Press the media module downwards onto the clip-in bar.
☐ Snap in the device.

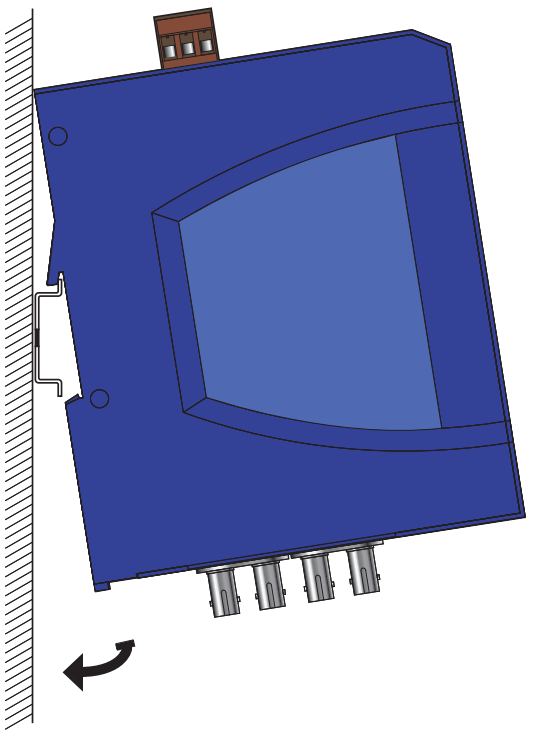


Figure 3: Mounting on the DIN rail

2.5 Installing the terminal block, start-up procedure

⚠ CAUTION
ELECTRIC SHOCK Solely connect a supply voltage that corresponds to the type plate of your device. **Failure to follow these instructions can result in injury or equipment damage.**

☐ Mount the terminal block for the supply voltage and the ground connection.

Connecting the voltage supply via the terminal block starts the operation of the device.

2.6 Connecting network cables

Note: Verify that you connect solely optical ports with the same optical transmission properties with each other.

You can connect terminal devices and other segments on the ports of the device via twisted pair cables or F/O cables.

2.6.1 10/100 Mbit/s twisted pair port

You will find further information under “10/100 Mbit/s twisted pair port” on page 15.

☐ Install the data lines according to your requirements.

2.6.2 10/100 Mbit/s PoE port

You will find further information under “10/100 Mbit/s PoE port” on page 15.

☐ Install the data lines according to your requirements.

2.6.3 10/100/1000 Mbit/s twisted pair port

You will find further information under “10/100/1000 Mbit/s twisted pair port” on page 16.

☐ Install the data lines according to your requirements.

2.6.4 100 Mbit/s F/O port

You will find further information under “100 Mbit/s F/O port” on page 16.

☐ Install the data lines according to your requirements.

2.6.5 1000 Mbit/s F/O port

You will find further information under “1000 Mbit/s F/O port” on page 17.

☐ Install the data lines according to your requirements.

3 Maintenance and service

- ☐ When designing this device, Hirschmann largely avoided using wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications (see on page 25 “Technical data”).
- ☐ Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed.

Note: You will find information about the complaints and returns procedures in the Internet under
http://www.beldensolutions.com/en/Service/Repairs/index.phtml .

4 Disassembly

4.1 Removing the device from the DIN rail

4.1.1 SPIDER II without PoE

To remove the device from the DIN rail, you proceed as follows:

☐ Insert a screwdriver horizontally below the housing into the locking gate.
☐ Pull the locking gate down without tilting the screwdriver.
☐ Fold the device up.

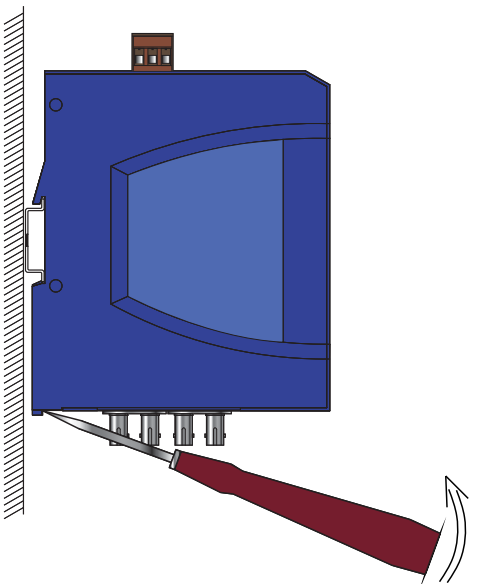


Figure 4: Removal from the DIN rail

4.1.2 SPIDER II 8TX PoE

☐ To remove the device from the DIN rail, press the device downwards and pull it out from under the DIN rail.

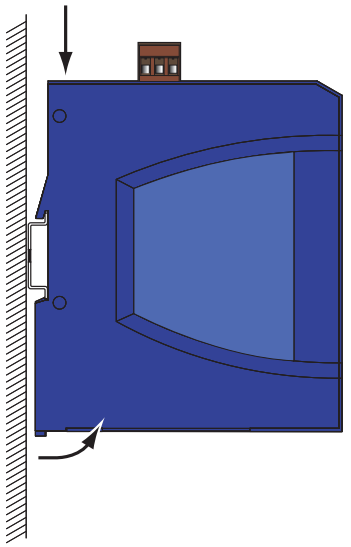


Figure 5: Removal from the DIN rail

4.2 Removing the SFP transceivers

☐ Pull the module out of the socket by means of the opened lock.
☐ Close the module with the protective cap.



Figure 6: F/O SFP transceiver

5 Technical data

General technical data

Dimensions W × H × D incl. terminal block	SPIDER II 8TX SPIDER II 8TX EEC SPIDER II 8TX/1FX EEC SPIDER II 8TX/1FX-SM EEC SPIDER II 8TX/2FX EEC SPIDER II 8TX/2FX-SM EEC SPIDER II Giga 5T EEC SPIDER II Giga 5T/2S EEC SPIDER II 8TX PoE	35 mm x 154 mm x 121 mm
	SPIDER II 8TX/1FX-ST EEC SPIDER II 8TX/2FX-ST EEC	35 mm x 168 mm x 121 mm
Weight	SPIDER II without FX port SPIDER II with one FX port SPIDER II with two FX ports SPIDER II Giga 5T EEC SPIDER II Giga 5T/2S EEC SPIDER II 8TX PoE	246 g 253 g 260 g 255 g 270 g 560 g
Power supply	Operating voltage SPIDER II without PoE	9.6 to 32.0 V DC Safety extra-low voltage (SELV) Relevant for North America: NEC Class 2 power source max. 5A.
	Operating voltage SPIDER II 8TX PoE	18.0 to 32.0 V DC
	Buffer time	min. 10 ms at 20.4 V DC
Potential difference between incoming voltage and housing	Potential difference from incoming voltage +24 V DC	32 V DC
	Potential difference from incoming voltage, ground	-32 V DC
Environment	Storage temperature (ambient air)	SPIDER II 8TX Standard: -40 °C to +70 °C (-40 °F to +158 °F)
		SPIDER II 8TX...EEC, SPIDER II Giga... Extended: -40 °C to +85 °C
		SPIDER II 8TX PoE −4 °F ... +158 °C (−20 °C ... +70 °C)
	Humidity	to 95% (non-condensing)
	Air pressure	Up to 2000 m (795 hPa), higher altitudes on request
Operating temperature	SPIDER II 8TX	Standard: 0 °C (+32 °F) to +60 °C (+140 °F)
	SPIDER II 8TX...EEC, SPIDER II Giga...	Extended: -40 °C to +70 °C
	SPIDER II 8TX PoE	+14 °F ... +140 °F (−10 °C ... +60 °C)
Pollution degree		2

Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection	IP 30

Dimension drawing

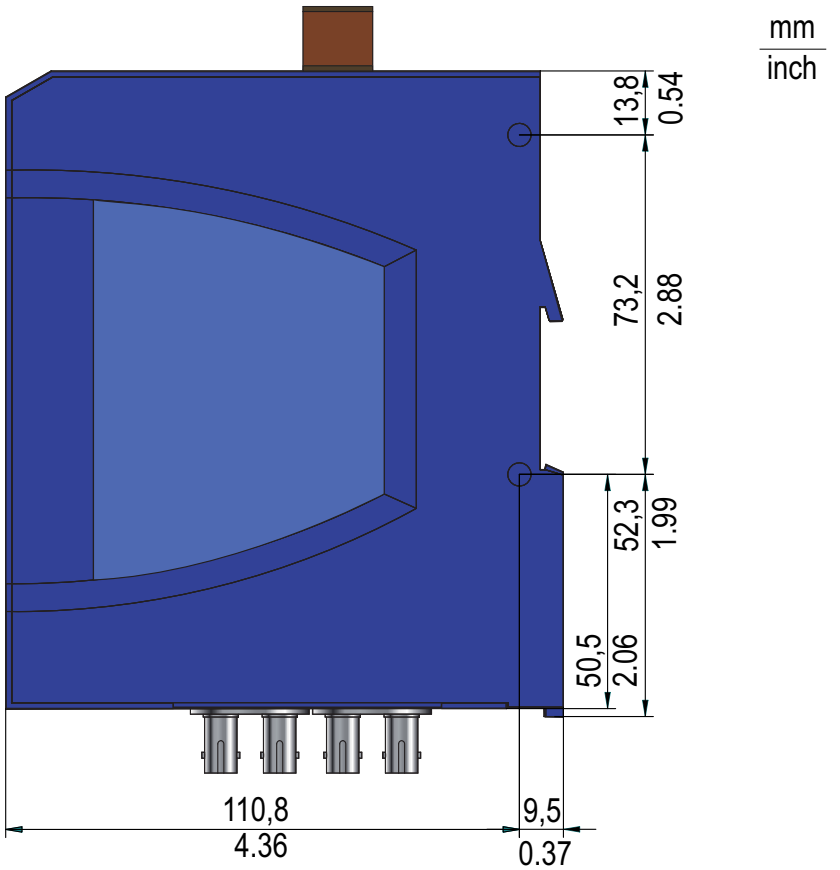


Figure 7: Dimensions of the SPIDER II

EMC and immunity

EMC compliance – IEC/EN 61000-6-2:2005 EMI TYPE tests, test acc. to:			
IEC/EN 61000-4-2	Electrostatic discharge		
	Contact discharge	SPIDER II 8TX/...	± 4 kV
		SPIDER II Giga/ ...	± 6 kV
	Air discharge		± 8 kV
IEC/EN 61000-4-3	Electromagnetic field		
	80 MHz ... 2700 MHz		20 V/m
IEC/EN 61000-4-4	Fast transients (burst)		
	DC power line		± 2 kV
	Data line		± 4 kV
IEC/EN 61000-4-5	Voltage surges		
	DC power line, line / line		± 1 kV
	DC Power Line, line / ground		± 2 KV
	Data line, line / ground	SPIDER II without PoE	± 1 kV
		SPIDER II 8TX PoE	± 2 KV

EMC compliance – IEC/EN 61000-6-2:2005 EMI TYPE tests, test acc. to:		
IEC/EN 61000-4-6	Conducted disturbances	
	150 kHz ... 80 MHz	10 V
EMC interference emission		
EN 55022	Class A	
FCC 47 CFR Part 15	Class A	
Stability		
Vibration	IEC 60068-2-6, test Fc	5 Hz to 9 Hz with 3.5 mm amplitude; 1g at 9 Hz to 150 Hz; 1.5 g at 200 Hz to 250 Hz
	IEC 60068-2-6, resonance search / resonance dwell, test Fc	2 Hz to 13.2 Hz with 1 mm amplitude; 0.7 g at 13.2 Hz to 100 Hz
Shock	IEC 60068-2-27, Test Ea	0.53 oz (15 g) at 11 ms

Network range

Note: The line lengths specified for the transceivers apply for the respective fiber data (fiber attenuation and BLP/dispersion).

TP port	
Length of a twisted pair segment	max. 100 m/328 ft (for cat5e cable)

Table 12: TP port 10BASE-T / 100BASE-TX / 1000BASE-T

Product code SPIDER II 8TX/...	F/O type	Wave length	Fiber	System attenuation	Example for F/O line length	Fiber attenuation	BLP/ dispersion
...FX EEC ...FX-ST EEC	MM	1300 nm	50/125 µm	0-8 dB	0-5 km	1,0 dB/km	800 MHz·km
...FX EEC ...FX-ST EEC	MM	1300 nm	62,5/125 µm	0-11 dB	0-4 km	1,0 dB/km	500 MHz·km
...FX-SM EEC	SM	1300 nm	9/125 µm	0-16 dB	0-30 km	0,4 dB/km	3,5 ps/(nm·km)

Table 13: F/O port 100BASE-FX

Product code M-SFP-...		Wave length	Fiber	System attenuation	Example for F/O line length [a]	Fiber attenuation	BLP[b]/ dispersion
-SX/LC...	MM	850 nm	50/125 µm	0-7.5 dB	0-550 m	3.0 dB/km	400 MHz×km
-SX/LC...	MM	850 nm	62.5/125 µm	0-7.5 dB	0-275 m	3.2 dB/km	200 MHz×km
-MX/LC	MM	1310 nm	50/125 µm	0-8 dB	2 km[c]	1.0 dB/km	500 MHz×km
-MX/LC	MM	1310 nm	62.5/125 µm	0-8 dB	1 km	1.0 dB/km	500 MHz×km
-LX/LC...	MM	1310 nm[d]	50/125 µm	0-10.5 dB	0-550 m	1.0 dB/km	800 MHz×km

Table 14: Fiber port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

Product code M-SFP-...		Wave length	Fiber	System attenuation	Example for F/O line length [a]	Fiber attenuation	BLP[b]/ dispersion
-LX/LC...	MM	1310 nm [d]	62.5/125 µm	0-10.5 dB	0-550 m	1.0 dB/km	500 MHz×km
-LX/LC...	SM	1310 nm	9/125 µm	0-10.5 dB	0-20 km[e]	0.4 dB/km	3.5 ps/(nm×km)
-LX+/LC...	SM	1310 nm	9/125 µm	5-20 dB	14-42 km	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	LH	1550 nm	9/125 µm	5-22 dB	23-80 km	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH	1550 nm	9/125 µm	15-30 dB	71-108 km	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH	1550 nm	9/125 µm	15-30 dB	71-128 km	0.21 dB/km (typically)	19 ps/(nm×km)

Table 14: Fiber port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

a. including 3 dB system reserve when compliance with the fiber data is observed
b. The bandwidth length product cannot be used to calculate the expansion.
c. Distances of up to 3 km reachable, 1000 MHz*km (1300 nm)
d. With F/O adapter compliant with IEEE 802.3-2002 clause 38 (single-mode fiber offset-launch mode conditioning patch cord)
e. including 2.5 dB system reserve when compliance with the fiber data is observed

Product code M-SFP-BIDI...		Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O line length [a]	Fiber attenuation	Dispersion
Type A LX/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0-11 dB	0-20 km	0.4 dB/km	3.5 ps/(nm×km)
Type B LX/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0-11 dB	0-20 km	0.25 dB/km	19 ps/(nm×km)
Type A LH/LC EEC	LH	1490 nm	1590 nm	9/125 µm	5-24 dB	23-80 km	0.25 dB/km	19 ps/(nm×km)
Type B LH/LC EEC	LH	1590 nm	1490 nm	9/125 µm	5-24 dB	23-80 km	0.25 dB/km	19 ps/(nm×km)

Table 15: F/O port (bidirectional Gigabit Ethernet SFP Transceiver)

a. including 3 dB system reserve when compliance with the fiber data is observed

MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul

Power consumption/power output at 24 V DC

Device name	Max. power consumption	Power output
SPIDER II 8TX	4.1 W	14.0 Btu (IT)/h
SPIDER II 8TX EEC	5.8 W	19.8 Btu (IT)/h
SPIDER II 8TX/1FX EEC	6.3 W	21.5 Btu (IT)/h
SPIDER II 8TX/2FX EEC	8.4 W	28.7 Btu (IT)/h
SPIDER II 8TX/1FX-SM EEC	7.0 W	23.9 Btu (IT)/h
SPIDER II 8TX/1FX-ST EEC	7.0 W	23.9 Btu (IT)/h
SPIDER II 8TX/2FX-SM EEC	8.4 W	28.7 Btu (IT)/h

Device name	Max. power consumption	Power output
SPIDER II 8TX/2FX-ST EEC	8.4 W	28.7 Btu (IT)/h
SPIDER II Giga 5T EEC	3.6 W	12.1 Btu (IT)/h
SPIDER II Giga 5T/2S EEC	6.6 W	21.6 Btu (IT)/h
SPIDER II Giga 5T EEC PRO	3.6 W	12.1 Btu (IT)/h
SPIDER II Giga 5T/2S EEC PRO	6.6 W	21.6 Btu (IT)/h
SPIDER II Giga 5T EEC Jumbo	3.6 W	12.1 Btu (IT)/h
SPIDER II Giga 5T/2S EEC Jumbo	6.6 W	21.6 Btu (IT)/h
SPIDER II 8TX PoE non-PD (powered device)	4.6 W	15.7 Btu (IT)/h
SPIDER II 8TX PoE 4 x Class0-PD (powered device)	74.9 W	255.5 Btu (IT)/h

Scope of delivery

Number	Article
1 x	Device
1 x	Terminal block for the supply voltage
1 x	Installation user manual

Order numbers

Device	Order number
Rail Switch SPIDER II 8 TX	943 957-001
Rail Switch SPIDER II 8 TX EEC	943 958-001
Rail Switch SPIDER II 8 TX/1FX EEC	943 958-111
Rail Switch SPIDER II 8 TX/2FX EEC	943 958-211
Rail Switch SPIDER II 8 TX/1FX-SM EEC	943 958-131
Rail Switch SPIDER II 8 TX/2FX-SM EEC	943 958-231
Rail Switch SPIDER II 8 TX/1FX-ST EEC	943 958-121
Rail Switch SPIDER II 8 TX/2FX-ST EEC	943 958-221
Rail Switch SPIDER II Giga 5T EEC	943 962-002
Rail Switch SPIDER II Giga 5T/2S EEC	943 963-002
Rail Switch SPIDER II Giga 5T EEC PRO	943 962-102
Rail Switch SPIDER II Giga 5T/2S EEC PRO	943 963-102
Rail Switch SPIDER II Giga 5T EEC Jumbo	943 962-202
Rail Switch SPIDER II Giga 5T/2S EEC Jumbo	943 963-202
Rail Switch SPIDER II 8TX PoE	942 008-001

Accessories

Gigabit Ethernet SFP transceiver	Order number
M-SFP-SX/LC	943 014-001
M-SFP-SX/LC EEC	943 896-001
M-SFP-MX/LC	942 035-001
M-SFP-LX/LC	943 015-001
M-SFP-LX/LC EEC	943 897-001
M-SFP-LX+/LC	942 023-001
M-SFP-LX+/ LC EEC	942 024-001
M-SFP-LH/LC	943 042-001

Gigabit Ethernet SFP transceiver	Order number
M-SFP-LH/LC EEC	943 898-001
M-SFP-LH+/LC	943 049-001
Bidirectional Gigabit Ethernet SFP transceiver	**Order number**
M-SFP-BIDI Type A LX/LC EEC	943 974-001
M-SFP-BIDI Type B LX/LC EEC	943 974-002
M-SFP-BIDI Type A LH/LC EEC	943 975-001
M-SFP-BIDI Type B LH/LC EEC	943 975-002
M-SFP-BIDI Bundle LX/LC EEC (type A + B)	943 974-101
M-SFP-BIDI Bundle LH/LC EEC (type A + B)	943 975-101
Other accessories	**Order number**
Rail Power Supply RPS 30	943 662-003
Rail Power Supply RPS 80 EEC	943 662-080
Rail Power Supply RPS 120 EEC (CC)	943 662-121

Underlying norms and standards

Name	
UL 508	Safety for Industrial Control Equipment
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
EN 60950-1	Information technology equipment – Safety – Part 1: General requirements
FCC 47 CFR Part 15	Code of Federal Regulations
ECE Nr. 10	E type certification for use in vehicles
72/245/EEC	Radio interference from motor vehicles (e type-approval)
IEEE 802.3af	Power over Ethernet

Table 16: List of norms and standards

The device generally fulfills the norms and standards named in their current versions.
The device has a certification based on a specific standard or de facto standard solely if the certification indicator appears on the housing.
If your device has a shippingcertification according to Germanischer Lloyd, the certification mark can be found printed on the device label. You will find out whether your device has other shipping certifications on the Hirschmann website under www.hirschmann.com in the product information.

A Further Support

Technical Questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You will find the addresses of our partners on the Internet at
http://www.hirschmann.com

Contact our support at
https://hirschmann-support.belden.eu.com

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