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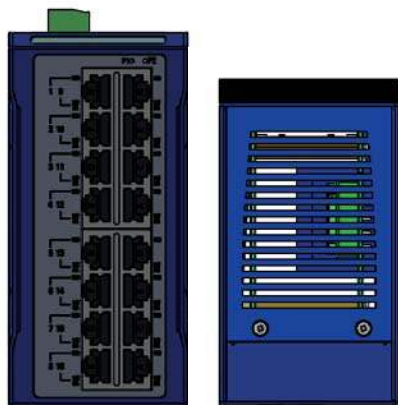
A **BELDEN** BRAND

User Manual

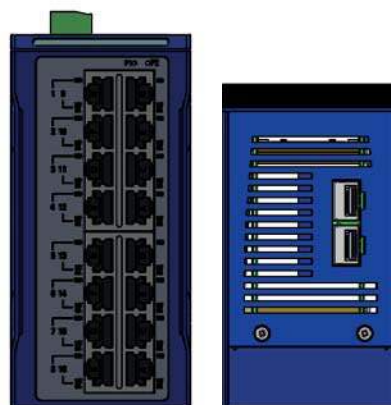
Installation

Industrial Ethernet Rail Switch

SPIDER II 16TX EEC, SPIDER II 16TX/2DS-S EEC



SPIDER II 16TX EEC



SPIDER II 16TX/2DS-S EEC

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You can get the latest version of this manual on the Internet at the Hirschmann product site (www.hirschmann.com).

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Safety instructions

■ General safety instructions

You operate this device with electricity. Improper usage of the device entails the risk of physical injury or significant property damage. The proper and safe operation of this device depends on proper handling during transportation, proper storage and installation, and careful operation and maintenance procedures.

- Before connecting any cable, read this document, and the safety instructions and warnings.
- Operate the device with undamaged components exclusively.
- The device is free of any service components. In case of a damaged or malfunctioning the device, turn off the supply voltage and return the device to Hirschmann for inspection.

■ Qualification requirements for personnel

- Only allow qualified personnel to work on the device.

Qualified personnel have the following characteristics:

- ▶ Qualified personnel are properly trained. Training as well as practical knowledge and experience make up their qualifications. This is the prerequisite for grounding and labeling circuits, devices, and systems in accordance with current standards in safety technology.
- ▶ Qualified personnel are aware of the dangers that exist in their work.
- ▶ Qualified personnel are familiar with appropriate measures against these hazards in order to reduce the risk for themselves and others.
- ▶ Qualified personnel receive training on a regular basis.

■ Intended usage

- Use the product only for the application cases described in the Hirschmann product information, including this manual.
- Operate the product only according to the technical specifications. [See “Technical data” on page 22.](#)
- Connect to the product only components suitable for the requirements of the specific application case.

■ National and international safety regulations

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

■ Supply voltage

The supply voltage is electrically isolated from the housing.

- Ground the device before connecting any other cables.
- Connect only a supply voltage that corresponds to the type plate of your device.
- Every** time you connect the electrical conductors, make sure that the following requirements are met:
 - ▶ The voltage supply conforms to overvoltage category I.
 - ▶ The power supply has an easily accessible disconnecting device (e.g., a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
 - ▶ The electrical wires are voltage-free.
 - ▶ Relevant for North America:
The power supply is Class 2 compliant.
 - ▶ The supply voltage inputs are designed for operation with safety extra-low voltage. Connect only SELV circuits with voltage restrictions in line with IEC/EN 60950-1 to the supply voltage connections.
 - ▶ A fuse suitable for DC voltage is located in the plus conductor of the power supply.
Regarding the properties of this fuse: [See “General technical data” on page 22.](#)
 - ▶ The wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the supply voltage input.
 - ▶ The power supply cables used are permitted for the temperature range required by the application case.
 - ▶ 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.

■ Installation site requirements

- Verify that there is at least 4 in (10 cm) of space above and below the device.
- Verify that there is at least 0.8 in (2 cm) of space on the right and left sides of the device.
- Only install the device in “operating sites with restricted access” based on EN 60950-1.

■ **Housing**

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

- Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- Verify that the electrical installation meets locally or nationally applicable safety regulations.
- Keep the ventilation slits free to ensure good air circulation.
- Install the device in the vertical position.
- At ambient temperatures > 140 °F (60 °C):
The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

■ **LED or laser components**

Relevant for SPIDER II 16TX/2DS-S EEC:

LED or LASER components according to IEC 60825-1 (2007):

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT

- Only use SFP transceiver which are limited to the laser class 1.

■ **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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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.

■ **Relevant for Use in Hazardous Locations Class I Div. 2 Groups A, B, C and D (according to the Standards ANSI/ISA12.12.01-2013 / CSA C22.2 No.213-M1987)**

These devices are open-type devices that are to be installed in an enclosure with tool removable cover/door that is suitable for the environment.. This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations only.

WARNING - EXPLOSION HAZARD – Do not connect or disconnect equipment unless power has been removed or the area is known to be non-hazardous.

WARNING - EXPLOSION HAZARD – Substitution of any components may impair suitability for Class I, Division 2.

■ **Relevant for use in Ex Zone 2 according to ATEX 95 (European directive 94/9/EC)**

Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment.

Any such unauthorized modifications: (1) constitute “misuse” and/or “negligence” within the meaning of the product warranty, thereby excluding warranty coverage for any resulting damage; and (2) invalidate product certifications or listings.

Conditions of Safe Use

Equipment intended for use in potentially explosive atmosphere directive 94/9/EC.

Compliance with the essential health and safety requirements has been assured by compliance with the following standards: EN 60079-0:2012, EN 60079-15:2010.

This product should be installed by personnel trained in installation of equipment in Hazardous Locations and meet the representative National Electrical Code of the according country.

Installation only in Zone 2 for gas group IIC.

Subject devices are to be installed in an ATEX Certified IP54 (as defined in EN 60079-0 and EN 60079-15) enclosure and accessible only by the use of a tool.

Subject devices are for use in an area of not more than pollution degree 2 in accordance with IEC 60664-1.

Provision shall be made to prevent the rated voltage being exceeded by the transient disturbances of more than 140 % of the peak rated voltage. When end users are providing Optical SFP Communications modules, these must be limited to Laser Class I 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 these frequencies. 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 residential 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 16TX 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 device is mounted by latching in place on a DIN rail.

The devices work without a fan.

You have the option of choosing various media to connect to the 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.

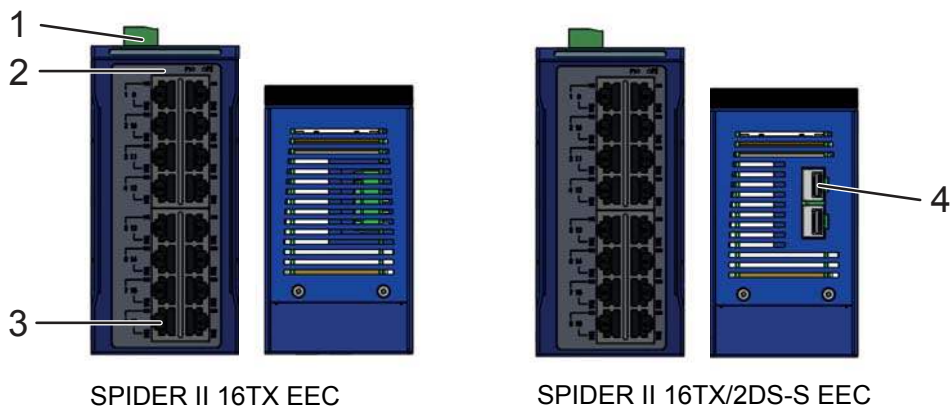
1.2 Description of the device variants

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 (fiber optic) and TP (twisted pair) indicate the media type. The abbreviations SFP and RJ45 indicate the socket type.

Variant	RJ45 socket for 10/100 Mbit/s twisted pair connections	SFP slot for 100/1000 Mbit/s F/O connection
SPIDER II 16TX EEC	16	–
SPIDER II 16TX/2DS-S EEC	16	2

Table 1: Number and type of ports



1	5 pin, pluggable terminal block for redundant power supply
2	LED display elements
3	RJ45 socket for 10/100 Mbit/s twisted pair connections
4	SFP slot for 100/1000 Mbit/s F/O connection

Table 2: Overview: interfaces, display elements, and terminal block for the supply voltage

1.3 Ethernet ports

1.3.1 10/100 Mbit/s twisted pair port

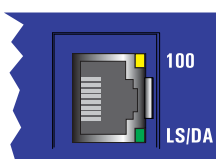
This port is an RJ45 socket.

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

The green and yellow LEDs at the individual twisted pair ports provide port-related information.



LED	Display	Color	Activity	Meaning
100	Data rate	Yellow	Lights up	100 Mbit/s connection
			None	10 Mbit/s connection
LS/DA	Link status data	Green	Lights up	Device detects a valid link
			Flashing	Device is transmitting and/or receiving data
			None	Device detects an invalid or missing link

1.3.2 100/1000 Mbit/s F/O port (optional)

This port is an SFP slot.

The 100/1000 Mbit/s F/O port offers you the ability to connect network components according to the IEEE 802.3 100BASE-FX/1000BASE-SX/1000BASE-LX standard.

When a Fast Ethernet transceiver is used, this port supports:

- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode

Default setting: Full duplex

When a Gigabit Ethernet transceiver is used, this port supports:

- ▶ Full duplex mode
- ▶ Autonegotiation

Delivery state: Autonegotiation active.

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

1.4 Display elements

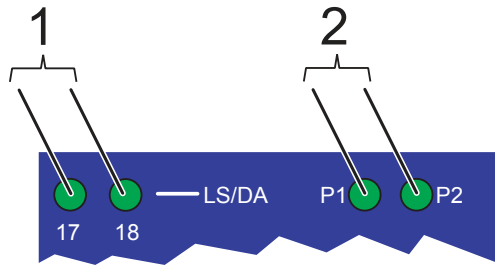


Figure 1: 1 – Relevant for SPIDER II 16TX/2DS-S EEC:
Information on F/O port status
2 – All devices:
Information on supply voltage

LED	Activity	Meaning
17	Lights up	Device detects a valid link
	Flashing	Device is transmitting and/or receiving data
	None	Device detects an invalid or missing link
18	Lights up	Device detects a valid link
	Flashing	Device is transmitting and/or receiving data
	None	Device detects an invalid or missing link
P1	Lights up	Supply voltage 1 is on
	None	Supply voltage 1 is off
P2	Lights up	Supply voltage 2 is on
	None	Supply voltage 2 is off

2 Installation

The devices have been developed for practical application in a harsh industrial environment.

On delivery, the device is ready for operation.


To configure a subdomain, follow these steps:

- ▶ [Checking the package contents](#)
- ▶ [Installing and grounding the device](#)
- ▶ [Wiring the terminal block for the supply voltage and the grounding](#)
- ▶ [Operating the device](#)
- ▶ [Connecting data cables](#)
- ▶ [Installing an SFP transceiver \(optional\)](#)

2.1 Checking the package contents

- Check whether the package includes all items named in the section [“Scope of delivery” on page 26](#).
- Check the individual parts for transport damage.

2.2 Installing and grounding the device

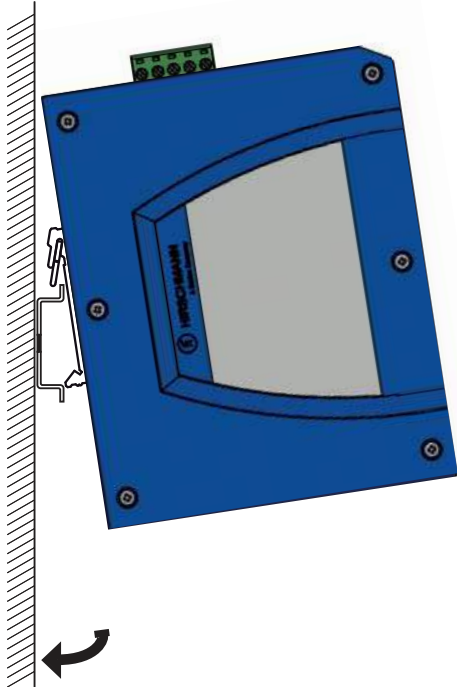
 CAUTION
TRANSIENT OR ELECTROSTATIC DISCHARGES
Do not open the housing.
Failure to follow these instructions can result in injury or equipment damage.

2.2.1 Installing the device onto the DIN rail

- Verify that there is at least 4 in (10 cm) of space above and below the device.
- Verify that there is at least 0.8 in (2 cm) of space on the right and left sides of the device.

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.



2.2.2 Grounding the device

WARNING

ELECTRIC SHOCK

Ground the device before connecting any other cables.

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

The device is grounded via a 5-pin terminal block.

Note: Ground the device before connecting any other cables.

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

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

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

WARNING

ELECTRIC SHOCK

Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.

Start connecting the electrical wires only if **all** the above safety requirements are fulfilled.

See “Supply voltage” on page 6.

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

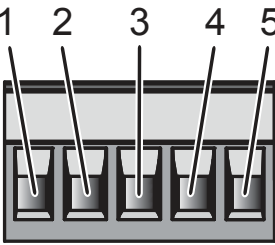
Figure	Pin assignment on the device	Specification of the supply voltage
	1 Power supply connection 1, 24 V	Rated voltage range DC 24 V
	2 Power supply connection 1, 0 V	
	3 Ground connection	Voltage range DC incl. maximum tolerances 18 V ... 32 V
	4 Power supply connection 2, 0 V	
	5 Power supply connection 2, 24 V	

Table 3: Pin assignment: 5-pin pluggable terminal block

■ **Supply voltage**

The supply voltage can be connected redundantly. Both inputs are uncoupled. There is no distributed load. With redundant supply, the power supply unit with the higher output voltage supplies the device on its own.

Note: Relevant for North America:

The tightening torque of the terminal screws is max. 4.4 lb in. (0.5 Nm).

- Pull the terminal block off the device.
- Connect the ground connection.
- Connect the power supply lines.

2.4 Operating the device



CAUTION

ELECTRIC SHOCK

Connect only a supply voltage that corresponds to the type plate of your device.

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

By connecting the supply voltage via the terminal block, you start the operation of the device.

2.5 Connecting data cables

Note: In general, adhere to the following recommendations for data cable connections in environments with high electrical interference levels:

- Keep the length of the data cables as short as possible.
- When using copper cables, verify that there is a sufficient gap between the power supply cables and the data cables when laid over a long distance. Ideally, install the cables in separate cable channels.
- Use shielded cables.

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

You can connect end devices and other segments to the device ports using twisted pair cables or optical fibers (F/O).

2.6 Installing an SFP transceiver (optional)

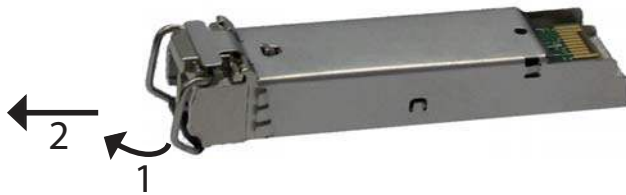
- Remove the protective cap from the SFP transceiver.
- Push the SFP transceiver with the lock closed into the socket until you hear it latch in.



Note: For this device, only use suitable SFP modules from Hirschmann. See [“Accessories”](#) on page 26.

2.7 Removing the SFP transceivers

- Pull the SFP transceiver out of the socket by means of the opened lock.
- Close the SFP transceiver with the protective cap.



3 Maintenance and service

- When designing this device, Hirschmann largely avoided using high-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.
- 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 on the Internet under

<http://www.beldensolutions.com/en/Service/Repairs/index.phtml> .

4 Disassembly

- Disconnect the data cables.
- Disable the supply voltage.
- Remove the power connector from the device.

4.1 Removing the device from the DIN rail

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

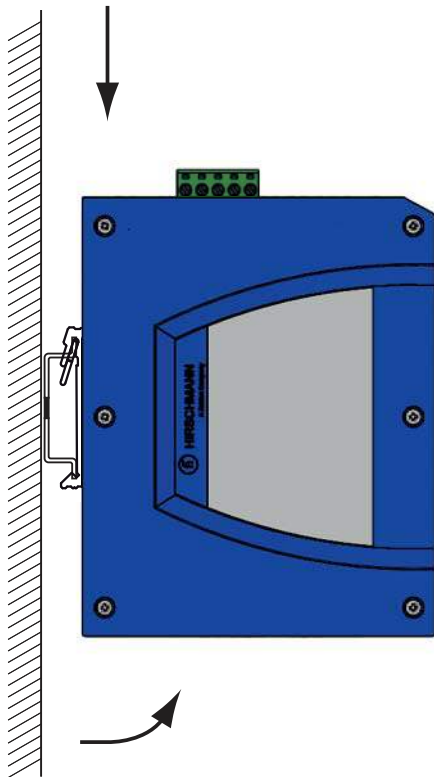


Figure 2: Removal from the DIN rail

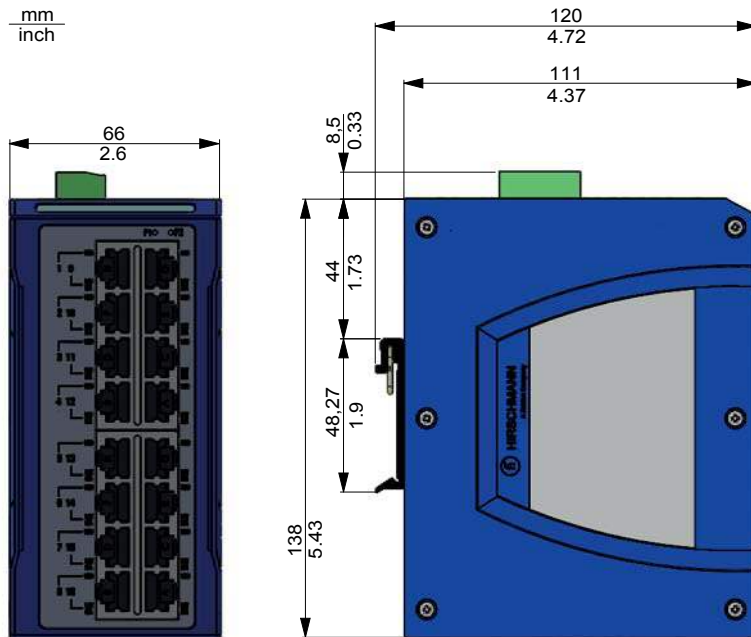
5 Technical data

■ General technical data

Dimensions W × H × D	See "Dimension drawings" on page 23.					
Weight	25.75 oz (730 g)					
Power supply	<ul style="list-style-type: none"> ▶ 2 voltage inputs for redundant power supply ▶ Safety extra-low voltage (SELV), redundant inputs disconnected ▶ Relevant for North America: Class 2 					
	Rated voltage range DC	24 V				
	Voltage range DC incl. maximum tolerances	18 V ... 32 V				
	Connection type	5 pin, pluggable terminal block for redundant power supply				
	Current consumption at 24 V DC	<table border="0" style="width: 100%;"> <tr> <td style="width: 70%;">SPIDER II 16TX EEC</td> <td style="text-align: right;">0.41 A</td> </tr> <tr> <td>SPIDER II 16TX/2DS-S EEC</td> <td style="text-align: right;">0.45 A</td> </tr> </table>	SPIDER II 16TX EEC	0.41 A	SPIDER II 16TX/2DS-S EEC	0.45 A
SPIDER II 16TX EEC	0.41 A					
SPIDER II 16TX/2DS-S EEC	0.45 A					
	Overload current protection at input	Non-replaceable fuse				
	Back-up fuse per voltage input ^a	4 A, slow blow				
	Peak inrush current	1.3 A				
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				
Climatic conditions during operation	Ambient air temperature ^b	-40 °F ... +158 °F (-40 °C ... +70 °C)				
	Humidity	10 % ... 95 % (non-condensing)				
	Air pressure	minimum 700 hPa (+9842 ft; +3000 m)				
Climatic conditions during storage	Ambient air temperature ^c	-40 °F ... +185 °F (-40 °C ... +85 °C)				
	Humidity	10 % ... 95 % (non-condensing)				
	Air pressure	minimum 700 hPa (+9842 ft; +3000 m)				
Pollution degree	2					
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1				
	Degree of protection	IP 30				

- a. As an alternative to the back-up fuse is possible:
Voltage supply according to Class 2 or EN 60950-1 Limited Power Source
- b. Temperature of the ambient air at a distance of 2 inches (5 cm) from the device
- c. Temperature of the ambient air at a distance of 2 inches (5 cm) from the device

■ Dimension drawings



■ EMC and immunity

EMC interference emission

Radiated emission

FCC 47 CFR Part 15	Class A
EN 55022	Fulfilled

Conducted emission

FCC 47 CFR Part 15	Class A
EN 55022	Fulfilled

EMC interference immunity

Electrostatic discharge

EN 61000-4-2	Contact discharge	± 4 kV
IEEE C37.90.3		
EN 61000-4-2	Air discharge	± 8 kV
IEEE C37.90.3		

Electromagnetic field

EN 61000-4-3	80 MHz ... 1000 MHz	10 V/m
EN 61000-4-3	1.4 GHz ... 2 GHz	3 V/m
EN 61000-4-3	2 GHz ... 2.7 GHz	1 V/m

Fast transients (burst)

EN 61000-4-4	DC supply connection	2 kV
IEEE C37.90.1		
EN 61000-4-4	Data line	4 kV
IEEE C37.90.1		

Voltage surges - DC supply connection

EMC interference immunity		
EN 61000-4-5	line/ground	1 kV
EN 61000-4-5	line/line	0.5 kV
Voltage surges - data line		
EN 61000-4-5	line/ground	1 kV
Conducted disturbances		
EN 61000-4-6	150 kHz ... 80 MHz	10 V

Stability		
IEC 60068-2-6, test Fc	Vibration	3 Hz ... 9 Hz with 0.14 in. (3.5 mm) amplitude 9 Hz ... 150 Hz with 1 g
IEC 60068-2-27, test Ea	Shock	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).

10/100/1000 Mbit/s twisted pair port	
Length of a twisted pair segment	max. 100 m (for cat5e cable)

Product code M-FAST-SFP-...	Wave length	Fiber	System attenuation	Example for F/O line length ^a	Fiber attenuation	BLP/ dispersion
-MM/LC...	MM 1310 nm	50/125 µm	0-8 dB	0-5 km	1.0 dB/km	800 MHz×km
-MM/LC...	MM 1310 nm	62.5/125 µm	0-11 dB	0-4 km	1.0 dB/km	500 MHz×km
-SM/LC...	SM 1310 nm	9/125 µm	0-13 dB	0-25 km	0.4 dB/km	3.5 ps/(nm×km)
-SM+/LC...	SM 1310 nm	9/125 µm	10-29 dB	25-65 km	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	SM 1550 nm	9/125 µm	10-29 dB	47-104 km	0.25 dB/km	19 ps/(nm×km)
-LH/LC...	SM 1550 nm	9/125 µm	10-29 dB	55-140 km	0.18 dB/km ^b	18 ps/(nm×km)

Table 4: Fiber port 100BASE-FX (SFP fiber optic Fast Ethernet Transceiver)

- a. including 3 dB system reserve when compliance with the fiber data is observed
b. with ultra-low-loss optical fiber

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

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

Table 5: 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
-MX/LC EEC	MM 1310 nm	50/125 µm	0-12 dB	0-1.5 km	1.0 dB/km	800 MHz×km
-MX/LC EEC	MM 1310 nm	62.5/125 µm	0-12 dB	0-500 m	1.0 dB/km	500 MHz×km
-LX/LC...	MM 1310 nm ^c	50/125 µm	0-10.5 dB	0-550 m	1.0 dB/km	800 MHz×km
-LX/LC...	MM 1310 nm ^c	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 ^d	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 5: 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. Using the bandwidth length product is inappropriate for expansion calculations.
- c. With F/O adapter compliant with IEEE 802.3-2002 clause 38 (single-mode fiber offset-launch mode conditioning patch cord)
- d. including 2.5 dB system reserve when compliance with the fiber data is observed

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

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 6: 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 16TX EEC	9.8 W	33.4 Btu (IT)/h
SPIDER II 16TX/2DS-S EEC	10.7 W	36.5 Btu (IT)/h

■ Scope of delivery

Number	Article
1 x	Device
1 x	5 pin, pluggable terminal block for redundant power supply
1 x	Installation user manual

■ Order numbers

Device	Order number
Rail Switch SPIDER II 16TX EEC	942 120-001
Rail Switch SPIDER II 16TX/2DS-S EEC	942 121-001

■ Accessories

Fast Ethernet SFP transceiver	Order number
M-FAST SFP-TX/RJ45	942 098-001
M-FAST SFP-TX/RJ45 EEC	942 098-001
M-FAST SFP-MM/LC	943 865-501
M-FAST SFP-MM/LC EEC	943 945-501
M-FAST SFP-SM/LC	943 865-501
M-FAST SFP-SM/LC EEC	943 945-501
M-FAST SFP-SM+/LC	943 865-501
M-FAST SFP-SM+/LC EEC	943 945-501
M-FAST SFP-LH/LC	943 865-501
M-FAST SFP-LH/LC EEC	943 945-501

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 EEC	942 108-001
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
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

Other accessories	Order number
Rail Power Supply RPS 80 EEC	943 662-080
Rail Power Supply RPS 120 EEC (CC)	943 662-121

■ Underlying technical standards

Name	
UL 508	Safety for Industrial Control Equipment
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
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
UL 60950-1	Safety for Information Technology Equipment
CSA 22.2 No. 60950-1	Information Technology Equipment – Safety – Part 1: General Requirements
FCC 47 CFR Part 15	Code of Federal Regulations
EN 60079-0	Explosive atmospheres – Part 0: Equipment – General requirements
IEC/EN 60079-15	Explosive atmospheres – Part 15: Equipment protection by type of protection “n”
ISA 12.12.01, CSA C22.2 No. 213	Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

Table 7: List of technical and industry standards

The device generally fulfills the technical and industry standards named in their current versions.

The device has an approval based on a specific standard or de facto standard only if the approval indicator appears on the housing.

If your device has a shipping approval according to Germanischer Lloyd, you find the approval mark printed on the device label. You will find out whether your device has other shipping approvals 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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- ▶ Tel.: +49 (0)1805 14-1538
- ▶ E-mail: hac.support@belden.com

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