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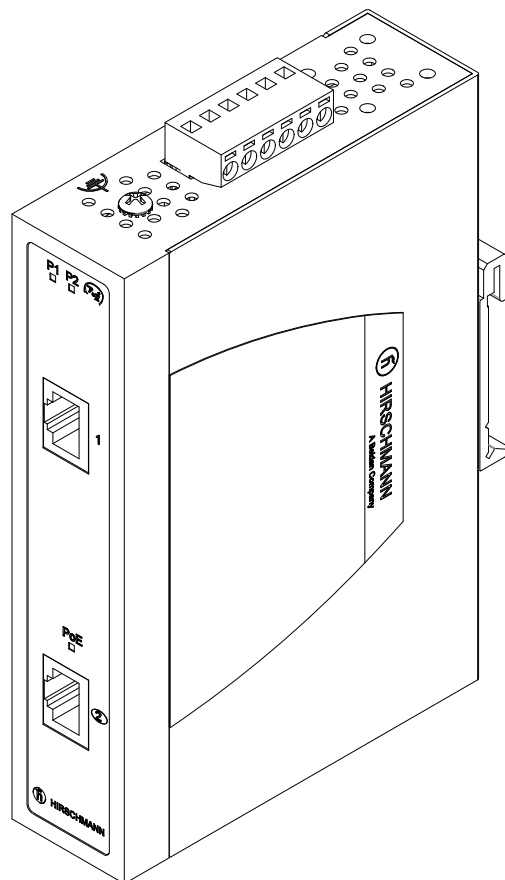
A **BELDEN** BRAND

User Manual

Installation

PoE Injector

SPIDER Giga 2TX PoE EEC



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Safety instructions

■ General safety instructions

You operate this device with electricity. Improper usage of the device entails the hazard of physical injury or significant damage to property. Before connecting any cable, read this document, and the safety instructions and warnings.

See [“Operating voltage” on page 17.](#)

- ▶ The proper and safe operation of this device depends on proper handling during transportation, proper storage and assembly, and conscientious operation and maintenance procedures.
- ▶ Operate the device with undamaged components exclusively.

■ Qualification requirements for personnel

- Allow qualified personnel exclusively to perform any work on the device.

Qualified personnel are characterized by the following points:

- ▶ The qualified personnel are properly trained. Proper training as well as a practical knowledge and experience constitute the qualification. This qualification is the requirement to connect, to ground and to label power circuits, devices, and systems in accordance with current safety engineering standards.
- ▶ The qualified personnel are aware of the hazards associated with his tasks.
- ▶ The qualified personnel know proper measures against such hazards to minimize the risk for themselves and others.
- ▶ The qualified personnel participate in training regularly.

■ Certified usage

- Use the device solely for the application cases described in the Hirschmann product information, including this manual. Operate the device solely according to the technical specifications. See [“Technical data” on page 22.](#)

■ **Operating voltage**

The operating voltage is **not** electrically insulated from the PoE voltage. Use an external power supply unit that ensures electrical insulation (insulation voltage 1500 V).

- Ground the device before connecting any other cables.
- Connect solely an operating voltage that corresponds to the type plate of your device.
- For **every** operating voltage to be connected, verify that the following requirements are met:
 - ▶ The voltage 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 line.
 - ▶ The power supply cables to be connected are voltage-free.
 - ▶ Relevant for North America:
The power supply is Class 2 compliant.
 - ▶ The operating voltage inputs are designed for operation with safety extra-low voltage. Connect solely SELV circuits with voltage restrictions in line with IEC/EN 60950-1 to the operating voltage connections.
 - ▶ A fuse suitable for DC voltage is located in the plus conductor of the power supply.
The minus conductor is grounded.
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 input.
 - ▶ The power supply cables used are permitted for the temperature range required by the use case.
 - ▶ The power supply cables are suitable for ambient temperatures of up to at least 167 °F (75 °C). For the wires of the power supply cables, use copper wire exclusively.

Start connecting the operating voltage solely if **all** the above requirements are fulfilled.

- The device is free of any service components. Internal fuses are triggered solely in the case of a detected fault in the device. In case of damage or malfunction of the device, turn off the operating voltage and return the device to the plant for inspection.

■ **Shielding ground**

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

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

■ **Housing**

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

The device is grounded via the separate ground screw.

- 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.
- 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.
- 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.

■ **National and international safety regulations**

Verify 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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The device can be used in the industrial sector.

- ▶ Interference immunity: EN 61000-6-2
- ▶ Emitted interference: EN 61000-6-4

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.

■ **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 PoE Injector 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 PoE Injector device is a power sourcing equipment (PSE). Through a twisted-pair cable connected to the 10/100/1000 Mbit/s PoE port, the device provides power for a powered device (PD) such as a WLAN access point, an IP camera or an IP telephone. With the presence of the PoE power supply, a separate power supply for the powered device is unnecessary.

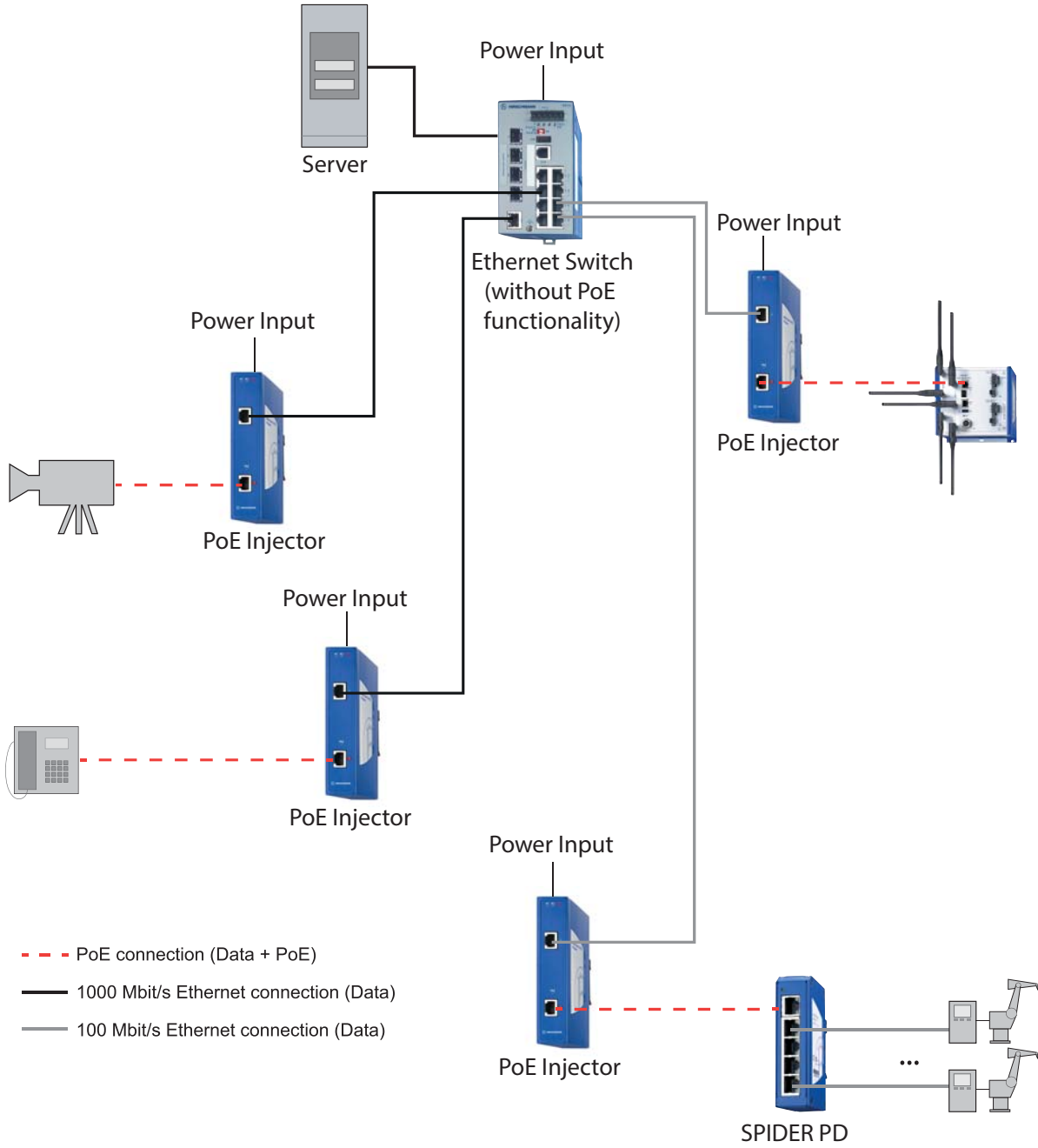
The following installation options are available:

- ▶ simply snapping them onto a DIN rail
- ▶ Mounting on a vertical flat surface

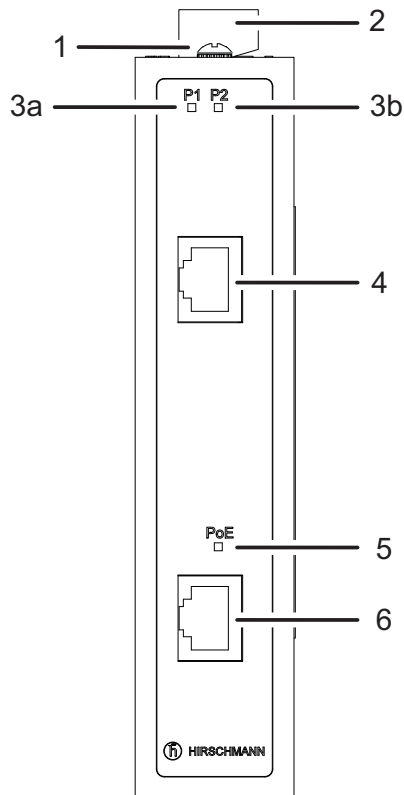
The devices work without a fan.

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

■ Application Examples



1.2 Device view



1	Grounding screw	
2	6-pin terminal block for the operating voltage	
3a	LED display element	Power Supply P1
3b	LED display element	Power Supply P2
4	Port 1	RJ45 socket for 10/100/1000 Mbit/s twisted-pair port
5	LED display element	PoE status
6	Port 2	RJ45 socket for 10/100/1000 Mbit/s PoE port

Table 1: Device view

1.3 Ethernet ports

The PoE Injector device supplies voltage to the twisted pair cables via the wire pairs carrying the signal (phantom voltage) and passes the data paths through (1:1) to the connected to the pins.

1.3.1 10/100/1000 Mbit/s twisted pair port

The socket housing is electrically connected to the front panel. 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:

- ▶ 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

1.3.2 10/100/1000 Mbit/s PoE port

The socket housing is electrically connected to the front panel.

This port is an RJ45 socket.

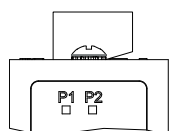
The 10/100/1000 Mbit/s PoE port allows you to connect network components such as a powered device (PD) according to the standards IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T and IEEE 802.3af/at.

This port supports:

- ▶ 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
- ▶ Power over Ethernet (PoE/PoE+)

1.4 Display elements

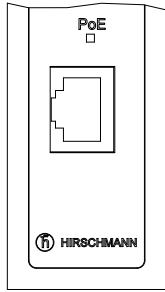
1.4.1 Device state



These LEDs provide information on the status of the power supply.

LED	Color	Activity	Meaning
P1	Green	Lights up	The operating voltage 1 is on.
		None	The operating voltage 1 is off.
P2	Green	Lights up	The operating voltage 2 is on.
		None	The operating voltage 2 is off.

1.4.2 PoE status



This LED provides information on the PoE status.

LED	Color	Activity	Meaning
PoE	Green	Lights up	The PoE power supply is active.
		None	The PoE power supply is inactive.

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 and checking the content of the package](#)
- ▶ [Installing and grounding the device](#)
- ▶ [Wiring the terminal block for the operating voltage](#)
- ▶ [Operating the device](#)
- ▶ [Connecting data cables](#)

2.1 Unpacking and checking the content of the package

- Check whether the package includes all items named in section [“Scope of delivery” on page 25](#).
- Check the individual parts for transport damage.

2.2 Installing and grounding the device



CAUTION

TRANSIENT OR ELECTROSTATIC DISCHARGES

Do not open the housing.

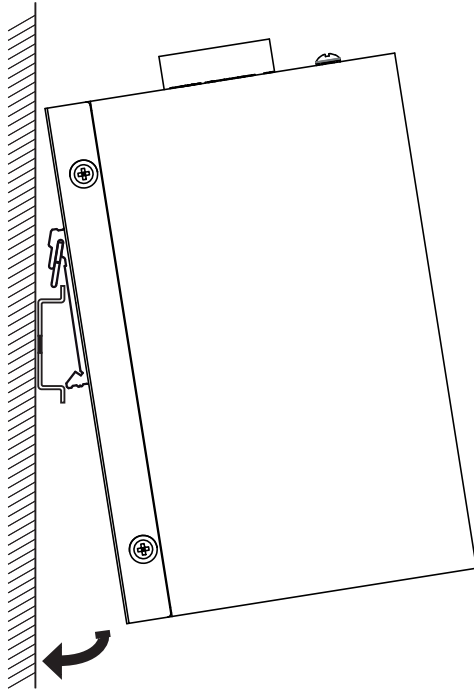
Failure to follow these instructions can result in injury or equipment damage.

2.2.1 Installing the device onto the DIN rail

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.



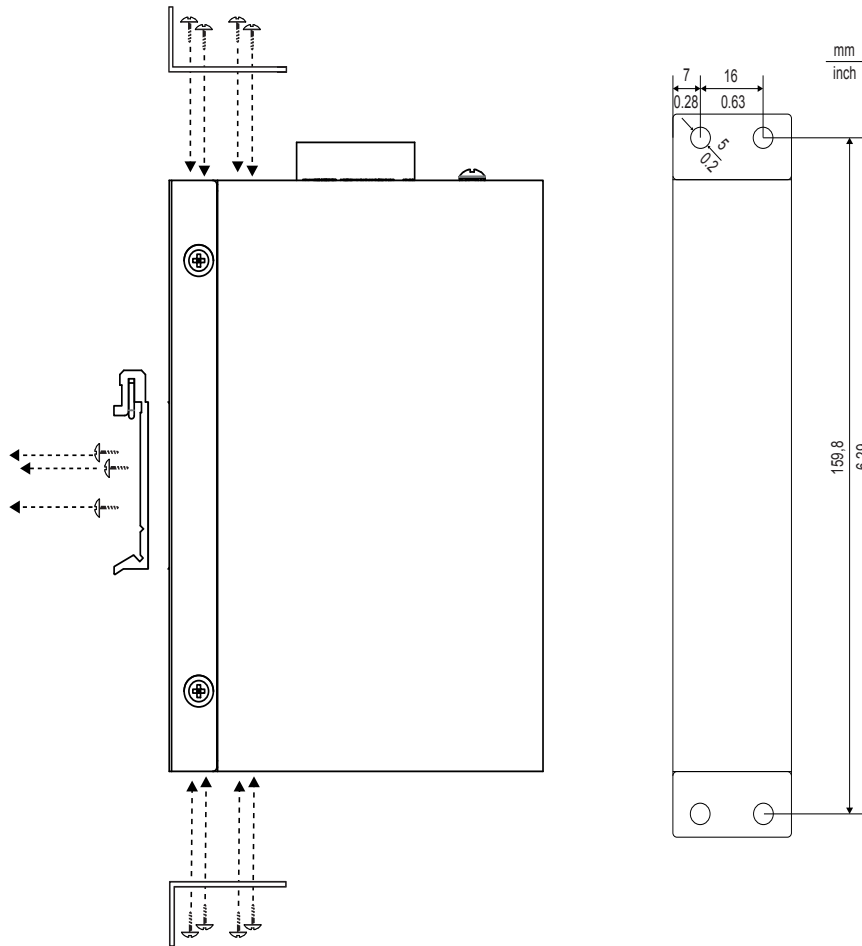
Note: Verify that there is at least 4 in (10 cm) of space above and below the device.

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

2.2.2 Wall-Mount Plate Mounting

Follow the steps below to mount the device with the wall-mount plates:

- To remove the DIN-Rail clip from the device, unscrew the screws that secure it.
- Align the screw holes of the wall-mount plates with the ones of the device.
- Use the screws included to secure the wall-mount plates on the device.
- Use the hook holes of the wall-mount plates to hang the device on the wall.
- To remove the wall-mount plates, reverse the steps above.



2.2.3 Grounding the device

The device has a functional ground connection.
The device is grounded via the separate ground screw.

Note: Ground the device before connecting any other cables.

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

Ground the device via the ground screw.

2.3 Wiring the terminal block for the operating voltage

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.

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

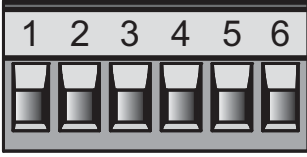
Figure	Pin assignment on the device	Specification of the operating voltage
	1 Power supply connection 2, 0 V, minus terminal	Rated voltage range DC 24 V ... 48 V
	2 Power supply connection 2, 24/48 V, plus terminal	
	3 –	
	4 –	
	5 Power supply connection 1, 0 V, minus terminal	
	6 Power supply connection 1, 24/48 V, plus terminal	

Table 2: Pin assignment: 6-pin pluggable terminal block

■ **Operating voltage**

WARNING

ELECTRIC SHOCK

Start connecting the operating voltage solely if **all** the above requirements are fulfilled.

See [“Operating voltage” on page 5](#).

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

The operating 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: The tightening torque applied to the terminal screws is 5 lb-in (0.56 Nm).

For the operating voltage to be connected, perform the following steps:

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

2.4 Operating the device

CAUTION

ELECTRIC SHOCK

Connect solely an operating 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 operating voltage

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

2.5 Connecting data cables

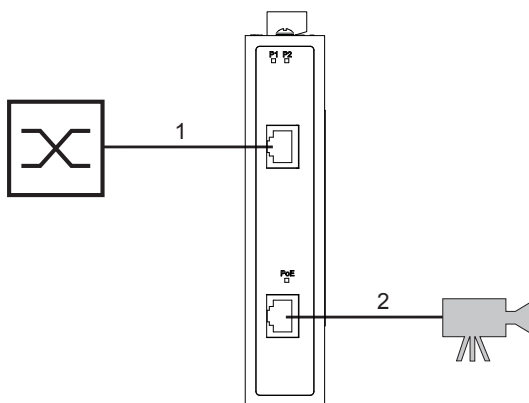


Figure 1: The PoE Injector device loops-through 1:1 the data paths connected to the pins.

1: Data

2: Data + PoE

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.

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 22 “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

Note: Disconnect the grounding solely after disconnecting all other cables.

- Disconnect the data lines.
- Disable the operating voltage.
- Remove the power connector from the device.
- Disconnect the grounding.

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.

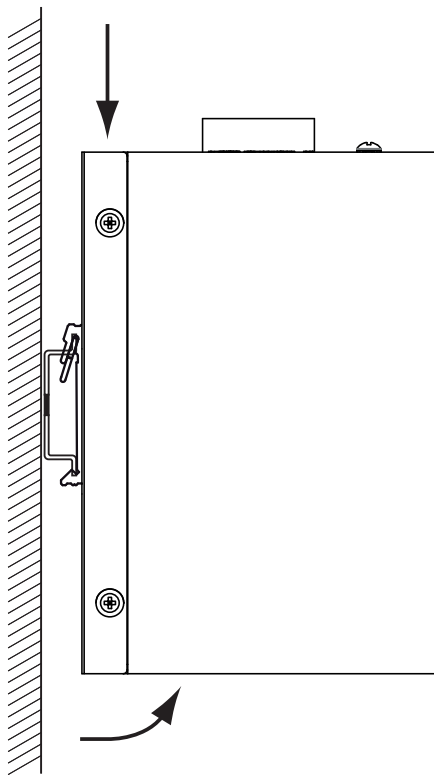


Figure 2: Removal from the DIN rail

5 Technical data

■ General technical data

Dimensions W × H × D	See "Dimension drawing" on page 23.	
Weight	4.6 lb (420 g)	
Power supply	<ul style="list-style-type: none"> ▶ 2 voltage inputs for redundant voltage supply ▶ Safety extra-low voltage (SELV), redundant inputs disconnected. ▶ Relevant for North America: Class 2 	
	Rated voltage range DC	24 V ... 48 V
	Voltage range DC incl. maximum tolerances	21 V ... 53 V
	Connection type	6 pin, pluggable terminal block for redundant power supply
	Current consumption at 24 V DC	max. 1.5 A (with PoE)
	Overload current protection at input	
	Back-up fuse per voltage input ^a	min. 3.5 A
	Peak inrush current	15 V for 1 ms
Climatic conditions during operation	Ambient air temperature ^b .	-40 °F ... +158 °F (-40 °C ... +70 °C)
	Humidity	5% ... 95% (non-condensing)
	Air pressure	up to 2187.2 yd (2000 m; 795 hPa)
Climatic conditions during storage	Ambient air temperature ^c .	-4 °F ... +140 °F (-45 °C ... +85 °C)
	Humidity	5% ... 95% (non-condensing)
	Air pressure	up to 2187.2 yd (2000 m; 795 hPa)
Pollution degree	2	
Protection classes	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 drawing

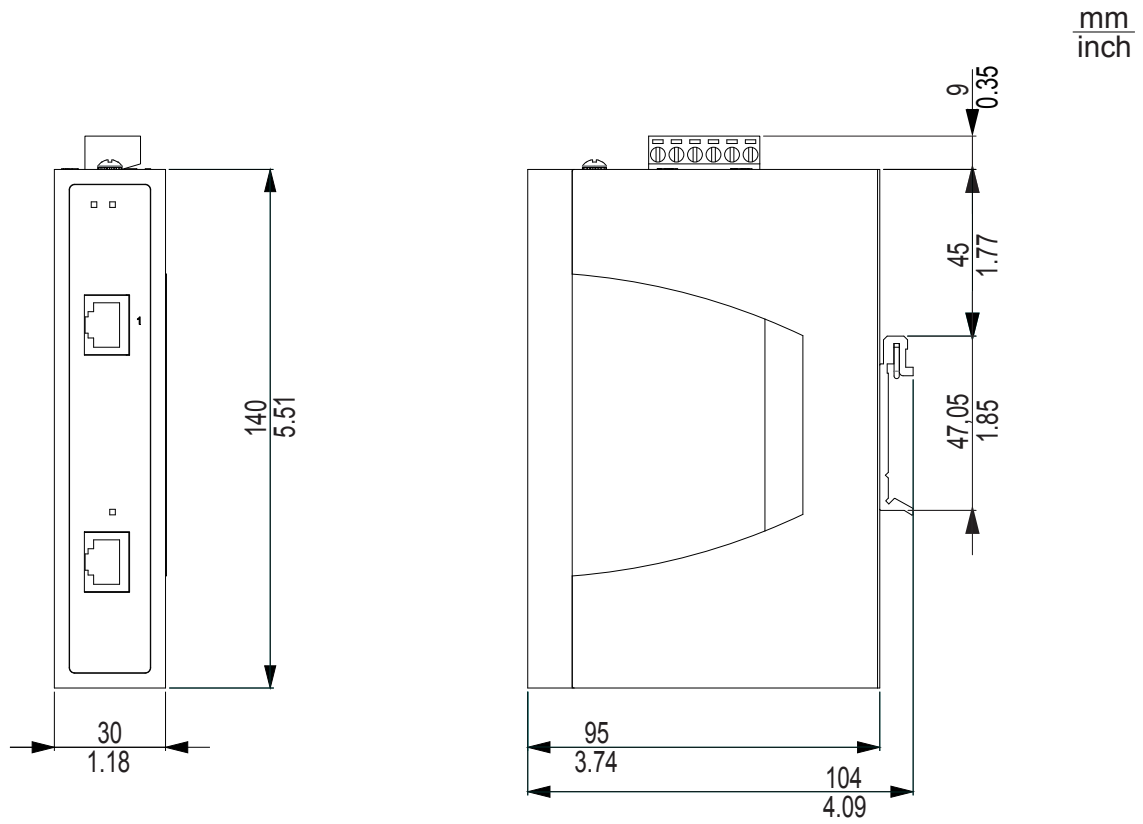


Figure 3: Dimensions SPIDER Giga 2TX PoE EEC

■ EMC and immunity

EMC interference emission		
Radiated emission		
FCC 47 CFR Part 15		Class A
EN 61000-6-4		Fulfilled
Conducted emission		
FCC 47 CFR Part 15		Class A
EN 61000-6-4		Fulfilled
EMC interference immunity		
Electrostatic discharge		
EN 61000-4-2 IEEE C37.90.3	Contact discharge	± 4 kV
EN 61000-4-2 IEEE C37.90.3	Air discharge	± 8 kV
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 IEEE C37.90.1	DC supply connection	± 2 kV
EN 61000-4-4 IEEE C37.90.1	Data line	± 1 kV
Voltage surges - DC supply connection		
EN 61000-4-5	line/ground	± 0.5 kV
EN 61000-4-5	line/line	± 0.5 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 0.04 oz (1 g)
IEC 60068-2-27, Test Ea	Shock	0.53 oz (15 g) at 11 ms

■ Network range

The total length permitted for the twisted-pair cables connected to port 1 and port 2 is a maximum of 109 yards (100 m).

■ Power consumption/power output at 24 V DC

Maximum power consumption	Power output
max. 33.8 W (with PoE)	115.4 Btu (IT)/h

■ Scope of delivery

Number	Article
1 ×	Device
1 ×	6 pin, pluggable terminal block for redundant power supply
1 ×	Wall mounting set
1 ×	Installation user manual

■ Order number

Device	Order number
SPIDER Giga 2TX PoE EEC	942 059-001

■ Accessories

Other accessories	Order number
Rail Power Supply RPS60/48V EEC	943 952-001
Rail Power Supply RPS 80 EEC	943 662-080

■ Underlying norms and standards

Name	
UL 508	Safety for Industrial Control Equipment
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments
FCC 47 CFR Part 15	Code of Federal Regulations
IEEE 802.3	Ethernet
IEEE 802.3af	Power over Ethernet
IEEE 802.3at	Power over Ethernet Plus

Table 3: 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.

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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■ Hirschmann Competence Center

The Hirschmann Competence Center is ahead of its competitors:

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▶ Training offers you an introduction to the basics, product briefing and user training with certification.

The current technology and product training courses can be found at <http://www.hicomcenter.com>

▶ Support ranges from the first installation through the standby service to maintenance concepts.

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