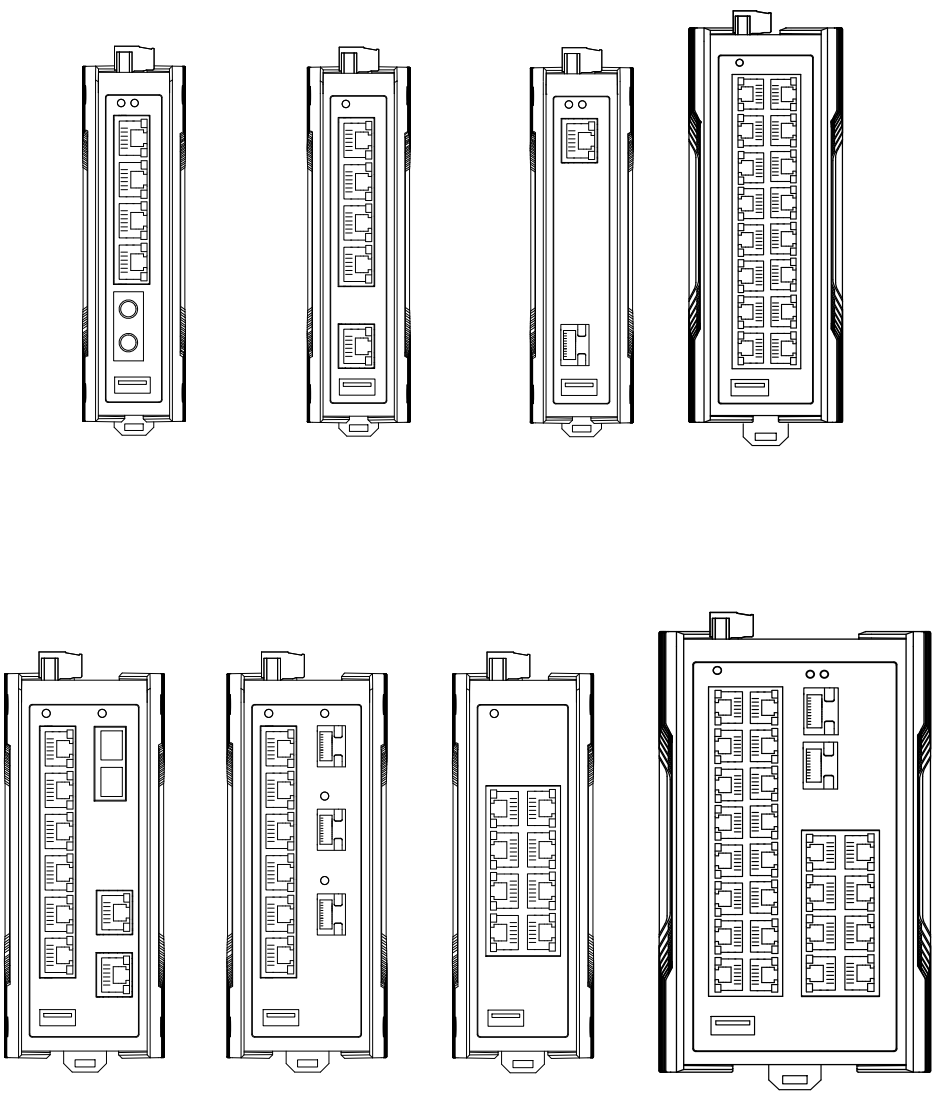
HIRSCHMANN
A BELDEN BRAND

User Manual

Installation
Industrial Ethernet Rail Switch
SPIDER Premium Line



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You can get the latest version of this manual on the Internet at:
https://www.doc.hirschmann.com

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72654 Neckartenzlingen
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Contents

Important information

Note: Read these instructions carefully, and familiarize yourself with the device before trying to install, operate, or maintain it. The following notes may appear throughout this documentation or on the device. These notes warn of potential hazards or call attention to information that clarifies or simplifies a procedure.

Symbol explanation

This is a general warning symbol. This symbol alerts you to potential personal injury hazards. Observe all safety notes that follow this symbol to avoid possible injury or death.

If this symbol is displayed in addition to a safety instruction of the type “Danger” or “Warning”, it means that there is a danger of electric shock and failure to observe the instructions will inevitably result in injury.

This symbol indicates the danger of hot surfaces on the device. In connection with safety instructions, non-observance of the instructions will inevitably result in injuries.

DANGER

DANGER draws attention to an immediately dangerous situation, which will **inevitably** result in a serious or fatal accident if not observed.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION

CAUTION indicates a possible danger which, if not avoided, **may** result in minor injuries.

NOTICE

NOTICE provides information about procedures that do not involve the risk of injury.

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 device, turn off the supply voltage and return the device to Hirschmann for inspection.

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 54.

Installation site requirements

- ☐ When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.
- ☐ Operate the device only at the specified ambient temperature (temperature of the ambient air at a distance of 5 cm (2 in) from the device) and at the specified relative humidity.
- ☐ Use the device in an environment with a maximum pollution degree that complies with the specifications in the technical data.
- ☐ Install the device in a fire enclosure.

Strain relief

Note: If the strain relief is insufficient, there is a potential risk of torsion, contact problems and creeping interruptions.

- ☐ Relieve the connection points of cables and lines from mechanical stress.
- ☐ Design strain reliefs in such a way that they help prevent any mechanical damage to cables, wires or conductors caused by external influences or their own weight.
- ☐ To help prevent damage to device connections, connectors and cables, follow the instructions for proper installation in accordance with DIN VDE 0100-520:2013-06, sections 522.6, 522.7 and 522.13.

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.

Device casing

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

☐ 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.

☐ Keep the ventilation slits free to ensure good air circulation.
See “General technical data” on page 54.

☐ Mount the device in the vertical position.

☐ At ambient air temperatures > +60 °C (+140 °F):
The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

Requirements for connecting electrical wires

Before connecting the electrical wires, **always** verify that the requirements listed are complied with.

The following requirements apply without restrictions:
▶ The electrical wires are voltage-free.
▶ The cables used are permitted for the temperature range of the application case.
▶ Relevant for North America: Exclusively use 60/75 °C (140/167 °F) or 75 °C (167 °F) copper (Cu) wire.

Table 1: Requirements for connecting electrical wires

Requirements for connecting the signal contact

Before connecting the signal contact, **always** verify that the requirements listed are complied with.

The following requirements apply without restrictions:
▶ The switched voltage complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
▶ The connected voltage is limited by a current limitation device or a fuse. Observe the electrical threshold values for the signal contact. See “General technical data” on page 54.

Table 2: Requirements for connecting the signal contact

Requirements for connecting the supply voltage

Before connecting the supply voltage, **always** verify that the requirements listed are complied with.

Prerequisites:	
All of the following requirements are complied with:	
	▶ The supply voltage corresponds to the voltage specified on the type plate of the device. ▶ The power supply conforms to overvoltage category I or II. ▶ The power supply has an easily accessible disconnecting device (for example 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 power supply cable is suitable for the voltage, the current and the physical load. Hirschmann recommends a conductor cross section of 0.5 mm² to 0.75 mm² (20 AWG up to 18 AWG).
The following requirements apply alternatively:	
Relevant when the device is supplied via 1 voltage input:	
Alternative 1	The power supply complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or ES1 + PS2 according to IEC/EN 62368-1.
Alternative 2	Relevant for North America: The power supply complies with the requirements according to NEC Class 2.
Alternative 3	**All** of the following requirements are complied with: ▶ The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/ EN 62368-1. ▶ Supply with DC voltage: A back-up fuse suitable for DC voltage is located in the plus conductor of the power supply. The minus conductor is on ground potential. Otherwise, a back-up fuse is also located in the minus conductor. Regarding the properties of this back-up fuse: See “General technical data” on page 54. ▶ Supply with AC voltage: A back-up fuse is located in the outer conductor of the power supply. The neutral conductor is on ground potential at both voltage inputs. Otherwise, a back-up fuse is also located in the neutral conductor. Regarding the properties of this back-up fuse: See “General technical data” on page 54.

Table 3: Requirements for connecting the supply voltage

National and international safety regulations

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

Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)

Ordinary Location,
Non-Hazardous Area,
Non-Explosive Atmosphere

Explosive Atmosphere Class I
Division 2, Groups A, B, C, D
Hazardous Location

USB connection:
Equipment with non-incendive field wiring parameters. USB entity parameters:

V_{OC} = 5.5V I_{SC} = 1.25A

C_a = 10µF L_a = 10µH

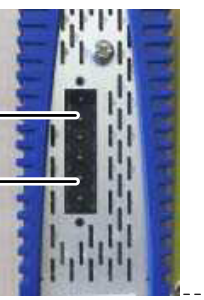
USB
Pin 1 and 4

Relay contacts:
Equipment with non-incendive field wiring parameters. The relay terminals are dependent upon the following entity parameters:

V_{max} = 30V I_{max} = 90mA

C_i = 2nF L_i = 1µH

Fault
contacts



For Use in Hazardous Locations Class I Division 2 Groups A, B ,C ,D:
Only allowed for SPIDER PL model No´s. which are individually labelled "FOR USE IN HAZARDOUS LOCATIONS"

Nonincendive field wiring circuits must be wired in accordance with the National Electrical Code (NEC), NFPA 70 , article 501. CEC, Appendix J, Annex J 18

The earth conductor must be at least the same wire size (mm² or AWG) as the supply conductors.

WARNING – EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR HAZARDOUS LOCATIONS OR EXPLOSIVE ATMOSPHERES.

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

Control Drawing SPIDER PL Series for Use in Hazardous Locations Class I Division 2, Groups A, B, C, D	HIRSCHMANN A BELDEN BRAND	
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Capacitance and inductance of the field wiring from the nonincendive circuit to the associated apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, C_{cable}, plus nonincendive equipment capacitance, C_i, must be less than the marked capacitance, C_a (or C_o), shown on any associated apparatus used.

The same applies for inductance (L_{cable}, L_i and L_a or L_o, respectively).
Where the cable capacitance and inductance per foot are not known, the following values shall be used:

C_{cable}= 60 pF/ft., L_{cable} = 0.2 µH/ft.

Table1:

Nonincendive Equipment		Associated Apparatus
V_{max} (or U_i)	≥	V_{oc} or V_t (or U_o)
I_{max} (or I_i)	≥	I_{sc} or I_t (or I_o)
P_{max} (or P_i)	≥	P_o
C_i + C_{cable}	≤	C_a (or C_o)
L_i + L_{cable}	≤	L_a (or L_o)

Suitability for installation in particular applications is at the discretion of the Authority Having Jurisdiction (AHJ).

ATEX directive 2014/34/EU – specific regulations for safe operation

Relevant for SPIDER-PL devices labeled with an ATEX certificate number: When operating in explosive gas atmospheres according to ATEX Directive2014/34/EU, the following applies:

☐ List of standards:
EN IEC 60079-0:2018
EN 60079-7:2015 + A1:2018
EN IEC 60079-15:2019

☐ Make sure that the device has the following label:

II 3G Ex ec nC IIC T4 Gc DEKRA 16ATEX0108X

T4: -40 °C ≤ Ta ≤ +70 °C (-40 °F ≤ Ta ≤ +158 °F) for device types “T” or “E“
(Position 24 of the product code) or

T4: -40 °C ≤ Ta ≤ +60 °C (-40 °F ≤ Ta ≤ +140 °F) for device variant SPIDER PL-20-06T1Z6Z6Z6...

☐ The modules shall be installed in a suitable enclosure according to EN 60079-15 providing a degree of protection of at least IP54 according to EN 60529, taking into account the environmental conditions under which the equipment will be used.

☐ Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.

☐ Connectors shall be connected or disconnected exclusively in dead-voltage state.

The USB port shall remain disconnected.

UK regulation S.I. 2016 No. 1107 (as amended by S.I. 2019 No. 696) - Schedule 3A, Part 6

Relevant for SPIDER-PL devices labeled with a UKEX certificate number:
When operating in explosive gas atmospheres, the following applies:

☐ List of standards:
EN IEC 60079-0:2018
EN 60079-7:2015 + A1:2018
EN IEC 60079-15:2019

☐ Make sure that the device has the following label:

II 3G Ex ec nC IIC T4 Gc DEKRA 21UKEX0066X

T4: -40 °C ≤ Ta ≤ +70 °C (-40 °F ≤ Ta ≤ +158 °F) for device types “T” or “E“
(Position 24 of the product code) or

T4: -40 °C ≤ Ta ≤ +60 °C (-40 °F ≤ Ta ≤ +140 °F) for device variant SPIDER PL-20-06T1Z6Z6...

☐ The modules shall be installed in a suitable enclosure according to EN 60079-15 providing a degree of protection of at least IP54 according to EN 60529, taking into account the environmental conditions under which the equipment will be used.

☐ Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.

☐ Connectors shall be connected or disconnected exclusively in dead-voltage state.

The USB port shall remain disconnected.

IECEx – Certification Scheme for Explosive Atmospheres

For SPIDER-PL devices labeled with an IECEx certificate number, the following applies:

☐ List of standards:
IEC 60079-0:2017
IEC 60079-7:2017
IEC 60079-15:2017

☐ Make sure that the device has the following label:
Ex ec nC IIC T4 Gc IECEx DEK 16.0064X

T4: -40 °C ≤ Ta ≤ +70 °C (-40 °F ≤ Ta ≤ +158 °F) for device types "T" or "E"
(Position 24 of the product code) or

T4: -40 °C ≤ Ta ≤ +60 °C (-40 °F ≤ Ta ≤ +140 °F) for device variant SPIDER PL-20-06T1Z6Z6...

☐ The modules shall be installed in a suitable enclosure according to IEC 60079-15 providing a degree of protection of at least IP54 according to IEC 60529, taking into account the environmental conditions under which the equipment will be used.

☐ Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.

☐ Connectors shall be connected or disconnected exclusively in dead-voltage state.

The USB port shall remain disconnected.

CE marking

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

- **2011/65/EU and 2015/863/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.
- **2014/30/EU (EMC)**
  Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
- **2014/34/EU (ATEX)**
  Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres.

Note: The ATEX Directive applies exclusively to the device variants labeled with an ATEX certificate number. See “ATEX directive 2014/34/EU – specific regulations for safe operation” on page 12.

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:

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany

You find the EU conformity declaration as PDF file for downloading on the Internet at: https://www.doc.hirschmann.com/certificates.html

The device can be used in industrial environments.

- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55032

You find more information on technical standards here:
“Technical data” on page 54

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.

UKCA marking

The labeled devices comply with the following UK regulations:

- **S.I. 2012 No. 3032**
  Restriction of the Use of Certain Hazardous Substances in Electrical and Electronical Equipment Regulations
- **S.I. 2016 No. 1091**
  Electromagnetic Compatibility Regulations
- **S.I. 2016 No. 1107**
  Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations

Note: The regulation applies exclusively to the device variants labeled with a UKEX certificate number: See “UK regulation S.I. 2016 No. 1107 (as amended by S.I. 2019 No. 696) - Schedule 3A, Part 6” on page 13.

UK CA

The UKCA conformity declaration will be available to the relevant authorities at the following address:

Belden UK Ltd.
1 The Technology Centre, Station Road
Framlingham, IP13 9EZ, United Kingdom

You find the UKCA conformity declaration as PDF file for downloading on the Internet at: https://www.doc.hirschmann.com/certificates.html

The device can be used in industrial environments.

- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55032

You find more information on technical standards here:
“Technical data” on page 54

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.

LED or laser components

LED or LASER components according to IEC 60825-1 (2014):
CLASS 1 LASER PRODUCT
CLASS 1 LED PRODUCT

FCC note

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

SPIDER-PL

U.S. Contact Information
Belden – St. Louis
1 N. Brentwood Blvd. 15th Floor
St. Louis, Missouri 63105, United States
Phone: 314.854.8000

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Recycling note

The symbol of a crossed-out wheeled bin shown on the device indicates that the device MUST NOT be disposed of with household waste at the end of its service life.
After its service life, the used device must be disposed of properly as electronic waste in accordance with the locally applicable disposal regulations.
End users are responsible for deleting personal data from the used device prior to disposal.
End users are obliged to separate used batteries and accumulators that are not enclosed by the used device from the used device in a non-destructive manner before disposing of the used device. The used batteries and accumulators must be handed in for separate collection. This does not apply if the used device is handed in for reuse.

About this Manual

The “Installation” user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.

Documentation mentioned in the “User Manual Installation” that is not supplied with your device as a printout can be found as PDF files for downloading on the Internet at: https://www.doc.hirschmann.com

Key

The symbols used in this manual have the following meanings:

▶	Listing
☐	Work step
■	Subheading

1 Description

1.1 General device description

The device is designed for the special requirements of industrial automation. The device meets the relevant industry standards, provides very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.
The device allows you to set up switched Industrial Ethernet networks according to standard IEEE 802.3.

You have numerous options of combining the device characteristics. You can determine the possible combinations using the configurator which is available in the Belden Online Catalog https://catalog.belden.com on the web page of the device.

1.2 Device name and product code

The device name corresponds to the product code. The product code is made up of characteristics with defined positions. The characteristic values stand for specific product properties.

The following device variants have a corresponding short designation in addition to the product code:

Short designation	Product code
SPR20-7TX/2FM-EEC	SPIDER-PL-20-07T1M2M299TxxxxHHxx
SPR20-7TX/2FS-EEC	SPIDER-PL-20-07T1S2S299TxxxxHHxx
SPR20-8TX/1FM-EEC	SPIDER-PL-20-08T1M29999TxxxxHHxx
SPR20-8TX-EEC	SPIDER-PL-20-08T1999999TxxxxHHxx
SPR40-1TX/1SFP-EEC	SPIDER-PL-40-01T1O69999TxxHHHHxx
SPR40-1TX/1SFP-EEC-HO	SPIDER-PL-40-01T1O69999TxxHKxxxx
SPR40-8TX-EEC	SPIDER-PL-40-08T1999999TxxxxHHxx

Table 4: Device variants with short designation

Item	Characteristic	Characteristic value	Description
1 ... 9	Product	SPIDER-PL	SPIDER Premium Line
10	(hyphen)	–	
11	Data rate	2	10/100 Mbit/s
		3	10/100 Mbit/s and 10/100/1000 Mbit/s
		4	10/100/1000 Mbit/s
12	Power over Ethernet (PoE)	0	without PoE support
13	(hyphen)	–	
14 ... 17	Number Twisted pair ports	01T1	
		04T1	
		05T1	
		06T1	
		07T1	
		08T1	
		16T1	
		24T1	
18 ... 19	Optical fiber port 1	M2	DSC multimode socket for 100 Mbit/s F/O connections
		S2	DSC singlemode socket for 100 Mbit/s F/O connections
		M4	ST multimode socket for 100 Mbit/s F/O connections
		O6	SFP slot for 100/1000 Mbit/s F/O connections
		Z6	SFP slot for 100 Mbit/s F/O connections
		99	without

Table 5: Device name and product code

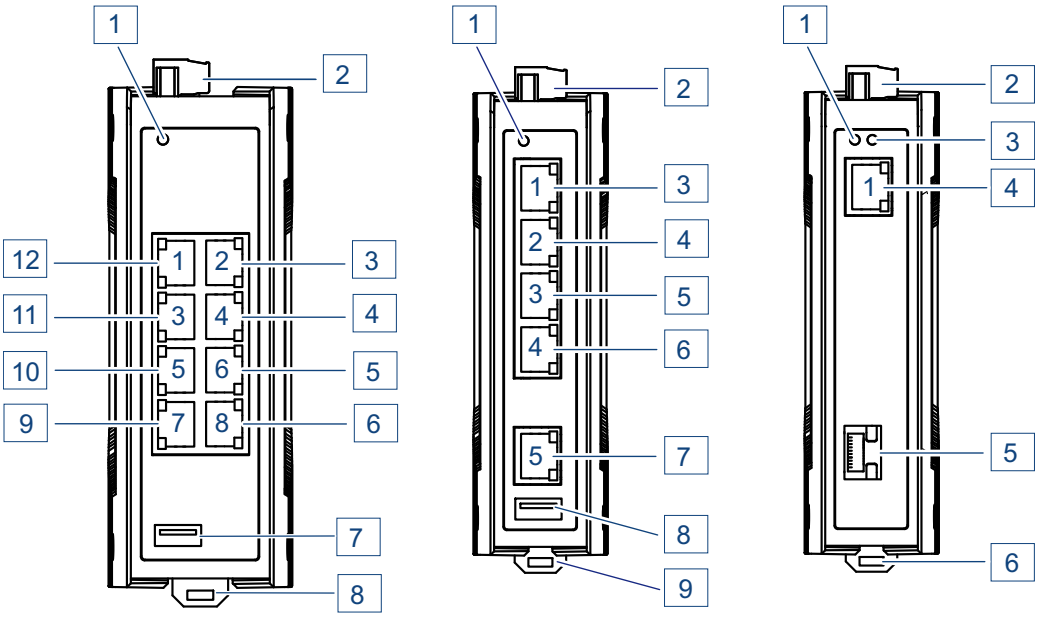
Item	Characteristic	Characteristic value	Description	
20 ... 21	Optical fiber port 2	M2	DSC multimode socket for 100 Mbit/s F/O connections	
		S2	DSC singlemode socket for 100 Mbit/s F/O connections	
		O6	SFP slot for 1000 Mbit/s connections	
		Z6	SFP slot for 100 Mbit/s F/O connections	
		99	without	
22 ... 23	Optical fiber port 3	Z6	SFP slot for 100 Mbit/s F/O connections	
		99	without	
24	Temperature range	T	Extended	-40 °C ... +70 °C (-40 °F ... +158 °F) Derating[a,b]
		E	Extended with Conformal Coating	-40 °C ... +70 °C (-40 °F ... +158 °F)
25 .. 26	Certificates and declarations	Z9	CE, FCC, EN 61131, RCM	
		Y9	Z9 + cUL 61010	
		X9	Z9 + cUL 61010 + ISA 12.12.01 Class 1 Div. 2	
		W9	Z9 + ATEX Zone 2	
		UY	Z9 + cUL 61010 + DNV	
		TY	Z9 + cUL 61010 + EN 50121-4	
		R9	Z9 + E1	
		WV	X9 + ATEX Zone 2 + DNV + EN 50121-4 + E1	
		WW	X9 + ATEX Zone 2 + IEC 61850-3 + IEEE 1613 + EN 50121-4 + DNV	
27 ... 28	Customer-specific version	HH	Hirschmann Standard	
		HK	Voltage terminal with spring	
		HU	Hub Mode N: N Port mirroring	
29 ... 30	Configuration	HH	Hirschmann Standard See “General technical data” on page 54.	
		HV	Extended voltage range See “General technical data” on page 54.	

Table 5: Device name and product code

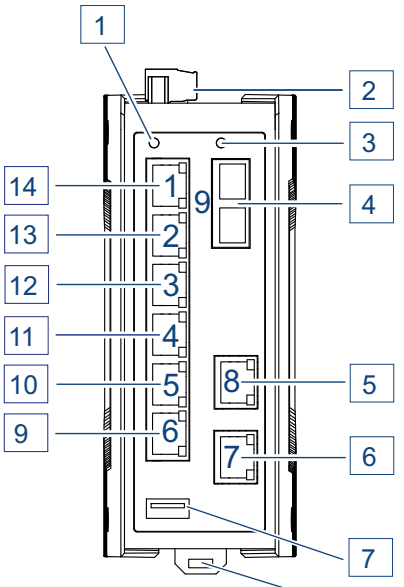
a. For the device variant SPIDER PL-20-06T1Z6Z6Z6..., the maximum permitted ambient air temperature has to be reduced to +60 °C (+140 °F).
b. For device variants SPR20-7TX/2FM-EEC, SPR20-7TX/2FS-EEC and SPR20-8TX/1FM-EEC, the maximum permitted ambient air temperature has to be reduced to +65 °C (+149 °F).

1.3 Device view

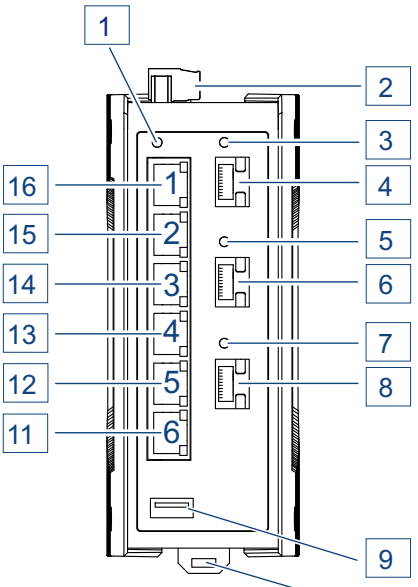
1.3.1 Front view



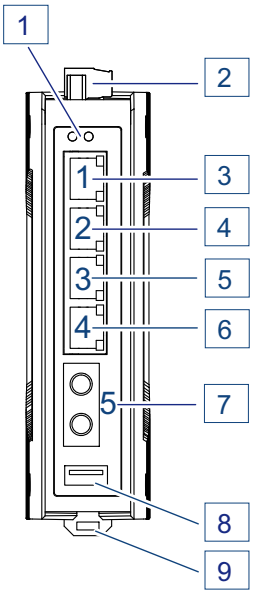
Front view using example of the device variants SPIDER PL-40...	
SPIDER PL 40-08T1...	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3 ... 6	4 × RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
7	USB interface
8	Rail lock slide for DIN rail mounting
9 ... 12	4 × RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
SPIDER PL-40-05T1...	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3 ... 7	5 × RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
8	USB interface
9	Rail lock slide for DIN rail mounting
SPIDER PL-40-01T1...	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3	LED display elements for port status
4	RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
5	SFP slot for 100/1000 Mbit/s F/O connections
6	Rail lock slide for DIN rail mounting



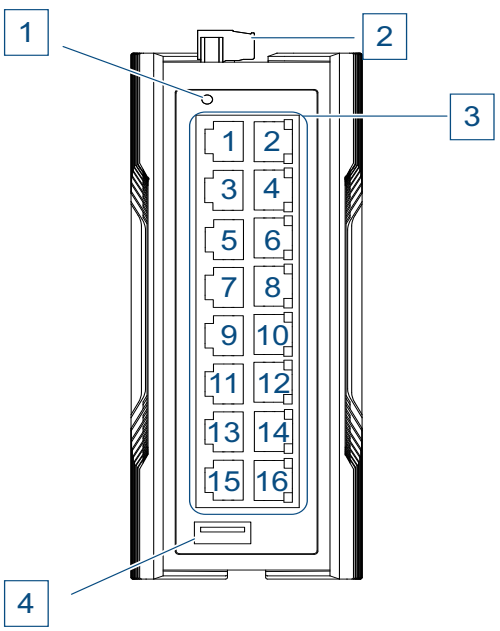
SPIDER PL-20-08T1...



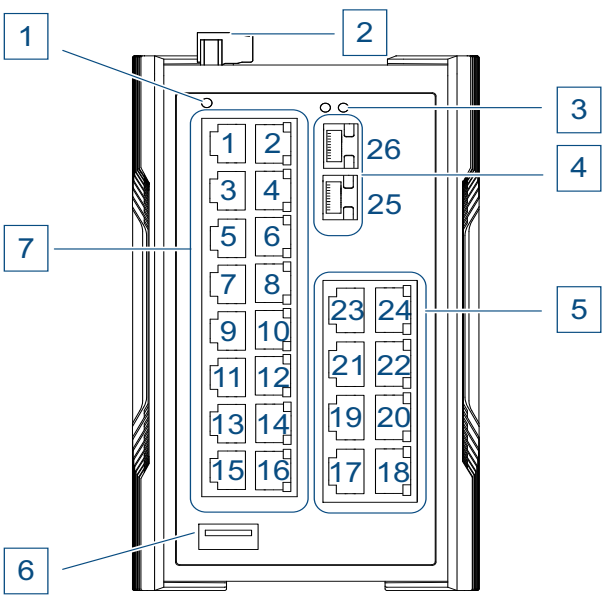
SPIDER PL-20-06T1...



SPIDER PL-20-04T1...



SPIDER PL-20-16T1...



SPIDER PL-20-24T1...
SPIDER PL-30-24T1...

Front view using example of the device variants SPIDER PL-20... and SPIDER PL-30...

SPIDER PL-20-08T1...
(depending on the device variant)

1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3	LED display elements for port status
4	depending on device variant ▶ DSC multimode socket for 100 Mbit/s F/O connections ▶ DSC singlemode socket for 100 Mbit/s F/O connections
5 ... 6	2 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
7	USB interface
8	Rail lock slide for DIN rail mounting

9 ... 14	6 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
SPIDER PL-20-06T1...	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3, 5, 7	LED display elements for port status
4, 6, 8	SFP slot for 100 Mbit/s F/O connections
9	USB interface
10	Rail lock slide for DIN rail mounting
11 ... 16	6 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
SPIDER PL-20-04T1...	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3 ... 6	4 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
7	depending on device variant ▶ ST multimode socket for 100 Mbit/s F/O connections ▶ DSC multimode socket for 100 Mbit/s F/O connections ▶ DSC singlemode socket for 100 Mbit/s F/O connections
8	USB interface
9	Rail lock slide for DIN rail mounting
SPIDER PL-20-16T1...	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3	16 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
4	USB interface
SPIDER PL-20-24T1... **SPIDER PL-30-24T1...**	
1	LED display elements for device status
2	6-pin, pluggable terminal block for power supply and signal contact
3	LED display elements for port status
4	2 × **SPIDER PL-20-24T1...** SFP slot for 100 Mbit/s F/O connections **SPIDER PL-30-24T1...** SFP slot for 100/1000 Mbit/s fiber optic connections
5	8 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
6	USB interface
7	16 × RJ45 socket for 10/100 Mbit/s Twisted pair connections

1.4 Power supply

1.4.1 Supply voltage with the characteristic value HH

The following options for power supply are available:

▶ 6-pin terminal block
You will find information on connecting the supply voltage here:
See “Connecting the 6-pin terminal block (device variants with characteristic value HH)” on page 39.

1.4.2 Supply voltage with characteristic value HK

The following options for power supply are available:

- 6-pin terminal block
  You will find information on connecting the supply voltage here:
  See “Connecting the 6-pin voltage terminal with spring (device variants with characteristic value HK)” on page 40.

1.5 Ethernet ports

You can connect end devices and other segments to the device ports using twisted pair cables or optical fibers (F/O).
You find information on the pin assignments for making patch cables here:
“Pin assignments” on page 28

10/100/1000 Mbit/s twisted pair port

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

- Autonegotiation
- Autopolarity
- Autocrossing (if autonegotiation is activated)
- 1000 Mbit/s half duplex, 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

10/100 Mbit/s twisted pair port

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

- Autonegotiation
- Autopolarity
- Autocrossing (if autonegotiation is activated)
- 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode

100/1000 Mbit/s F/O port

This port is an SFP slot.

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

- 1000 Mbit/s full duplex when using a Gigabit Ethernet SFP transceiver
- 100 Mbit/s half duplex, 100 Mbit/s full duplex when using a Fast Ethernet SFP transceiver

100 Mbit/s F/O port

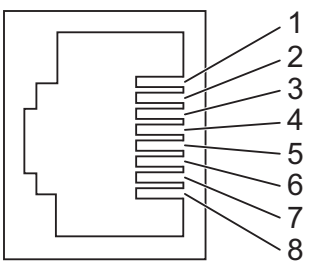
The 100 Mbit/s F/O port allows you to connect network components according to the IEEE 802.3 100BASE-FX standard.
This port supports:

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

Delivery state:

- 100 Mbit/s, full duplex

1.5.1 Pin assignments

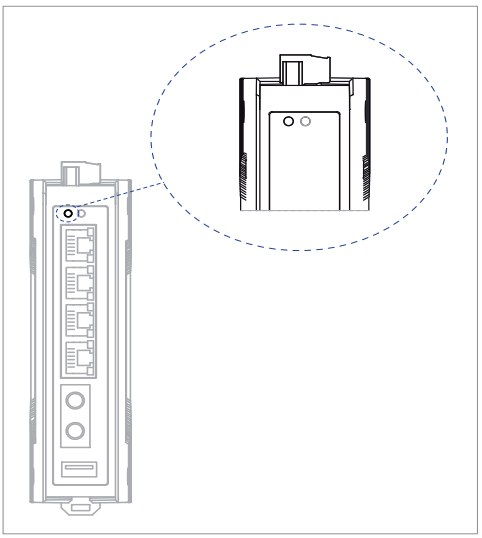
RJ45	Pin	10/100 Mbit/s	1000 Mbit/s
	**MDI mode**		
	1	TX+	BI_DA+
	2	TX−	BI_DA−
	3	RX+	BI_DB+
	4	—	BI_DC+
	5	—	BI_DC−
	6	RX−	BI_DB−
	7	—	BI_DD+
	8	—	BI_DD−
	MDI-X mode		
	1	RX+	BI_DB+
	2	RX−	BI_DB−
	3	TX+	BI_DA+
	4	—	BI_DD+
	5	—	BI_DD−
	6	TX−	BI_DA−
	7	—	BI_DC+
	8	—	BI_DC−

1.6 Display elements

After the supply voltage is switched on, the device performs a self-test. During this process, various LEDs light up.

1.6.1 Device status

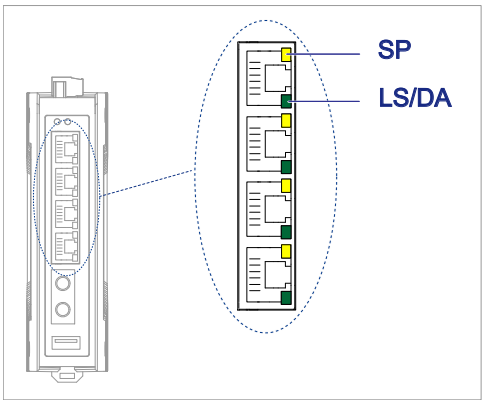
These LEDs provide information about conditions which affect the operation of the whole device.



LED	Display	Color	Activity	Meaning
Power	Supply voltage	—	none	Supply voltage is too low
		yellow	lights up	Device variants with redundant power supply: Supply voltage 1 **or** 2 is on
		green	lights up	Device variants with redundant power supply: Supply voltage 1 **and** 2 is on

1.6.2 Port status

These LEDs provide port-related information.



L/D (link status/data)	Color	Activity	Meaning
	green	lights up	Device detects a valid link
	green	flashing	Device is transmitting and/or receiving data
	yellow/ green	flashing alternately	Updating configuration using the USB interface
	–	none	Device detects an invalid or missing link

The display element for the data rate depends on the device variant used. The following display options are possible:

LED display element	Color	Activity	Meaning
SP (data rate)	yellow	flashes 1 × a period	10 Mbit/s connection
	yellow	flashes 2 × a period	100 Mbit/s connection
	yellow	flashes 3 × a period	1000 Mbit/s connection
	–	none	Device detects an invalid or missing link
without	–	–	–

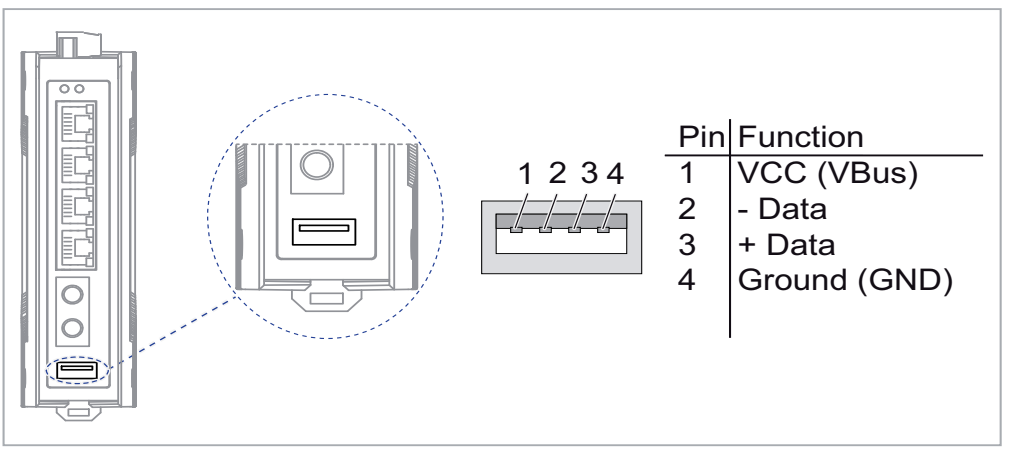
2 Configuration interface

2.1 USB interface

The USB interface allows you to connect a storage medium. This is for transferring configuration data.

The USB interface has the following properties:

- Connectors: type A
- Supports the USB master mode
- Supports USB 2.0
- Supplies current of max. 500 mA
- Voltage not potential-separated

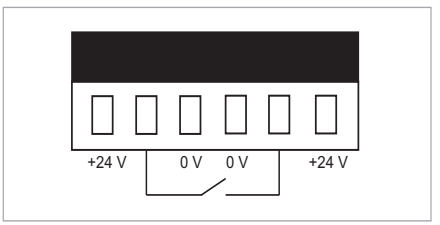


Pin	Function
1	VCC (VBus)
2	- Data
3	+ Data
4	Ground (GND)

3 Signal contact

The potential-free signal contact (relay contact, closed circuit) reports through a break in contact:

- At least one power supply is inoperable.
- The device is not operational.
- Loss of connection to at least one port.
  The link state can be masked for each port using the configuration. In the delivery state, link monitoring is inactive.

Figure	Pin	Function
	1	+ 24 V DC
	2	FAULT
	3	0 V
	4	0 V
	5	FAULT
	6	+ 24 V DC

4 Installation

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

Perform the following steps to install and configure the device:
- Checking the package contents
- Mounting the device
- Installing an SFP transceiver (optional)
- Connecting the terminal block
- Operating the device
- Connecting data cables
- Configuration (optional)

4.1 Checking the package contents

Perform the following work steps:
☐ Check whether the package includes all items named in the section “Scope of delivery” on page 68.
☐ Check the individual parts for transport damage.

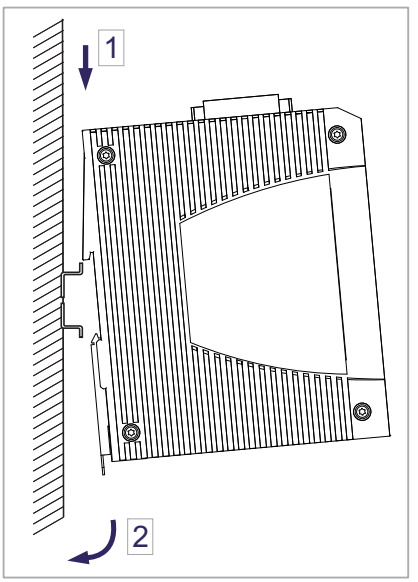
4.2 Mounting the device

You have the following options for mounting your device:

- Installing the device onto the DIN rail
- Mounting on a flat surface

4.2.1 Installing the device onto the DIN rail

The device is for mounting on a 35 mm DIN rail in accordance with DIN EN 60715.

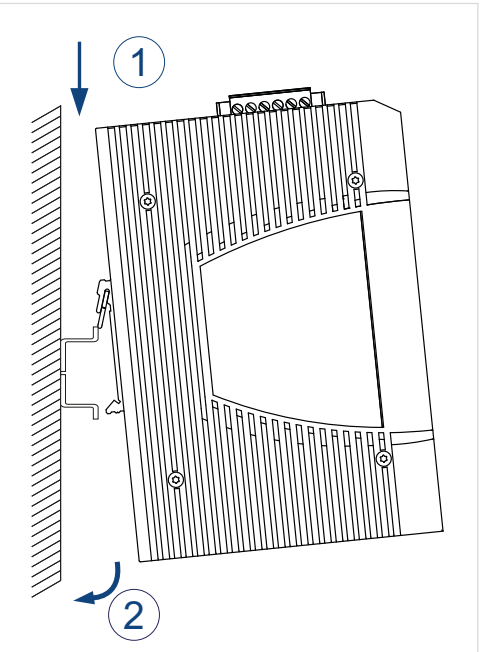


Perform the following work steps:

☐ Slide the upper snap-in guide of the device into the DIN rail.
☐ Use a screwdriver to pull the rail lock slide downwards.
☐ Snap in the device by releasing the rail lock slide.

Device variants SPIDER PL-20-16T1... , SPIDER PL-20-24T1... , SPIDER PL-30-24T1...

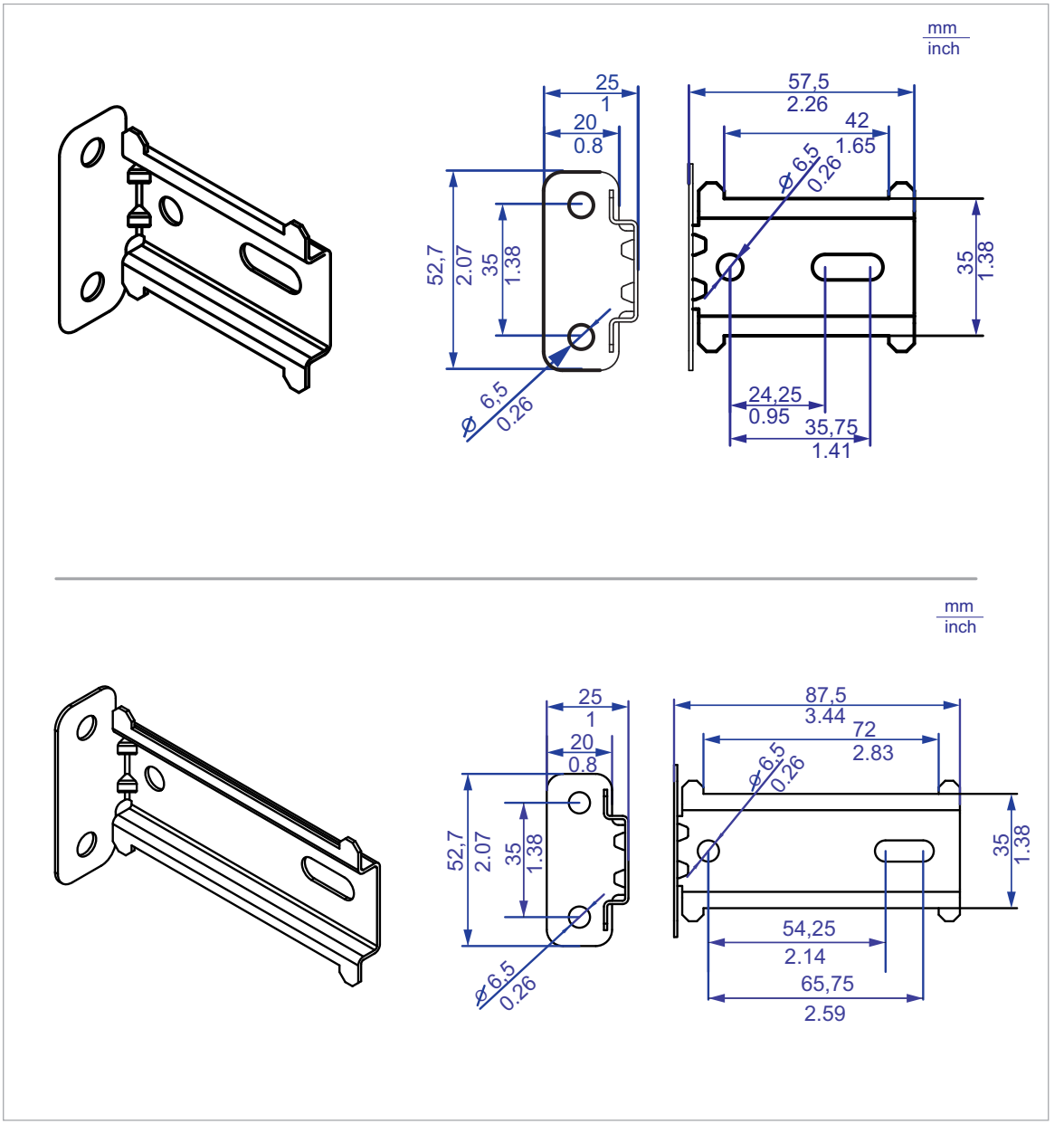
The device is for mounting on a 35 mm DIN rail in accordance with DIN EN 60715.



Perform the following work steps:

- ☐ Slide the upper snap-in guide of the device into the DIN rail.
- ☐ Push the device downwards and onto the DIN rail.
- ☐ Snap-in the device.

4.2.2 Mounting on a flat surface



Perform the following work steps:

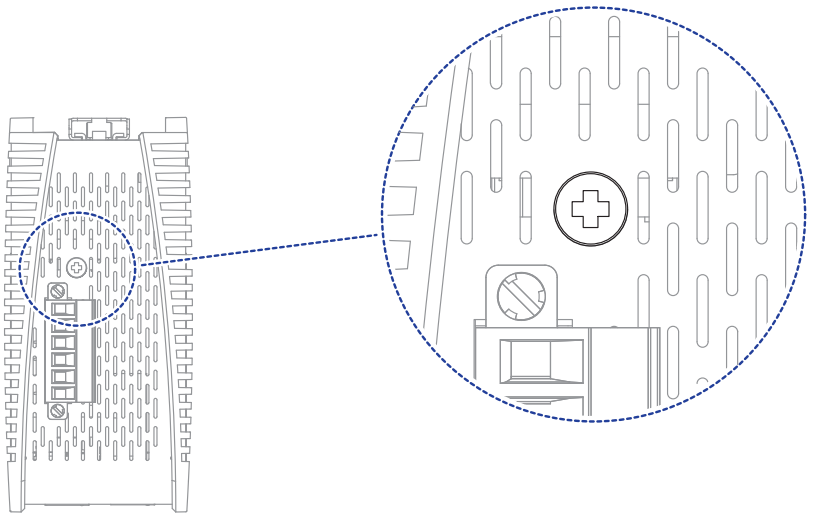
☐ Attach the wall mounting plate to a flat surface of the wall using screws. You will find the dimensions necessary for mounting the device in the illustration.

☐ Mount the device on the wall mounting plate. Insert the upper snap-in guide of the device into the rail and press it down against the rail until it snaps into place.

▶ Two models of wall mounting plates are available.
See “Accessories” on page 69.

4.3 Grounding the device

Prerequisite:
Use a wire diameter for the ground conductor that is no smaller than the diameter of the supply voltage connection, however of at least 0.5 mm² (20 AWG).



Perform the following work steps:

☐ Ground the device via the ground screw.
The grounding screw is located on the topside as shown in the illustration.

4.4 Installing an SFP transceiver (optional)

Prerequisites:
Exclusively use Hirschmann SFP transceivers.
See “Accessories” on page 69.

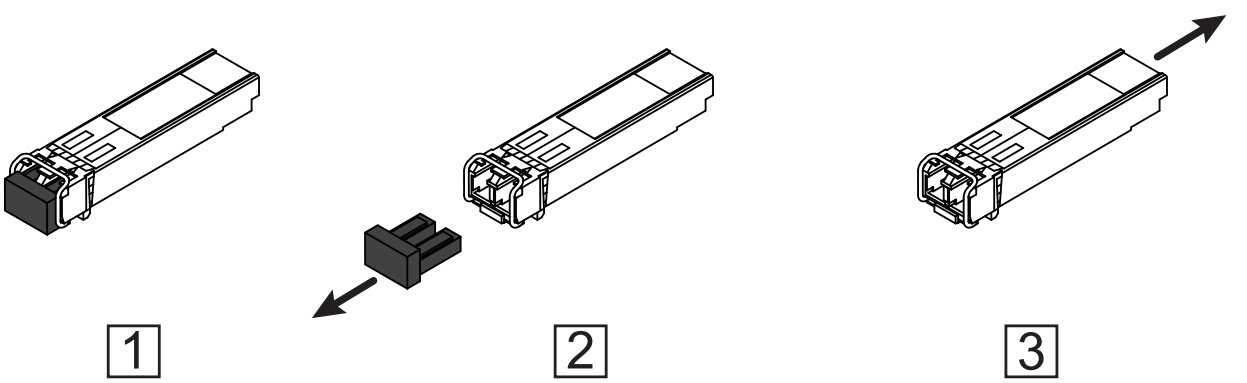


Figure 1: Installing SFP transceivers: Installation sequence

Perform the following work steps:

☐ Take the SFP transceiver out of the transport packaging (1).
☐ Remove the protection cap from the SFP transceiver (2).
☐ Push the SFP transceiver with the lock closed into the slot until it latches in (3).

4.5 Connecting the terminal block

⚠ WARNING

ELECTRIC SHOCK

Exclusively connect a supply voltage that corresponds to the type plate of your device.
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.
Observe the maximum values for the contact load of the signal contact.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

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. The supply voltage is electrically isolated from the housing.

Note: With non-redundant supply voltage, the device reports inoperable supply voltage. You can help prevent this message by applying the supply voltage via both inputs, or by changing the configuration.

4.5.1 Connecting the 6-pin terminal block (device variants with characteristic value HH)

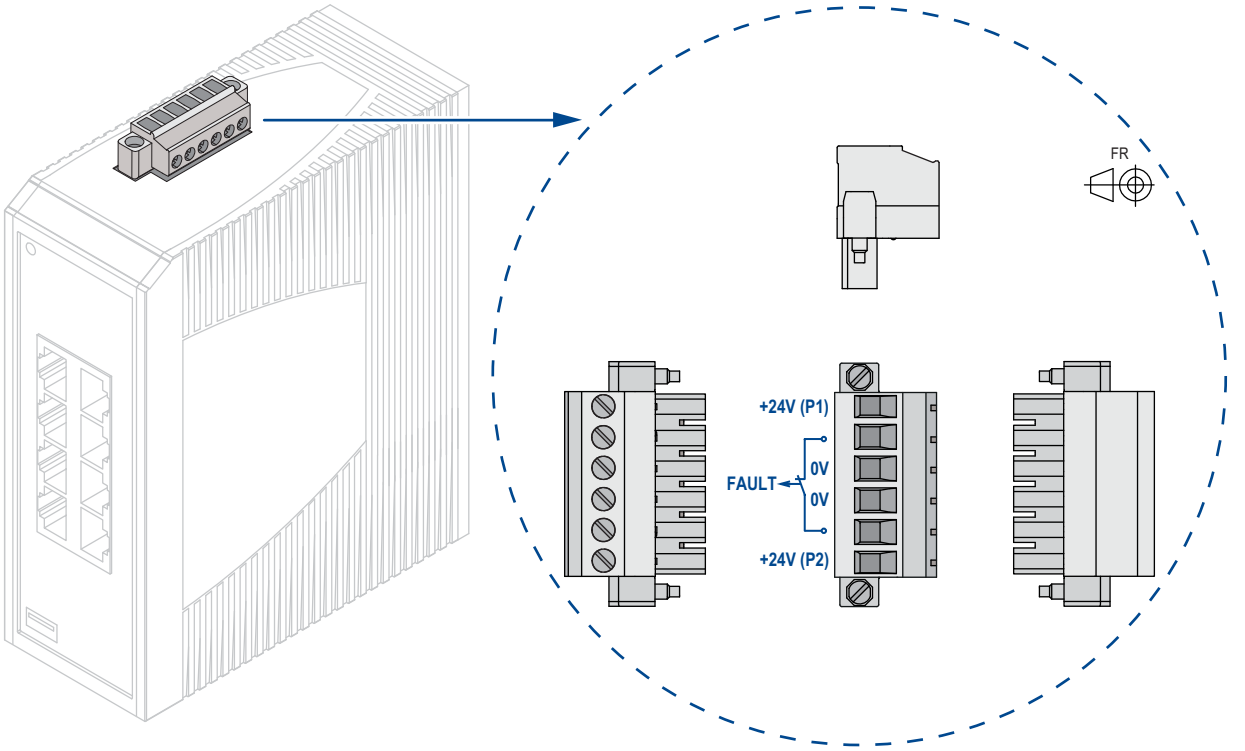


Figure 2: 6-pin terminal block, characteristic value HH

Type of the voltages that can be connected	DC voltage	
Specification of the supply voltage	Configuration: Hirschmann standard (characteristic value HH)	Rated voltage range 12 V DC ... 24 V DC Voltage range incl. maximum tolerances 9.6 V DC ... 32 V DC
	Configuration: Extended voltage range (characteristic value HV)	Rated voltage range 12 V DC ... 48 V DC 24 V AC Voltage range incl. maximum tolerances 9.6 V DC ... 60 V DC 18 V AC ... 30 V AC
Pin assignment	+24 V DC (P1)	Plus terminal of the supply voltage P1
	FAULT	Signal contact
	0 V DC	Minus terminal of the supply voltage P1
	0 V DC	Minus terminal of the supply voltage P2
	FAULT	Signal contact
	+24 V DC (P2)	Plus terminal of the supply voltage P2

Table 6: Type and specification of the supply voltage and pin assignment on the device

Perform the following work steps:

☐ Verify the required conditions for connecting the voltage supply.
See “Requirements for connecting the supply voltage” on page 9.

☐ Remove the terminal connector from the device.

☐ Connect the wires according to the pin assignment on the device with the clamps.

☐ Fasten the wires in the terminal block by tightening the terminal screws.

☐ Mount the terminal block for the supply voltage and the signal contact using screws.

4.5.2 Connecting the 6-pin voltage terminal with spring (device variants with characteristic value HK)

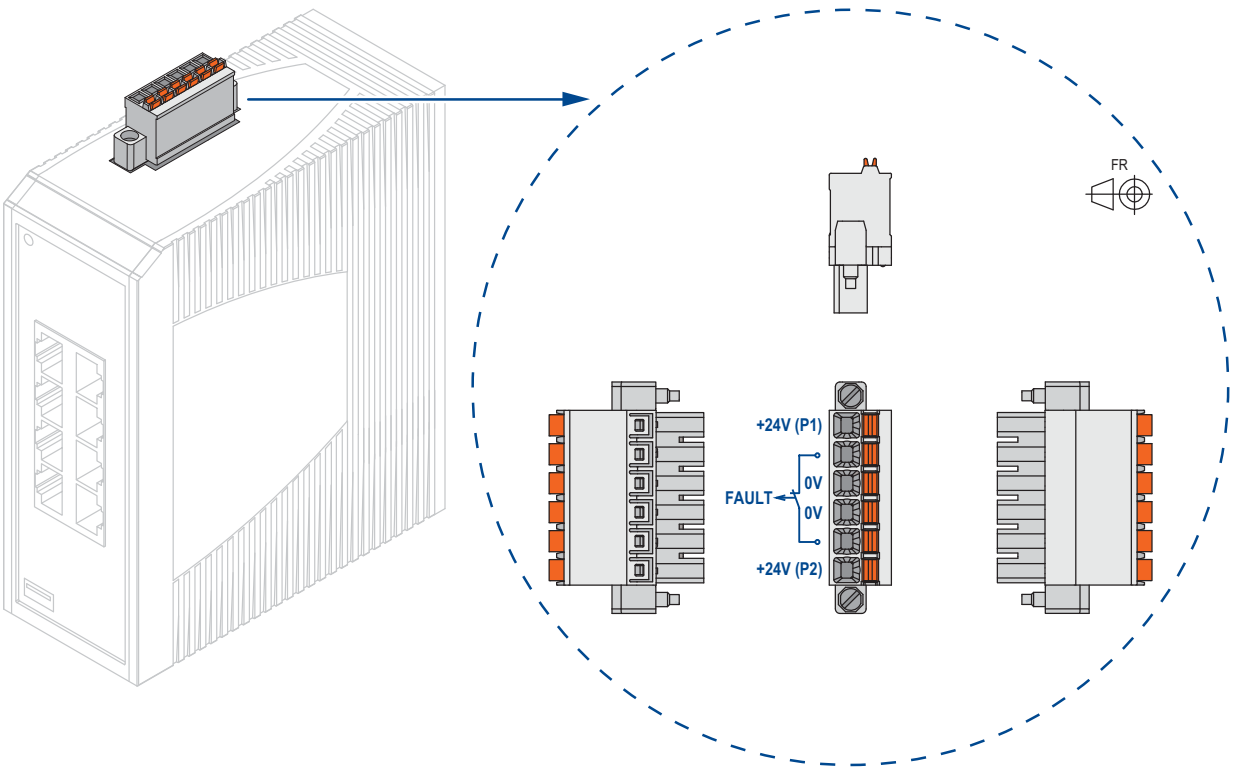


Figure 3: 6-pin voltage terminal with spring, characteristic value HK

Type of the voltages that can be connected	DC voltage

Table 7: Type and specification of the supply voltage and pin assignment on the device

Specification of the supply voltage	Configuration: Hirschmann standard (characteristic value HH)	Rated voltage range 12 V DC ... 24 V DC Voltage range incl. maximum tolerances 9.6 V DC ... 32 V DC
	Configuration: Extended voltage range (characteristic value HV)	Rated voltage range 12 V DC ... 48 V DC 24 V AC Voltage range incl. maximum tolerances 9.6 V DC ... 60 V DC 18 V AC ... 30 V AC
Pin assignment	+24 V DC (P1)	Plus terminal of the supply voltage P1
	FAULT	Signal contact
	0 V DC	Minus terminal of the supply voltage P1
	0 V DC	Minus terminal of the supply voltage P2
	FAULT	Signal contact
	+24 V DC (P2)	Plus terminal of the supply voltage P2

Table 7: Type and specification of the supply voltage and pin assignment on the device

Perform the following work steps:

☐ Verify the required conditions for connecting the voltage supply.
See “Requirements for connecting the supply voltage” on page 9.

☐ Remove the terminal connector from the device.

☐ Open the terminal lock by pressing the corresponding lever with a screwdriver.

☐ Connect the wires according to the pin assignment on the device with the clamps.

☐ Mount the terminal block for the supply voltage and the signal contact using screws.

4.6 Operating the device

Perform the following steps to start up the device:

- Installing terminal blocks, switching on the supply voltage
- Connecting data cables

4.6.1 Installing terminal blocks, switching on the supply voltage

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

4.6.2 Connecting data cables

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

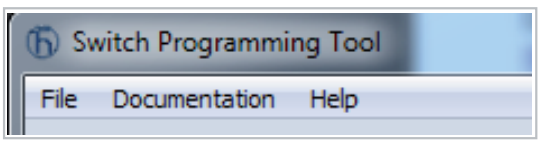
- ☐ Keep the length of the data cables as short as possible.
- ☐ The use of electrical data cables is restricted to applications inside buildings.
- ☐ Use optical data cables for the data transmission between the buildings.
- ☐ When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- ☐ Verify that power supply cables and data cables do not run parallel over longer distances. To reduce inductive coupling, verify that the power supply cables and data cables cross at a 90 ° angle.
- ☐ Use shielded data cables for gigabit transmission via copper cables, for example SF/UTP cables according to ISO/IEC 11801. To meet EN 50121-4 and marine application requirements, use shielded data cables at all transmission rates.
- ☐ Connect the data cables according to your requirements.
  See “Ethernet ports” on page 27.

5 Configuration (optional)

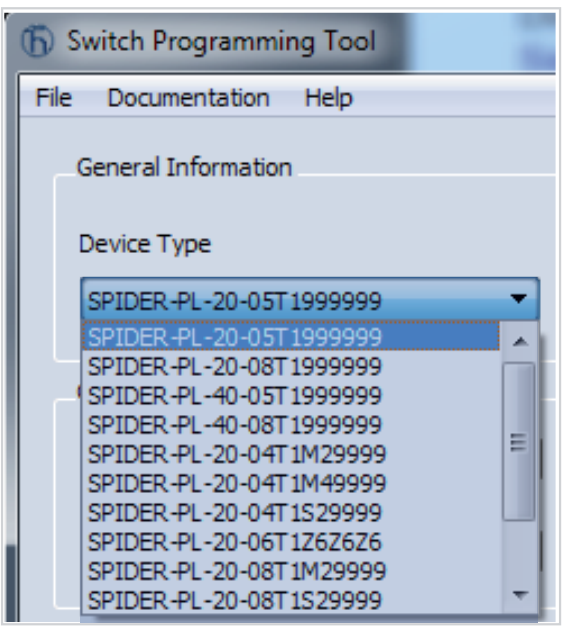
The device is immediately ready for operation with its default settings, from the factory.
The device allows you to change the settings according to your requirements using the USB interface.
You can find the configuration parameters described in a separate overview.
See table 9 on page 47.

Prerequisite:
Install the **Switch Programming Tool** on your computer. You can download the software for free on the Belden catalog: https://catalog.belden.com

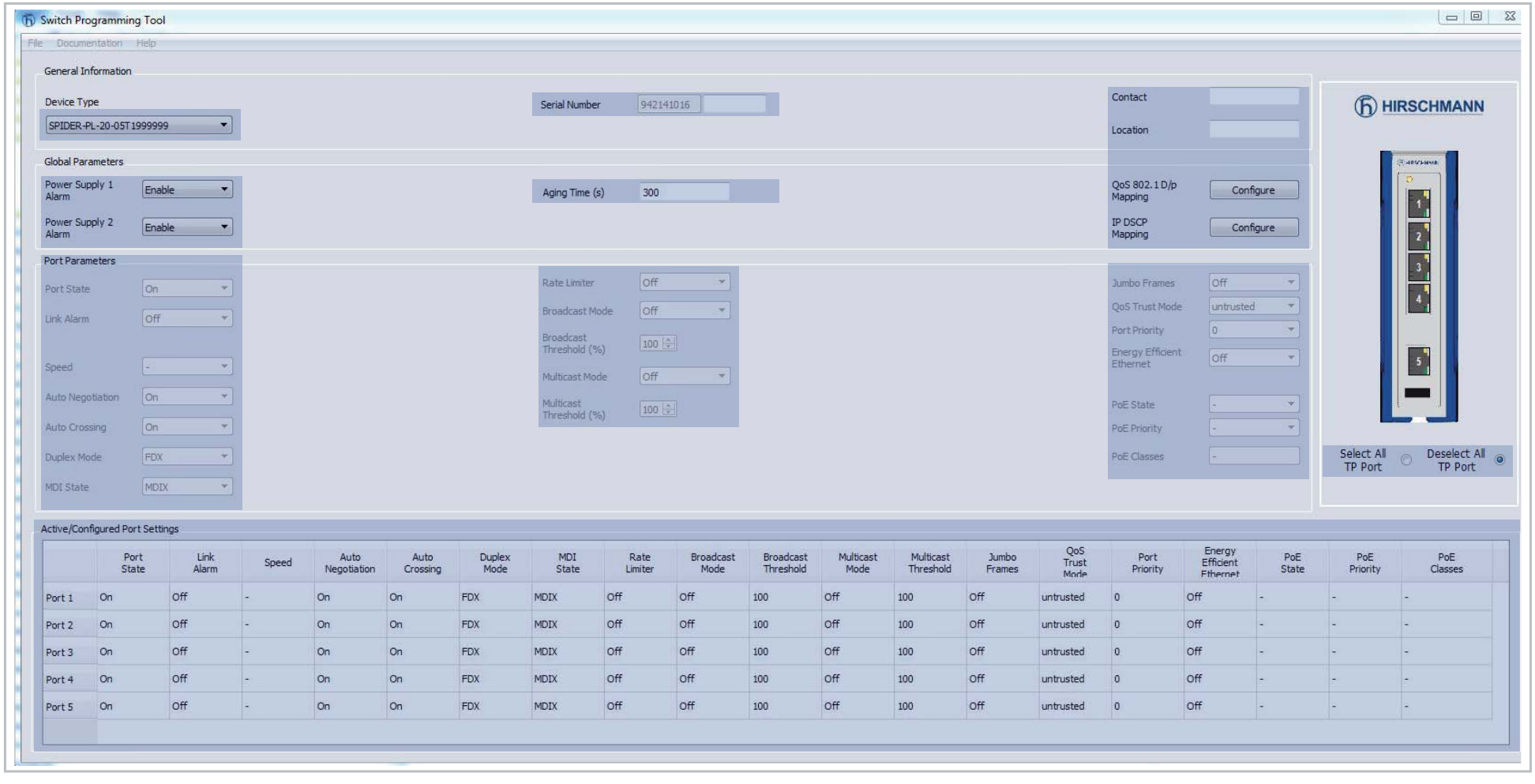
Perform the following work steps:
☐ Connect a storage medium to your PC.
☐ Start the Switch Programming Tool.



☐ Select your device variant from the drop-down list “Device Type”.

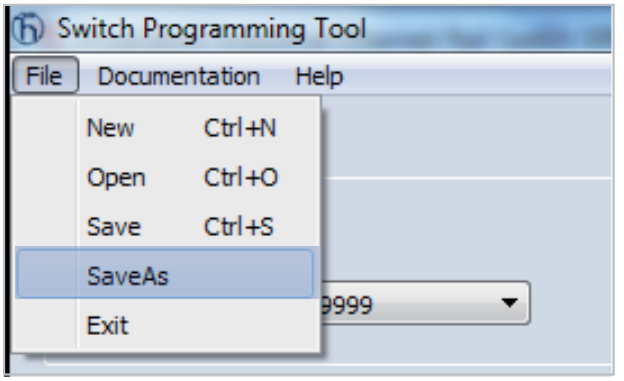


☐ Modify the parameters in the highlighted areas according to your requirements.



	Port State	Link Alarm	Speed	Auto Negotiation	Auto Crossing	Duplex Mode	MDI State	Rate Limiter	Broadcast Mode	Broadcast Threshold	Multicast Mode	Multicast Threshold	Jumbo Frames	QoS Trust Mode	Port Priority	Energy Efficient Ethernet	PoE State	PoE Priority	PoE Classes
Port 1	On	Off	-	On	On	FDX	MDIX	Off	Off	100	Off	100	Off	untrusted	0	Off	-	-	-
Port 2	On	Off	-	On	On	FDX	MDIX	Off	Off	100	Off	100	Off	untrusted	0	Off	-	-	-
Port 3	On	Off	-	On	On	FDX	MDIX	Off	Off	100	Off	100	Off	untrusted	0	Off	-	-	-
Port 4	On	Off	-	On	On	FDX	MDIX	Off	Off	100	Off	100	Off	untrusted	0	Off	-	-	-
Port 5	On	Off	-	On	On	FDX	MDIX	Off	Off	100	Off	100	Off	untrusted	0	Off	-	-	-

☐ Save the configuration file to the storage medium.



☐ Disconnect the storage medium from your PC.

▶ Transfer the configuration data to your device by following these steps:
☐ Verify that the device is switched off.
☐ Connect the storage medium to the device.
☐ Switch on the device.
▶ The SPIDER device reads the csv file on the storage medium and adopts the settings. During this time, the LED **“LS/DA”** flashes alternately in **yellow/green**.

	Parameter	Values	Default values		Comment
global	PSU alarm	PSU 1/2 enabled / disabled	PSU 1 / 2 enabled		
	Aging time	Aging time in s	300 s		
	QoS 802.1p mapping	VLAN Priority 0 ... 7 Traffic Class 0 ... 3	VLAN Priority 0 1 2 3 4 5 6 7	Traffic Class 1 0 0 1 2 2 3 3	
	QoS DSCP mapping	DSCP value 0 ... 63 Traffic Class 0 ... 3	See “DSCP mapping table” on page 47.		
per port	Flow control	enabled / disabled	disabled		
	Port admin state	enabled / disabled	enabled		
	Jumbo frames	enabled / disabled	disabled		Only on GE ports
	Broadcast storm protection	enabled / disabled	disabled		Ingress filtering
	Broadcast storm threshold	0% ... 100%	100%		
	Multicast storm protection	enabled / disabled	disabled		Ingress filtering
	Multicast storm threshold	0% ... 100%	100%		
	QoS Trust Mode	untrusted, trustDot1p, trustIpDscp	trustDot1		This also includes VLAN 0 mode for Profinet applications.
	Port based priority	0 .. 7	0		
	Link alarm	enabled / disabled	disabled		

Table 8: Configuration parameters

	Parameter	Values	Default values	Comment
per TP port	Autonegotiation	enabled / disabled	enabled	
	Speed	100 Mbit/s, 10 Mbit/s	100 Mbit/s	Only if autonegotiation is disabled, no forced mode 1000 Mbit/s
	Duplex mode	FDX / HDX	FDX	Only if autonegotiation is disabled
	Autocrossing	enabled / disabled	enabled	Only if autonegotiation is disabled
	MDI state	MDI-X	MDI-X	Only if autonegotiation is disabled
	EEE	enabled / disabled	disabled	Only for GE ports
per Fiber port	Duplex mode	FDX / HDX	FDX	

Table 8: Configuration parameters

d2/d1	0	1	2	3	4	5	6
0:	1	0	0	1	2	3	3
1:	1	0	0	1	2	3	3
2:	1	0	0	2	2	3	3
3:	1	0	0	2	2	3	3
4:	1	0	1	2	2	3	
5:	1	0	1	2	2	3	
6:	1	0	1	2	2	3	
7:	1	0	1	2	2	3	
8:	0	0	1	2	3	3	
9:	0	0	1	2	3	3	

Table 9: DSCP mapping table

5.1 Configuration readout

You can read out the configuration using a storage medium.
Perform the following work steps:

☐ Create a text file in the root directory of the storage medium.
☐ Rename the text file to “**ShowRunningConfiguration.txt**”.
☐ Connect the storage medium to the device.
☐ Restart the device by disconnecting the power supply for a moment.

- When the text file “**ShowRunningConfiguration.txt**” in the root directory of the device is found, the device creates a file with the current configuration.
- You find this file in the root directory of the storage medium under the name “**RunningConfig.txt**”.

6 Monitoring the ambient air temperature

Operate the device below the specified maximum ambient air temperature exclusively.
See “General technical data” on page 54.

The ambient air temperature is the temperature of the air at a distance of 5 cm (2 in) from the device. It depends on the installation conditions of the device, for example the distance from other devices or other objects, and the output of neighboring devices.

7 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.
- Relays are subject to natural wear. This wear depends on the frequency of the switching operations. Check the resistance of the closed relay contacts and the switching function depending on the frequency of the switching operations.
- 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 find information on settling complaints on the Internet at http://www.beldensolutions.com/en/Service/Repairs/index.phtml.

8 Disassembly

8.1 Removing an SFP transceiver (optional)

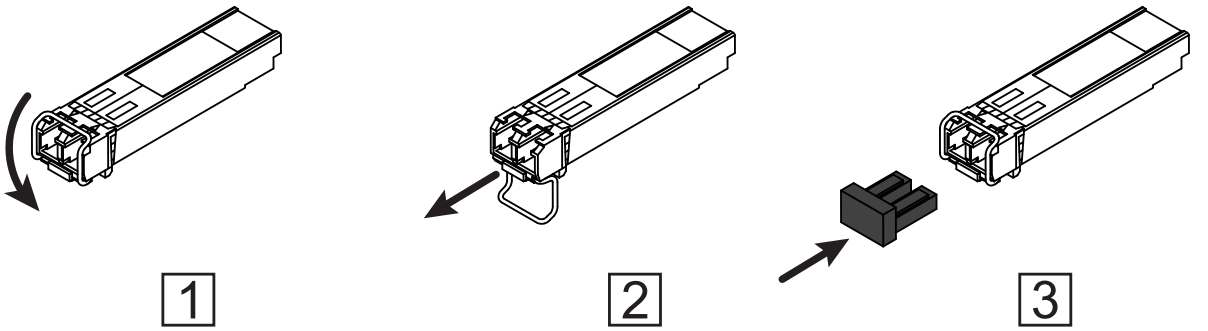


Figure 4: De-installing SFP transceivers: De-installation sequence

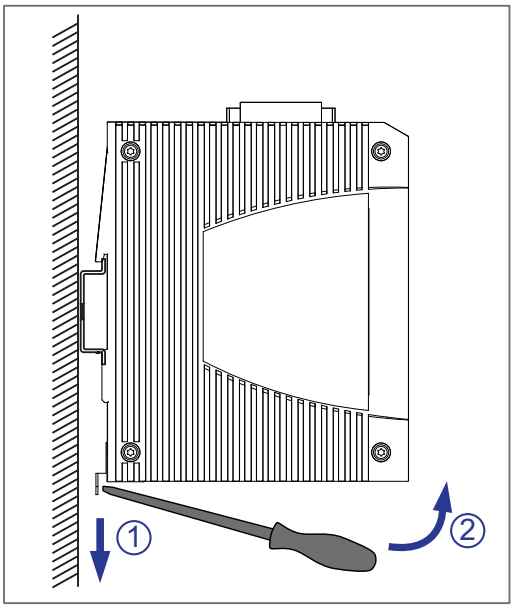
Perform the following work steps:
☐ Open the locking mechanism of the SFP transceiver (1).
☐ Pull the SFP transceiver out of the slot via the open locking mechanism (2).
☐ Close the SFP transceiver with the protection cap (3).

8.2 Removing the device

⚠ WARNING
ELECTRIC SHOCK Disconnect the grounding only after disconnecting all other cables. **Failure to follow this instruction can result in death, serious injury, or equipment damage.**

To prepare the deinstallation, perform the following work steps:
☐ Disconnect the data cables.
☐ Disable the supply voltage.
☐ Disconnect the terminal blocks.
☐ Disconnect the grounding.

To remove the device from the DIN rail, perform the following work steps:
☐ Insert a screwdriver horizontally below the casing into the locking gate.
☐ Without tilting the screwdriver, pull the locking gate down and tilt the device upwards.



Device variants SPIDER PL-20-16T1... , SPIDER PL-20-24T1... , SPIDER PL-30-24T1...

⚠ WARNING

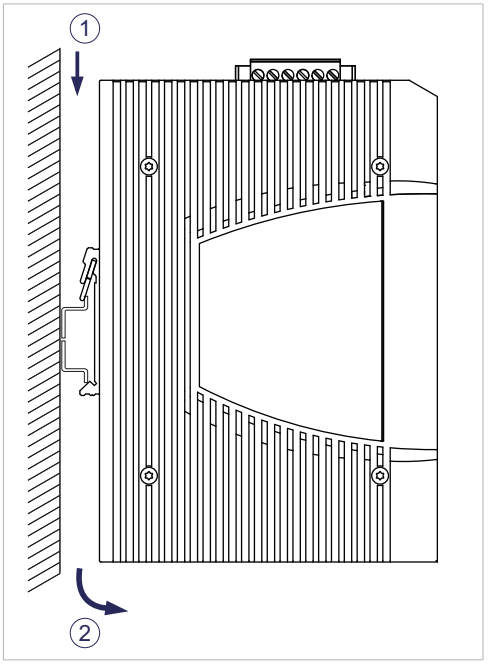
ELECTRIC SHOCK

Disconnect the grounding only after disconnecting all other cables.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

To prepare the deinstallation, perform the following work steps:
☐ Disconnect the data cables.
☐ Disable the supply voltage.
☐ Disconnect the terminal blocks.
☐ Disconnect the grounding.

To remove the device from the DIN rail, perform the following work steps:
☐ Press the device downwards and pull it out from under the DIN rail.


1
2

9 Technical data

9.1 General technical data

Dimensions W × H × D	SPIDER-PL-20...	See “Dimension drawings” on page 57.
	SPIDER-PL-30...	
	SPIDER-PL-40...	
Weight	SPIDER-PL-20-05T1999999TY9HHHH	400 g (14.11 oz)
	SPIDER-PL-20-01T1M29999TY9HHHH	390 g (13.7 oz)
	SPIDER-PL-20-01T1S29999TY9HHHH	390 g (13.7 oz)
	SPIDER-PL-20-04T1M29999TY9HHHH	430 g (13.83 oz)
	SPIDER-PL-20-04T1M49999TY9HHHH	400 g (14.11 oz)
	SPIDER-PL-20-04T1S29999TY9HHHH	400 g (14.11 oz)
	SPIDER-PL-20-06T1Z6Z6Z6TY9HHHH	530 g (18.70 oz)
	SPIDER-PL-20-07T1S2S299TY9HHHH	510 g (17.99 oz)
	SPR20-7TX/2FS-EEC	510 g (17.99 oz)
	SPIDER-PL-20-07T1M2M299TY9HHHH	510 g (17.99 oz)
	SPR20-7TX/2FM-EEC	510 g (17.99 oz)
	SPIDER-PL-20-08T1M29999TY9HHHH	500 g (17.64 oz)
	SPR20-8TX/1FM-EEC	500 g (17.64 oz)
	SPIDER-PL-20-08T1S29999TY9HHHH	500 g (17.64 oz)
	SPIDER-PL-20-08T1999999TY9HHHH	430 g (13.83 oz)
	SPR20-8TX-EEC	430 g (13.83 oz)
	SPIDER-PL-20-16T1999999TZ9HHHV	986 g (34.7 oz)
	SPIDER-PL-20-24T1Z6Z699TZ9HHHV	1140 g (40.2 oz)
	SPIDER-PL-30-24T1O6O699TZ9HHHV	1140 g (40.2 oz)
	SPIDER-PL-40-01T1O69999TY9HHHH	400 g (14.11 oz)
	SPR40-1TX/1SFP-EEC	400 g (14.11 oz)
	SPR40-1TX/1SFP-EEC-HO	400 g (14.11 oz)
	SPIDER-PL-40-04T1O69999TY9HHHH	415 g (14.6 oz)
	SPIDER-PL-40-05T1999999TY9HHHH	410 g (14.46 oz)
	SPIDER-PL-40-08T1999999TY9HHHH	450 g (14.48 oz)
	SPR40-8TX-EEC	450 g (14.48 oz)

Power supply	Configuration: Hirschmann standard (characteristic value HH)	Rated voltage	12 V DC ... 24 V DC
		Voltage range incl. maximum tolerances	9.6 V DC ... 32 V DC
	Configuration: Extended voltage range (characteristic value HV)	Rated voltage	12 V DC ... 48 V DC 24 V AC
		Voltage range incl. maximum tolerances	9.6 V DC ... 60 V DC 18 V AC ... 30 V AC
	Connection type	6-pin terminal block, characteristic value HH	Tightening torque 0.51 Nm (4.5 lb-in)
		6-pin voltage terminal with spring, characteristic value HK	
	Power loss buffer		>10 ms
	Limited power source (LPS) according to IEC 60950-1 or ES1 + PS2 according to IEC/ EN 62368-1	without back-up fuse	
	Safety Extra-low Voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/ EN 62368-1	with back-up fuse	
		Configuration: Hirschmann standard (characteristic value HH)	Nominal rating: 4 A Characteristic: slow blow
		Configuration: Extended voltage range (characteristic value HV)	Nominal rating: 2 A Characteristic: slow blow
Signal contact “FAULT”	Switching current		max. 1 A SELV according to IEC 60950-1 or ES1 according to IEC/ EN 62368-1
	Switching voltage		max. 60 V DC or max. 30 V AC SELV according to IEC 60950-1 or ES1 according to IEC/ EN 62368-1
Climatic conditions during operation	Ambient air temperature[a]		-40 °C ... +70 °C (-40 °F ... +158 °F) Derating[b,c]
	Humidity		10 % ... 95 %
	Air pressure		min. 700 hPa (+3000 m ASL; +9842 ft ASL)

Climatic conditions during storage	Ambient air temperature[a]	-40 °C ... +85 °C (-40 °F ... +185 °F)
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure	min. 700 hPa (+3000 m ASL; +9842 ft ASL)
Pollution degree		2
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection	IP40

a. Temperature of the ambient air at a distance of 5 cm (2 in) from the device
b. For the device variant SPIDER PL-20-06T1Z6Z6Z6..., the maximum permitted ambient air temperature has to be reduced to +60 °C (+140 °F).
c. For device variants SPR20-7TX/2FM-EEC, SPR20-7TX/2FS-EEC and SPR20-8TX/1FM-EEC, the maximum permitted ambient air temperature has to be reduced to +65 °C (+149 °F).

9.2 Dimension drawings

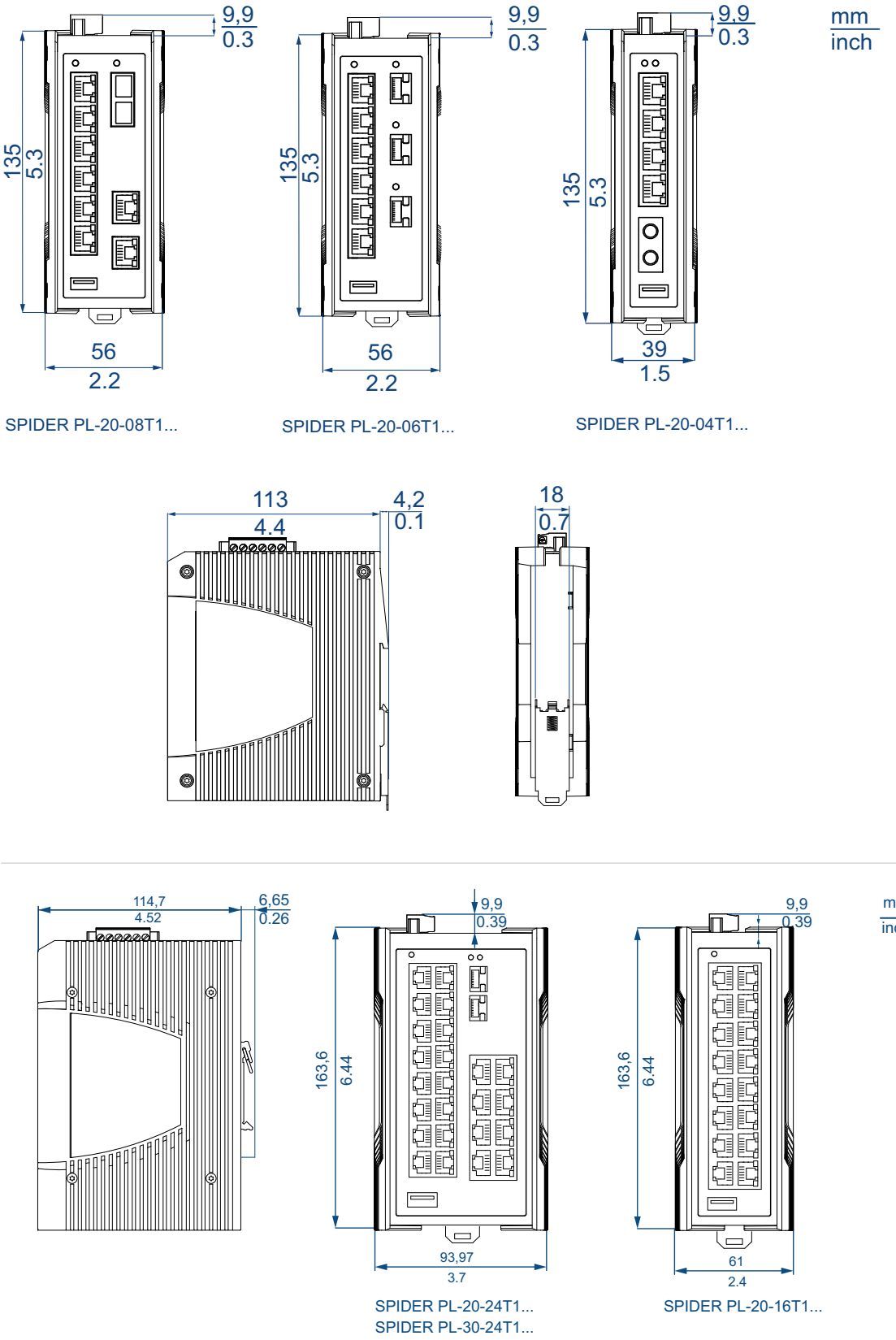


Figure 5: Dimensions of device variants SPIDER PL-20... and SPIDER PL-30...

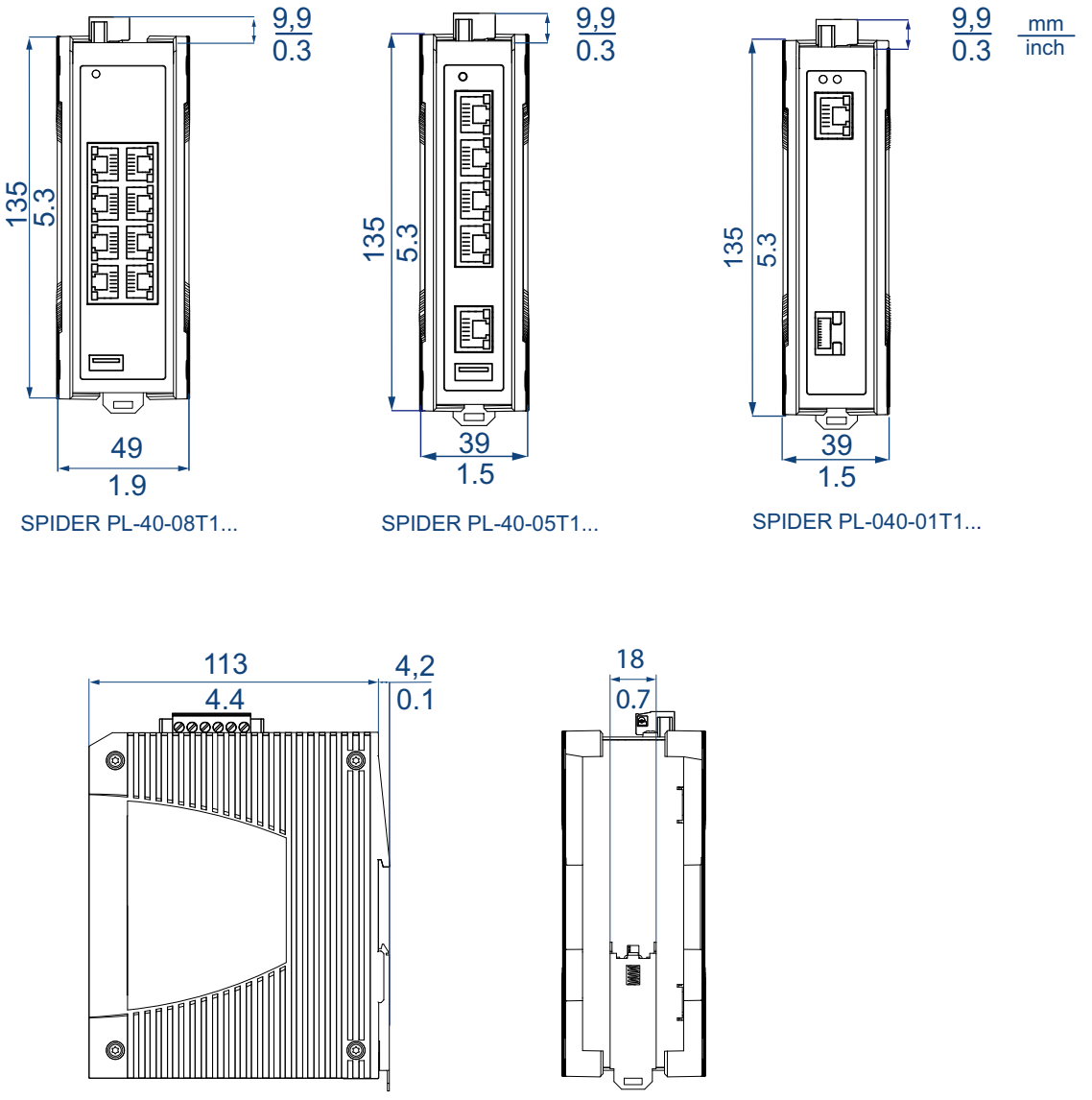


Figure 6: Dimensions of device variants SPIDER-PL-40...

9.3 Immunity

Immunity		Standard applications[a]	Marine applications[b]	Railway applications (trackside)[c]	Sub-station applications[d]
IEC 60068-2-6, test Fc	Vibration	5 Hz ... 8.4 Hz with 3.5 mm (0.14 in) amplitude	2 Hz ... 13.2 Hz with 1 mm (0.04 in) amplitude	—	2 Hz ... 9 Hz with 3 mm (0.11 in) amplitude
		8.4 Hz ... 150 Hz with 1 g	13.2 Hz ... 200 Hz with 0.7 g	—	9 Hz ... 200 Hz with 1 g
		—	—	—	200 Hz ... 500 Hz with 1.5 g
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms	—	—	10 g at 11 ms

9.4 Electromagnetic compatibility (EMC)

Note: Use shielded data cables for gigabit transmission via copper cables. Use shielded data cables for all transmission rates to meet the requirements according to EN 50121-4 and marine applications.

EMC interference emission		Standard applications[a]	Marine applications[b]	Railway applications (trackside)[c]	Sub-station applications[d]
Radiated emission					
EN 55032		Class A	Class A	Class A	Class A
DNV Guidelines		—	EMC 1	—	—
FCC 47 CFR Part 15		Class A	Class A	Class A	Class A
EN 61000-6-4		Fulfilled	Fulfilled	Fulfilled	Fulfilled
Conducted emission					
EN 55032	Supply connection	Class A	Class A	Class A	Class A
DNV Guidelines	Supply connection	—	EMC 1	—	—
FCC 47 CFR Part 15	Supply connection	Class A	Class A	Class A	Class A
EN 61000-6-4	Supply connection	Fulfilled	Fulfilled	Fulfilled	Fulfilled
EN 55032	Telecommunication connections	Class A	Class A	Class A	Class A
EN 61000-6-4	Telecommunication connections	Fulfilled	Fulfilled	Fulfilled	Fulfilled

a. EN 61131-2, CE, FCC – applies to all devices
b. Merchant Navy – applies to devices with the approval codes UY, WV, WW
c. EN 50121-4 – applies to devices with the approval codes TY, WV, WW
d. EN 61850-3, IEEE 1613 – applies to devices with the approval codes WW

EMC interference immunity		Standard applications[a]	Marine applications[b]	Railway applications (trackside)[c]	Sub-station applications[d]
Electrostatic discharge					
EN 61000-4-2 IEEE C37.90.3	Contact discharge	±4 kV	±6 kV	±6 kV	±8 kV
EN 61000-4-2 IEEE C37.90.3	Air discharge	±8 kV	±8 kV	±8 kV	±15 kV
Electromagnetic field					
EN 61000-4-3		max. 10 V/m	max. 10 V/m	max. 20 V/m	max. 10 V/m
IEEE 1613		—	—	—	max. 35 V/m
Fast transients (burst)					
EN 61000-4-4 IEEE C37.90.1	Supply connection	±2 kV	±2 kV	±2 kV	±4 kV
EN 61000-4-4 IEEE C37.90.1	Data line	±4 kV	±4 kV	±2 kV	±4 kV
Voltage surges - DC supply connection					
EN 61000-4-5	line/ground	±2 kV	±2 kV	±2 kV	±2 kV
IEEE 1613	line/ground	—	—	—	±5 kV
EN 61000-4-5	line/line	±1 kV	±1 kV	±1 kV	±1 kV
Voltage surges - data line					
EN 61000-4-5	line/ground	±1 kV	±1 kV	±2 kV	±2 kV
Conducted disturbances					
EN 61000-4-6	150 kHz ... 80 MHz	10 V	10 V	10 V	10 V
Damped oscillation – DC supply connection					
EN 61000-4-12 IEEE C37.90.1	line/ground	—	—	—	2.5 kV
EN 61000-4-12 IEEE C37.90.1	line/line	—	—	—	1 kV
Damped oscillation – data line					
EN 61000-4-12 IEEE C37.90.1	line/ground	—	—	—	2.5 kV

EMC interference immunity		Standard applications[a]	Marine applications[b]	Railway applications (trackside)[c]	Sub-station applications[d]
EN 61000-4-12	line/line	—	—	—	±1 kV
Pulse magnetic field					
EN 61000-4-9		—	—	300 A/m	—

9.5 Network range

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

Product code M-SFP-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP[c]/Dispersion
-SX/LC...	MM	850 nm	50/125 µm	0 dB ... 7.5 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	3.0 dB/km	400 MHz×km
-SX/LC...	MM	850 nm	62.5/125 µm	0 dB ... 7.5 dB	0 km ... 0.275 km (0 mi ... 0.17 mi)	3.2 dB/km	200 MHz×km
-MX/LC EEC	MM	1310 nm	50/125 µm	0 dB ... 12 dB	0 km ... 1.5 km (0 mi ... 0.93 mi)	1.0 dB/km	800 MHz×km
-MX/LC EEC	MM	1310 nm	62.5/125 µm	0 dB ... 12 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	1.0 dB/km	500 MHz×km
-LX/LC...	MM	1310 nm[d]	50/125 µm	0 dB ... 10.5 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	1.0 dB/km	800 MHz×km
-LX/LC...	MM	1310 nm[e]	62.5/125 µm	0 dB ... 10.5 dB	0 km ... 0.55 km (0 mi ... 0.34 mi)	1.0 dB/km	500 MHz×km
-LX/LC...	SM	1310 nm	9/125 µm	0 dB ... 10.5 dB	0 km ... 20 km (0 mi ... 12.43 mi)[f]	0.4 dB/km	3.5 ps/(nm×km)
-LX+/LC...	SM	1310 nm	9/125 µm	5 dB ... 20 dB	14 km ... 42 km (8.70 mi ... 26.10 mi)	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	LH	1550 nm	9/125 µm	5 dB ... 22 dB	23 km ... 80 km (14.29 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)

Table 10: F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

Product code M-SFP-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP[c]/Dispersion
-LH+/LC	LH	1550 nm	9/125 µm	15 dB ... 30 dB	71 km ... 108 km (44.12 mi ... 67.11 mi)	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH	1550 nm	9/125 µm	15 dB ... 30 dB	71 km ... 128 km (44.12 mi ... 79.54 mi)	0.21 dB/ km (typically)	19 ps/(nm×km)

Table 10: F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.
c. Using the bandwidth-length product is inappropriate for expansion calculations.
d. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).
e. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).
f. Including 2.5 dB system reserve when compliance with the fiber data is observed.

Product code M-SFP-BIDI...	Mode[a]	Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	Dispersion
Type A LX/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0 dB ... 11 dB	0 km ... 20 km (0 mi ... 12.43 mi)	0.4 dB/km	3.5 ps/(nm×km)
Type B LX/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0 dB ... 11 dB	0 km ... 20 km (0 mi ... 12.43 mi)	0.25 dB/km	19 ps/(nm×km)
Type A LH/LC EEC	LH	1490 nm	1590 nm	9/125 µm	5 dB ... 24 dB	23 km ... 80 km (14.29 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)
Type B LH/LC EEC	LH	1590 nm	1490 nm	9/125 µm	5 dB ... 24 dB	23 km ... 80 km (14.29 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)

Table 11: F/O port (bidirectional Gigabit Ethernet SFP transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.

Product code M-FAST-SFP-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP/Dispersion
-MM/LC...	MM	1310 nm	50/125 µm	0 dB ... 8 dB	0 km ... 5 km (0 mi ... 3.11 mi)	1.0 dB/km	800 MHz×km
-MM/LC...	MM	1310 nm	62.5/125 µm	0 dB ... 11 dB	0 km ... 4 km (0 mi ... 2.49 mi)	1.0 dB/km	500 MHz×km
-SM/LC...	SM	1310 nm	9/125 µm	0 dB ... 13 dB	0 km ... 25 km (0 mi ... 15.53 mi)	0.4 dB/km	3.5 ps/(nm×km)
-SM+/LC...	SM	1310 nm	9/125 µm	10 dB ... 29 dB	25 km ... 65 km (15.53 mi ... 40.39 mi)	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	SM	1550 nm	9/125 µm	10 dB ... 29 dB	47 km ... 104 km (29.20 mi ... 64.62 mi)	0.25 dB/km	19 ps/(nm×km)
-LH/LC...	SM	1550 nm	9/125 µm	10 dB ... 29 dB	55 km ... 140 km (14.29 mi ... 86.99 mi)	0.18 dB/km[c]	18 ps/(nm×km)

Table 12: Fiber port 100BASE-FX (SFP fiber optic Fast Ethernet Transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.
c. With ultra-low-loss optical fiber.

Product code	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP/Dispersion
-M2, -M4	MM	1300 nm	50/125 µm	0 dB ... 8 dB	0 km ... 5 km (0 mi ... 3.11 mi)	1.0 dB/km	800 MHz×km

Table 13: F/O port 100BASE-FX (DSC/DST fiber optic Fast Ethernet Transceiver)

Product code	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP/Dispersion
-M2, -M4	MM	1300 nm	62.5/125 µm	0 dB ... 11 dB	0 km ... 4 km (0 mi ... 2.49 mi)	1.0 dB/km	500 MHz×km
-S2	SM	1300 nm	9/125 µm	0 dB ... 16 dB	0 km ... 30 km (0 mi ... 18.64 mi)	0.4 dB/km	3.5 ps/(nm×km)

Table 13: F/O port 100BASE-FX (DSC/DST fiber optic Fast Ethernet Transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Including 3 dB system reserve when compliance with the fiber data is observed.

10/100/1000 Mbit/s twisted pair port	
Length of a twisted pair segment	max. 100 m (328 ft) (for Cat5e cable)

Table 14: Network range: 10/100/1000 Mbit/s twisted pair port

9.6 Power consumption/power output

No.	Device name	Maximum power consumption	Maximum power output
1	SPIDER PL-20-01.....HH-..	3.8 W	13.1 Btu (IT)/h
2	SPIDER PL-20-01.....HV-..	4.4 W	15.1 Btu (IT)/h
3	SPIDER PL-20-04.....HH-..	4.3 W	14.7 Btu (IT)/h
4	SPIDER PL-20-04.....HV-..	4.9 W	16.7 Btu (IT)/h
5	SPIDER PL-20-05.....HH-..	2.4 W	8.0 Btu (IT)/h
6	SPIDER PL-20-05.....HV-..	3.0 W	10.4 Btu (IT)/h
7	SPIDER PL-20-06.....HH-..	9.0 W	30.7 Btu (IT)/h
8	SPIDER PL-20-06.....HV-..	8.6 W	29.5 Btu (IT)/h
9	SPIDER PL-20-07.....HH-..	6.9 W	23.7 Btu (IT)/h
10	SPR20-7TX/2FM-EEC	5.1 W	17.4 Btu (IT)/h
11	SPR20-7TX/2FS-EEC	5.1 W	17.4 Btu (IT)/h
12	SPIDER PL-20-07.....HV-..	6.9 W	23.5 Btu (IT)/h
13	SPIDER PL-20-08...2.....HH-..	5.0 W	16.9 Btu (IT)/h
14	SPR20-8TX/1FM-EEC	4.1 W	14.0 Btu (IT)/h
15	SPIDER PL-20-08...2.....HV-..	5.2 W	17.7 Btu (IT)/h
16	SPIDER PL-20-08..99.....HH-..	2.6 W	8.8 Btu (IT)/h
17	SPR20_8TX-EEC	2.2 W	7.5 Btu (IT)/h
18	SPIDER PL-20-08..99.....HV-..	3.1 W	10.6 Btu (IT)/h
19	SPIDER PL-20-16..99.....HV-..	5.1 W	17.2 Btu (IT)/h
20	SPIDER PL-20-24..99.....HV-..	8.4 W	28.5 Btu (IT)/h
21	SPIDER PL-30-24..99.....HV-..	8.4 W	28.5 Btu (IT)/h
22	SPIDER PL-40-01.....HH-..	4.0 W	13.8 Btu (IT)/h
23	SPR40-1TX/1SFP-EEC	3.1 W	10.6 Btu (IT)/h
24	SPR40-1TX/1SFP-EEC-HO	3.1 W	10.6 Btu (IT)/h
25	SPIDER PL-40-01.....HV-..	4.7 W	21.0 Btu (IT)/h
26	SPIDER PL-40-04.....HH-..	5.9 W	20.0 Btu (IT)/h
27	SPIDER PL-40-04.....HV-..	6.1 W	21.0 Btu (IT)/h
28	SPIDER PL-40-05.....HH-..	4.3 W	14.8 Btu (IT)/h
29	SPIDER PL-40-05.....HV-..	5.0 W	17.0 Btu (IT)/h
30	SPIDER PL-40-08.....HH-..	6.0 W	20.4 Btu (IT)/h
31	SPR40-8TX-EEC	4.6 W	15.7 Btu (IT)/h
32	SPIDER PL-40-08.....HV-..	7.9 W	26.8 Btu (IT)/h

Table 15: Power consumption/power output of the device variants SPIDER PL-20... , SPIDER PL-30... and SPIDER PL-40... .

10 Scope of delivery, order numbers and accessories

Scope of delivery

Number	Scope of delivery
1 ×	Device
1 ×	Terminal block for supply voltage and signal contact
1 ×	Safety and general information sheet

Order number

Device	Order number
SPIDER PL-20-01T1M29999TY9HHHH	942141022
SPIDER PL-20-01T1S29999TY9HHHH	942141023
SPIDER PL-20-04T1M29999TY9HHHH	942141024
SPIDER PL-20-04T1M49999TY9HHHH	942141025
SPIDER PL-20-04T1S29999TY9HHHH	942141026
SPIDER PL-20-05T1999999TY9HHHH	942141016
SPIDER PL-20-06T1Z6Z6Z6TY9HHHH	942141027
SPIDER PL-20-07T1M2M299TY9HHHH	942141030
SPIDER PL-20-07T1S2S299TY9HHHH	942141031
SPIDER PL-20-08T1M29999TY9HHHH	942141028
SPR20-8TX/1FM-EEC	942335028
SPIDER PL-20-08T1999999TY9HHHH	942141017
SPR20-8TX-EEC	942335017
SPIDER PL-20-08T1S29999TY9HHHH	942141029
SPIDER PL-20-16T1999999TZ9HHHV	942141018
SPIDER PL-20-24T1Z6Z699TZ9HHHV	942141032
SPIDER PL-40-01T1O69999TY9HHHH	942141033
SPR40-1TX/1SFP-EEC	942335033
SPR40-1TX/1SFP-EEC-HO	942335501
SPIDER PL-40-04T1O69999TY9HHHH	942141034
SPIDER PL-40-05T1999999TY9HHHH	942141019
SPIDER PL-40-08T1999999TY9HHHH	942141020
SPR40-8TX-EEC	942335020
SPIDER PL-20-01T1M29999TX9HHHH	942141122
SPIDER PL-20-01T1S29999TX9HHHH	942141123
SPIDER PL-20-04T1M29999TX9HHHH	942141124
SPIDER PL-20-04T1M49999TX9HHHH	942141125
SPIDER PL-20-04T1S29999TX9HHHH	942141126
SPIDER PL-20-05T1999999TX9HHHH	942141116
SPIDER PL-20-06T1Z6Z6Z6TX9HHHH	942141127
SPIDER PL-20-07T1M2M299TX9HHHH	942141130
SPR20-7TX/2FM-EEC	942335030
SPIDER PL-20-07T1S2S299TX9HHHH	942141131
SPR20-7TX/2FS-EEC	942335031

Device	Order number
SPIDER PL-20-08T1M29999TX9HHHH	942141128
SPIDER PL-20-08T1999999TX9HHHH	942141117
SPIDER PL-20-08T1S29999TX9HHHH	942141129
SPIDER PL-40-01T1O69999TX9HHHH	942141133
SPIDER PL-40-04T1O69999TX9HHHH	942141134
SPIDER PL-40-05T1999999TX9HHHH	942141119
SPIDER PL-40-08T1999999TX9HHHH	942141120

Accessories

Note that products recommended as accessories may have different characteristics to those of the device, which may limit the application range of the overall system. For example, if you add an accessory with IP20 to a device with IP65, the degree of protection of the overall system is reduced to IP20.

Other accessories	Order number
6-pin terminal block (50 pcs.)	943 845-013
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
Wall mounting plate for DIN rail mounting, width 40 mm (1.58 in)	942 177-001
Wall mounting plate for DIN rail mounting, width 70 mm (2.76 in)	942 177-002

Note: To operate the device in the maximum permitted ambient air temperature as mentioned in “General technical data” on page 54, exclusively use the EEC variants of the SFP transceivers listed below. When using listed below SFP transceivers without EEC rating, the maximum permitted ambient air temperature during operation of the SPIDER-PL has to be reduced by 15 K.

Fast-Ethernet-SFP-Transceiver	Order number
M-FAST SFP-TX/RJ45	942 098-001
M-FAST SFP-TX/RJ45 EEC	942 098-002
M-FAST SFP-MM/LC	943 865-001
M-FAST SFP-MM/LC EEC	943 945-001
M-FAST SFP-SM/LC	943 866-001
M-FAST SFP-SM/LC EEC	943 946-001
M-FAST SFP-SM+/LC	943 867-001
M-FAST SFP-SM+/LC EEC	943 947-001
M-FAST SFP-LH/LC	943 868-001
M-FAST SFP-LH/LC EEC	943 948-001
SFP-FAST-MM/LC[a]	942 194-001
SFP-FAST-MM/LC EEC[a]	942 194-002
SFP-FAST-SM/LC[a]	942 195-001
SFP-FAST-SM/LC EEC[a]	942 195-002

Fast-Ethernet-SFP-Transceiver	Order number
SFP-FAST-BA MM/LC EEC	942 204-001
SFP-FAST-BB MM/LC EEC	942 204-002
SFP-FAST-BA SM/LC EEC	942 205-001
SFP-FAST-BB SM/LC EEC	942 205-002
SFP-FAST-BA SM+/LC EEC	942 206-001
SFP-FAST-BB SM+/LC EEC	942 206-002

a. You find further information on certifications on the Internet at the Hirschmann product pages (www.hirschmann.com).

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

Table 16: Accessory: Bidirectional Gigabit Ethernet SFP transceiver

Gigabit Ethernet SFP transceiver	Order number
M-SFP-TX/RJ45	943 977-001
M-SFP-TX/RJ45 EEC	943 161-001
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
M-SFP-LH+/LC EEC	943 119-001
SFP-GIG-LX/LC[a]	942 196-001
SFP-GIG-LX/LC EEC[a]	942 196-002
SFP-GIG-BA LX/LC EEC	942 207-001
SFP-GIG-BB LX/LC EEC	942 207-002
SFP-GIG-BA LX+/LC EEC	942 208-001
SFP-GIG-BB LX+/LC EEC	942 208-002
SFP-GIG-BA LH/LC EEC	942 209-001
SFP-GIG-BB LH/LC EEC	942 209-002

a. You find further information on certifications on the Internet at the Hirschmann product pages (www.hirschmann.com).

11 Underlying technical standards

Standard	
ATEX (2014/34/EU)	ATEX – Intended use of equipment and protection systems in potentially explosive areas.
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
CAN/CSA C22.2 No. 213	Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations.
ANSI/ISA 12.12.01	Non-incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
UN/ECE No. 10	E type approval for use in vehicles
FCC 47 CFR Part 15	Code of Federal Regulations
DNV-CG-0339	Environmental test specification for electrical, electronic and programmable equipment and systems.
IEC/EN 61850-3	Communication networks and systems for power utility automation - Part 3: General requirements.
IEC 60825-1	Laser product safety
IEEE 1613	IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations
EN 50121-4	Railway applications – EMC – Emission and immunity of the signaling and telecommunications apparatus (Rail Trackside)
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
IEC/EN 62368-1	Equipment for audio/video, information and communication technology - Part 1: safety requirements
IEC 60950-1	Information technology equipment – Safety – Part 1: General requirements
EN 60950-22	Installations of IT equipment – Security – Part 22: Outdoor equipments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment
NEMA TS 2	Traffic Controller Assemblies with NTCIP Requirements (environmental requirements)
RCM	Australian Regulatory Compliance Mark (RCM) Australian Radiocommunications Standard 2008, Radiocommunications Act 1992

Table 17: List of the technical standards

The device has an approval based on a specific standard exclusively if the approval indicator appears on the device casing.
If your device has a shipping approval according to DNV, 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 at www.hirschmann.com in the product information.

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Version: 3.25.0
Source Link: https://www.microchip.com/en-us/tools-resources/develop/libraries/advanced-software-framework

Component Name: BSD-style license
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Version: R0.09
Source Link: http://elm-chan.org/fsw/ff/archives.html

Component Name: ARM Cortex Microcontroller Software Interface Standard (CMSIS)
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