HIRSCHMANN
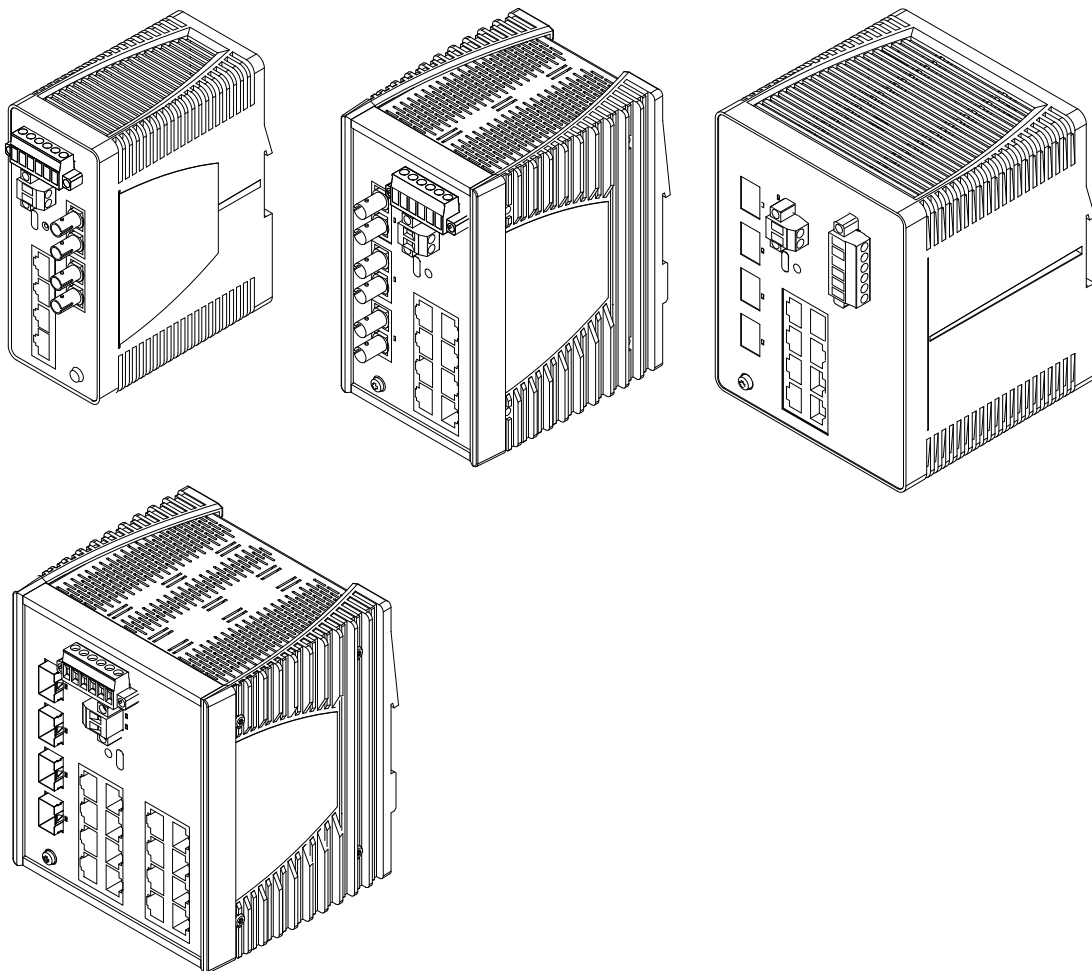A **BELDEN** BRAND

User Manual

Installation
Industrial Ethernet BOBCAT Rail Switch
BRS Family

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

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

<table>
<tr><td colspan="2" align="center">⚠ **WARNING**</td></tr>
<tr><td colspan="2">

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.
Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

Failure to follow this instruction can result in death, serious injury, or equipment damage.
</td></tr>
</table>

■ 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 product only for the application cases described in the Hirschmann product information, including this manual.
☐ Operate the product only according to the technical specifications. See "Technical data" on page 62.
☐ Connect to the product only components suitable for the requirements of the specific application case.

▪ Installation site requirements

⚠ **WARNING**

FIRE HAZARD

If you connect the device to a power supply that does **NOT** meet the requirements for Limited Power Source, NEC Class 2 or PS2 according to IEC/EN 62368-1 and is **NOT** limited to 100 W output power, the device must be installed in either a switch cabinet or other fire enclosure.

The fire enclosure can be made of metal or plastic with fire-protection properties of at least V-1 according to IEC 60695-11-10. Bottom openings of the fire enclosure must **NOT** exceed 2 mm in diameter.

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

☐ Install this device only in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.
☐ When you are selecting the installation location, make sure you observe the climatic threshold values specified in the technical data.
☐ Use the device in an environment with a maximum pollution degree that complies with the specifications in the technical data.

▪ 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.

■ **Shielding ground**
The shielding ground of the connectable twisted pair cables is connected to the ground connection as a conductor.

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

■ **Grounding the device**
The device is grounded via the separate ground screw. The grounding screw is located on the front right side of the device for narrow casing sizes. For the medium and wide casing sizes, the grounding screw is located at the bottom left of the front side of the device.
See "Dimension drawings" on page 80.

☐ Ground the device before connecting any other cables.

☐ Disconnect the grounding only after disconnecting all other cables.

■ **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.

⚠️ Only use power supply cables that are suitable for a temperature 20 °C (36 °F) higher than the maximum ambient air temperature at which the device is used. Only use copper wire.

■ 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 "Technical data" on page 62.

■ 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 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 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 wire diameter of the power supply cable is at least 0.75 mm² (North America: AWG18) on the supply voltage input.
The wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the supply voltage input for PoE device variants.
▶ The cross-section of the ground conductor is the same size as or bigger than the cross-section of the power supply cables.

Depending on the voltage input used (characteristic value F, T, U, P) and the supply voltage used (DC, AC), the following additional requirements apply:

Device variants featuring supply voltage with characteristic value F, T, U	**All** of the following requirements are complied with: Supply with DC voltage: ▶ There are fuses suitable for DC voltage in the positive conductors of the supply lines, or the voltage sources are appropriately current-limited. Regarding the properties of this fuse: See "Technical data" on page 62. ▶ The negative conductors of the voltage inputs are on ground potential.
Device variants featuring supply voltage with characteristic value F	**All** of the following requirements are complied with: Supply with AC voltage: ▶ There are fuses in the supply lines, or the voltage sources are appropriately current-limited. Regarding the properties of this fuse: See "Technical data" on page 62. ▶ The power sources are electrically isolated from the ground potential.

Prerequisites:	
Device variants featuring supply voltage with characteristic value P	**All** of the following requirements are complied with: ▶ There are fuses suitable for DC voltage in the positive conductors of the supply lines, or the voltage sources are appropriately current-limited. Regarding the properties of this fuse: See "Technical data" on page 62. ▶ The power sources are electrically isolated from the ground potential. According to specification IEEE-802.3, the insulation voltage must be 1500 V AC or 2250 V DC.

Note: The devices can be supplied either via one voltage input or redundantly via both voltage inputs.

■ **Supply voltage**
The supply voltage is connected to the device casing through protective elements exclusively.

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

■ **National and international safety regulations**
Verify that the electrical installation meets local or nationally applicable safety regulations.

■ **Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)**
This equipment is exclusively suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations.

This device is an open-type device that is to be installed in an enclosure suitable for the environment and accessible exclusively with the use of a tool.

Exclusively use the device for the application cases specified by the manufacturer. Failure to follow these instructions can impair device protection.

German	**WARNING** – Explosion Hazard – Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous. **WARNING** – Explosion Hazard – Substitution of any components may impair suitability for Class I, Division 2. The storage medium ACA22-USB-C (EEC) is mechanically secured to prevent the connection from being disconnected. In hazardous areas, exclusively operate the ACA22-USB-C (EEC) on the USB interface. A USB cable for configuring the device may only be used in a non-explosive area. **WARNING** – Connection or disconnection in an explosive atmosphere could result in an explosion.
French	**Avertissement** - Risque d'explosion - Ne pas débrancher tant que le circuit est sous tension à moins que l'emplacement soit connu pour ne contenir aucune concentration de gaz inflammable. **Avertissement** - Risque d'explosion - La substitution de tout composant peut rendre ce matériel incompatible pour une utilisation en classe I, division 2. Le dispositif de sauvegarde ACA22-USB-C (EEC) est fixé mécaniquement pour éviter toute déconnexion de la connexion. En environnement explosible, seul l'ACA22-USB-C (EEC) peut être utilisé sur l'interface USB-C. Un câble USB pour la configuration de l'équipement ne doit être utilisé que dans une zone non explosive. **Avertissement** - Le branchement ou le débranchement dans une atmosphère explosive peut entraîner une explosion.

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

Explosive Atmosphere
Class I, Division 2, Groups A, B,
C, D, T4 [**]
Hazardous Location

BRS - Industrial Ethernet
BOBCAT Rail Switch

Relay

USB

Relay contacts:
Equipment with nonincendive field wiring parameters.
Polarity is not relevant.

The relay terminals are dependent upon the following entity parameters [*]:

V max	I max	C_i	L_i
30 V	90 mA	2 nF	1 µH

The ACA22-USB-C (EEC) storage medium is mechanically secured to prevent disconnection.

A USB cable for configuration the device may exclusively be used in non-hazardous locations.

WARNING!
Connection or disconnection in an explosive atmosphere could result in an explosion.

(*) Associated apparatus:
The nonincendive field wiring circuit concept allows interconnection of nonincendive field wiring apparatus and associated nonincendive field wiring apparatus using any of the wiring methods permitted for unclassified locations when certain parametric conditions are met.

Capacity: $C_a \geq C_i + C_{Cable}$; Inductivity: $L_a \geq L_i + L_{Cable}$

(**) Temperature Code: T4
Ambient Temperature rating:
Ta: 0 °C to +60 °C for "S" or "C" temperature types
Ta: −40 °C to +70 °C for "T", "E" or "G" temperature types
(Refer to the type designation on the device.)

The maximum cable length has to be determined as follows:
  (a) max. cable length $< (L_a − L_i) / Cable_L$
    ("$Cable_L$" denotes the inductance per unit length of used cable)
    and
  (b) max. cable length $< (C_a − C_i) / Cable_C$
    ("$Cable_C$" denotes the capacitance per unit length of used cable)

  The lower value of (a) and (b) is to apply.
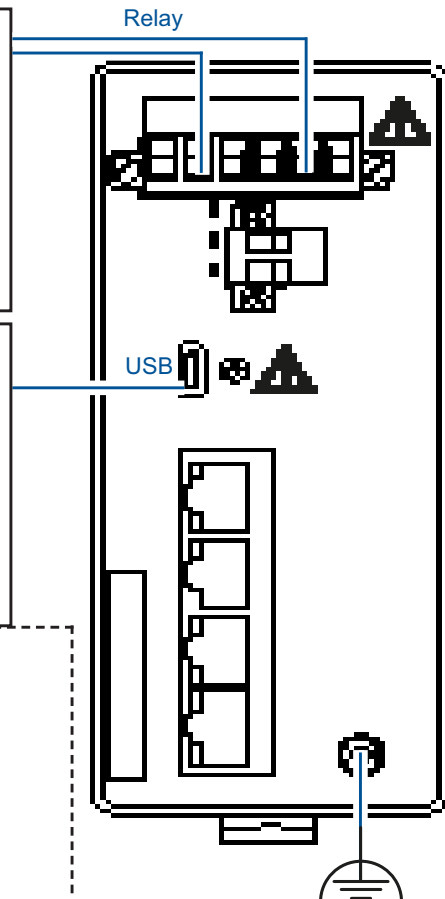
The earth conductor must be at least the same wire size (mm² or AWG) as the supply conductors of the supply voltage.

Control Drawing for BRS devices according to Class I, Division 2 Hazardous Locations		
Rev.: 4	Document No.: 000217023DNR	Page 1/2

For use in Hazardous Locations Class I, Division 2, Groups A, B, C, D:

Exclusively allowed for BRS model No´s which are individually labeled
 "**FOR USE IN HAZARDOUS LOCATIONS**".

This equipment is exclusively suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations.

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

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.

THIS IS AN OPEN-TYPE DEVICE THAT IS TO BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE ENVIRONMENT AND ACCESSIBLE EXCLUSIVELY WITH THE USE OF A TOOL.

Control Drawing for BRS devices according to Class I, Division 2 Hazardous Locations		
Rev.: 4	Document No.: 000217023DNR	Page 2/2

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

The following applies to BRS devices if you operate them in areas with explosive gases according to ATEX directive 2014/34/EU:

☐ 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:

⟨Ex⟩ **II 3G Ex ec nC IIC T4 Gc   DEKRA 20ATEX0134 X**

T4: 0 °C ≤ Ta ≤ +60 °C (+32 °F ≤ Ta ≤ +140 °F) for device types "S" or "C"
(Position 16 of the product code) or
T4: -40 °C ≤ Ta ≤ +70 °C (-40 °F ≤ Ta ≤ +158 °F) for device types "T", "E" or "G"
(Position 16 of the product code)

☐ The equipment is suitable for use in an area with maximum pollution degree 2, as defined in IEC 60664-1.

☐ The modules shall be installed in a suitable enclosure in accordance with IEC 60079-0 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.

☐ When the temperature under rated conditions exceeds +70 °C (+158 °F) at the cable or the conduit entry point, or +80 °C (+176 °F) at the branching point of the conductors, take measures so that the temperature specification of the selected cable and cable entries is in compliance with the actual measured temperature values.

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

⚠ When using ACA22-USB-C (EEC) on the USB interface, verify that the ACA22-USB-C (EEC) is mechanically secured with the fastening screw. Exclusively connect or disconnect the ACA22-USB-C (EEC) when it is voltage-free. In hazardous areas, exclusively operate the ACA22-USB-C (EEC) on the USB interface.

■ IECEx – Certification Scheme for Explosive Atmospheres

For BRS 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 20.0079 X

T4: 0 °C ≤ Ta ≤ +60 °C for "S" or "C" types
(position 16 of nomenclature breakdown) or
T4: -40 °C ≤ Ta ≤ +70 °C (-40 °F ≤ Ta ≤ +158 °F) for "T", "E" or "G" types
(position 16 of nomenclature breakdown)

☐ The equipment is suitable for use in an area with maximum pollution degree 2, as defined in IEC 60664-1.

☐ The modules shall be installed in a suitable enclosure according to EN 60079-0 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.

☐ When the temperature under rated conditions exceeds +70 °C (+158 °F) at the cable or conduit entry point, or +80 °C (+176 °F) at the branching point of the conductors, the temperature specification of the selected cable and cable entries shall be in compliance with the actual measured temperature values.

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

⚠️ When using the ACA22-USB-C (EEC) storage medium on the USB interface, verify that the ACA22-USB-C (EEC) is mechanically secured with the fastening screw. The ACA22-USB-C (EEC) shall be connected or disconnected exclusively in dead-voltage state. Only the ACA22-USB-C (EEC) may be operated on the USB-C interface in potentially explosive atmospheres.

- ■ **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 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.

    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 16.

  In accordance with the above-named EU directive(s), the EU conformity declaration will be available to 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 62

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

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.

■ FCC note

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

Industrial Ethernet BOBCAT Rail Switch
BRS Family

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 can choose from a wide range of variants. You have the option to set up your device individually based on different criteria:
- ▶ Number of ports
- ▶ Transmission speed
- ▶ Types of connectors
- ▶ Temperature range
- ▶ Supply voltage range
- ▶ Certifications
- ▶ Software level
- ▶ IP degree of protection: IP30 (plastic casing) or IP30/IP40 (metal casing)

Mounting the device
- ▶ Mounting on the DIN rail

You have the option of choosing various media to connect to the end devices and other network components:
- ▶ Twisted pair cable
- ▶ Multimode F/O
- ▶ Singlemode F/O

There are convenient options for managing the device. Manage your devices via:
- ▶ Web browser
- ▶ SSH
- ▶ Telnet
- ▶ Network management software (for example Industrial HiVision)
  The Network Management Software Industrial HiVision provides you with options for smooth configuration and monitoring. You find further information on the Internet at the Hirschmann product pages:
  http://www.hirschmann.com/en/QR/INET-Industrial-HiVision
- ▶ USB-C interface (locally on the device)

The device provides you with a large range of functions, which the manuals for the operating software inform you about. You can download these manuals as PDF files from the Internet at: https://www.doc.hirschmann.com

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.
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.

Item	Characteristic	Character istic value	Description		
1 ... 3	Product	BRS	BOBCAT Rail Switch		
4	Data rate	2	100 Mbit/s		
		3	100/1000 Mbit/s		
		4	1000 Mbit/s		
		5	1000/2500 Mbit/s		
5	Hardware type	0	Standard		
		1	Standard + MACSec		
		2	PoE		
		3	Standard + MACSec + PoE		
6	(hyphen)	–			
7 ... 8	Number: 100 Mbit/s ports	00	0 ×	10/100 Mbit/s ports	
		04	4 ×	10/100 Mbit/s ports	
		05	5 ×	10/100 Mbit/s ports	
		06	6 ×	10/100 Mbit/s ports	
		08	8 ×	10/100 Mbit/s ports	
		09	9 ×	10/100 Mbit/s ports	
		10	10 ×	10/100 Mbit/s ports	
		11	11 ×	10/100 Mbit/s ports	
		12	12 ×	10/100 Mbit/s ports	
		16	16 ×	10/100 Mbit/s ports	
		20	20 ×	10/100 Mbit/s ports	
		24	24 ×	10/100 Mbit/s ports	

Table 1:   Device name and product code

Item	Characteristic	Character istic value	Description	
9 ... 10	Number: 100/1000 Mbit/s ports and 1000/ 2500 Mbit/s ports	00	0 ×	100/1000 Mbit/s ports
		04	4 ×	100/1000 Mbit/s ports
		08	8 ×	100/1000 Mbit/s ports
		12	12 ×	100/1000 Mbit/s ports
		12	12 ×	8 × 100/1000-Mbit/s-Ports + 4 × 1000/ 2500 Mbit/s
		16	16 ×	100/1000 Mbit/s ports
		20	20 ×	100/1000 Mbit/s ports
		20	20 ×	16 × 100/1000-Mbit/s ports + 4 × 1000/ 2500 Mbit/s ports
		24	24 ×	100/1000 Mbit/s ports
		24	24 ×	20 × 100/1000-Mbit/s ports + 4 × 1000/ 2500 Mbit/s ports

Table 1:   Device name and product code

Item	Characteristic	Characteristic value	Description		
11 ... 12	Configuration of the first uplink ports	99	Identical to the standard ports or not configurable ▶ Standard ports for BRS20/22: 10/100 Mbit/s ▶ Standard ports for BRS40/42: 10/100/1000 Mbit/s		
		M2	1 ×	DSC multimode socket for 100 Mbit/s F/O connections	
		M4	1 ×	DST multimode socket for 100 Mbit/s fiber optic connections	
		S2	1 ×	DSC singlemode socket for 100 Mbit/s F/O connections	
		S4	1 ×	DST singlemode socket for 100 Mbit/s fiber optic connections	
		E2	1 ×	DSC singlemode (plus) socket for 100 Mbit/s fiber optic connections	
		L2	1 ×	DSC singlemode (LH) socket for 100 Mbit/s fiber optic connections	
		G2	1 ×	DSC singlemode (LH) socket for 100 Mbit/s fiber optic connections, 200 km	
		Z6	1 ×	SFP slot for 100 Mbit/s F/O connections	
		MM	2 ×	DSC multimode socket for 100 Mbit/s F/O connections	
		NN	2 ×	DST multimode socket for 100 Mbit/s fiber optic connections	
		VV	2 ×	DSC singlemode socket for 100 Mbit/s F/O connections	
		UU	2 ×	DST singlemode socket for 100 Mbit/s fiber optic connections	
		EE	2 ×	DSC singlemode (plus) socket for 100 Mbit/s fiber optic connections	
		LL	2 ×	DSC singlemode (LH) socket for 100 Mbit/s fiber optic connections	
		GG	2 ×	DSC singlemode (LH) socket for 100 Mbit/s fiber optic connections, 200 km	
		ZZ	2 ×	SFP slot for 100 Mbit/s F/O connections	
		OO	2 ×	SFP slot for 100/1000 Mbit/s F/O connections	
		2Q	2 ×	SFP slot for 100/1000/2500 Mbit/s fiber optic connections	
		2T	2 ×	RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections	

Table 1:   Device name and product code

Item	Characteristic	Characteristic value	Description		
13 ... 14	Configuration of the second uplink ports	99	Identical to the standard ports or not configurable ▶ Standard ports for BRS20/22: 10/100 Mbit/s ▶ Standard ports for BRS40/42: 10/100/1000 Mbit/s		
		M2	1 ×	DSC multimode socket for 100 Mbit/s F/O connections	
		M4	1 ×	DST multimode socket for 100 Mbit/s fiber optic connections	
		S2	1 ×	DSC singlemode socket for 100 Mbit/s F/O connections	
		S4	1 ×	DST singlemode socket for 100 Mbit/s fiber optic connections	
		E2	1 ×	DSC singlemode (plus) socket for 100 Mbit/s fiber optic connections	
		L2	1 ×	DSC singlemode (LH) socket for 100 Mbit/s fiber optic connections	
		G2	1 ×	DSC singlemode (LH) socket for 100 Mbit/s fiber optic connections, 200 km	
		Z6	1 ×	SFP slot for 100 Mbit/s F/O connections	
		ZZ	2 ×	SFP slot for 100 Mbit/s F/O connections	
		OO	2 ×	SFP slot for 100/1000 Mbit/s F/O connections	
		2Q	2 ×	SFP slot for 100/1000/2500 Mbit/s fiber optic connections	
		2T	2 ×	RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections	
15	(hyphen)	–			
16	Temperature range	S	Standard	0 °C ... +60 °C (+32 °F ... +140 °F)	
		C	Standard with Conformal Coating	0 °C ... +60 °C (+32 °F ... +140 °F)	
		T	Extended	-40 °C ... +70 °C (-40 °F ... +158 °F)	
		E	Extended with Conformal Coating	-40 °C ... +70 °C (-40 °F ... +158 °F)	
		G	Extended with Conformal Coating, glued	-40 °C ... +70 °C (-40 °F ... +158 °F)	
17	Supply voltage	T	2 ×	12 V DC ... 24 V DC	
		U	2 ×	24 V DC	
		F	2 ×	24 V DC ... 48 V DC + 24 V AC	
		P	2 ×	48 V DC (PoE) / 54 V DC (PoE+)	
18	Housing	C	IP30	Plastic	
		D	IP30	Metal	
		E	IP40	Metal	

Table 1:   Device name and product code

Item	Characteristic	Characteristic value	Description
19	Certificates and declarations[a] Part A	Z	CE, FCC, EN 61131-2, EN 62368-1, NEMA TS2[b]
		Y	Z + cUL 61010
		X	Z + cUL 61010 + ANSI/UL 121201
		V	Z + IEC 61850-3
		U	Z + DNV
		W	Z + ATEX/IECEx
		S	Z + DNV+ extended ship approval
		T	Z + EN 50121-4
20	Certificates and declarations Part B	9	Not present
		Y	cUL 61010
		X	cUL61010 + ANSI/UL 121201
		V	IEC 61850-3
		U	DNV
		W	ATEX/IECEx
		S	DNV+ extended ship approval
		T	EN 50121-4
21	Software packages	9	Reserved
22 ... 23	Customer-specific version	HH	Hirschmann
24	Hardware configuration	S	Standard
25	Software configuration	E	Entry (without configuration)
		P	PROFINET
26	Software level	S	HiOS Layer 2 Standard
		A	HiOS Layer 2 Advanced
27 ... 31	Software version	08.7.	Software version 08.7.
		XX.X	Current software version
32 ... 33	Maintenance	00	Bugfix version 00
		XX	Current bugfix version

Table 1:   Device name and product code

a. You will find detailed information on the approvals and self-declarations applying to your device in the data sheet. You find the data sheet for download in the Belden Online Catalog on the web page of the configured device.
b. Applies exclusively to device variants with extended temperature range.

1.3   Device views

1.3.1   Front view

■ Example of a device variant with 4 ... 6 ports without PoE

1	6-pin terminal block with screw lock for redundant power supply and signal contact
2	2-pin terminal block with screw lock for the digital input
3	depending on device variant
	▶ SFP slot for 100 Mbit/s F/O connections
	▶ DSC or DST singlemode socket for 100 Mbit/s fiber optic connections
	▶ DSC or DST multimode socket for 100 Mbit/s fiber optic connections
	▶ Identical to the standard ports or not configurable See "Device name and product code" on page 24.
4	RJ45 socket for 10/100 Mbit/s Twisted pair connections
5	Grounding screw
6	Rail lock slide for DIN rail mounting
7	Label area for IP address
8, 10	LED display elements for port status
9	USB-C interface
11	LED display elements for device status

■ Example of a device variant with 8 ... 12 ports with PoE

1	LED display elements for device status
2	2-pin terminal block with screw lock for the digital input
3	6-pin terminal block with screw lock for redundant power supply and signal contact
4	USB-C interface
5	depending on the device variants **BRS22/32** ▶ RJ45 socket for 10/100 Mbit/s Twisted pair connections ▶ RJ45 socket with PoE support **BRS42/52** ▶ RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections ▶ RJ45 socket with PoE support
6, 10	LED display elements for port status
7	Rail lock slide for DIN rail mounting
8	Grounding screw
9	Label area for IP address
11	depending on the device variants **BRS22** ▶ Identical to the standard ports or not configurable See "Device name and product code" on page 24. **BRS32** ▶ SFP slot for 100/1000 Mbit/s fiber optic connections ▶ RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections **BRS42** ▶ SFP slot for 100/1000 Mbit/s fiber optic connections ▶ RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections ▶ Identical to the standard ports or not configurable See "Device name and product code" on page 24. **BRS52** ▶ SFP slot for 100/1000/2500 Mbit/s fiber optic connections

■ Example of a device variant with 8 ... 24 ports without PoE

1	6-pin terminal block with screw lock for redundant power supply and signal contact
2	LED display elements for device status
3	LED display elements for port status
4	depending on the device variants
	▶ **BRS20/30**
	4 × RJ45 socket for 10/100 Mbit/s twisted pair connections
	These ports support full duplex only.
	▶ **BRS40/50**
	4 × RJ45 socket for 10/100/1000 Mbit/s twisted pair connections
	These ports support full duplex only.
	▶ Identical to the standard ports or not configurable
	See "Device name and product code" on page 24.
5	USB-C interface
6	LED display elements for port status

7	depending on the device variants
	BRS20/30
	▶ 8 × RJ45 socket for 10/100 Mbit/s twisted pair connections
	▶ 16 × RJ45 socket for 10/100 Mbit/s twisted pair connections
	BRS40/50
	▶ 8 × RJ45 socket for 10/100/1000 Mbit/s twisted pair connections
	▶ 16 × RJ45 socket for 10/100/1000 Mbit/s twisted pair connections
8	Rail lock slide for DIN rail mounting
9	Grounding screw
10	Label area for IP address of device
11	Label area for MAC address of device
12	LED display elements for port status
13	depending on the device variants
	BRS20
	▶ SFP slot for 100 Mbit/s F/O connections
	▶ DSC or DST singlemode socket for 100 Mbit/s fiber optic connections
	▶ DSC or DST multimode socket for 100 Mbit/s fiber optic connections
	▶ RJ45 socket for 10/100 Mbit/s Twisted pair connections
	These ports support full duplex only.
	▶ Identical to the standard ports or not configurable
	See "Device name and product code" on page 24.
	BRS30
	▶ RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
	These ports support full duplex only.
	▶ SFP slot for 100/1000 Mbit/s F/O connections
	BRS40
	▶ SFP slot for 100/1000 Mbit/s F/O connections
	▶ RJ45 socket for 10/100/1000 Mbit/s Twisted Pair connections
	These ports support full duplex only.
	▶ Identical to the standard ports or not configurable
	See "Device name and product code" on page 24.
	BRS50
	▶ SFP slot for 100/1000/2500 Mbit/s fiber optic connections
14	2-pin terminal block with screw lock for the digital input

1.3.2   Rear view

Device variants with casing characteristic value C	Device variants with casing with characteristic value E or D

1	Rail lock slide for DIN rail mounting

1.4 Power supply

1.4.1 Supply voltage with characteristic value T

The following options for power supply are available:
▶ 6-pin terminal block
   You will find information on connecting the supply voltage here:
   See "Supply voltage with characteristic value T" on page 48.

1.4.2 Supply voltage with characteristic value F

The following options for power supply are available:
▶ 6-pin terminal block
   You will find information on connecting the supply voltage here:
   See "Supply voltage with characteristic value F" on page 49.

1.4.3 Supply voltage with characteristic value U

The following options for power supply are available:
▶ 6-pin terminal block
   You will find information on connecting the supply voltage here:
   See "Supply voltage with characteristic value U" on page 50.

1.4.4 Supply voltage with characteristic value P

The following options for power supply are available:
▶ 6-pin terminal block
   You will find information on connecting the supply voltage here:
   See "Supply voltage with characteristic value P" on page 51.
   These device variants support PoE(+).

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).

1.5.1 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
▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
Delivery state: Autonegotiation activated
The port casing is electrically connected to the front panel.
The pin assignment corresponds to MDI-X.

Note: Some ports support full duplex mode only:

1.5.2 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
▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
▶ 1000 Mbit/s full duplex
Delivery state: Autonegotiation activated
The port casing is electrically connected to the front panel.
The pin assignment corresponds to MDI-X.

Note: Some ports support full duplex mode only:

1.5.3 100/1000/2500 Mbit/s twisted pair port

This port is an RJ45 socket.

The 100/1000/2500 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 100BASE-TX/1000BASE-T and IEEE 802.3bz 2.5GBASE-T standards.

This port supports:

▶ Autonegotiation
▶ Autopolarity
▶ Autocrossing (if autonegotiation is activated)
▶ 100/1000/2500 Mbit/s full duplex

Delivery state: Autonegotiation activated

The port casing is electrically connected to the front panel.

The pin assignment corresponds to MDI-X.

■ **Pin assignment**
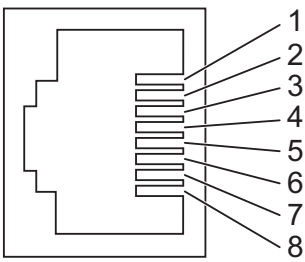
RJ45	Pin	10/100 Mbit/s	1000/2500 Mbit/s	PoE
	MDI mode			
	1	TX+	BI_DA+	Negative V_{PSE}
	2	TX−	BI_DA−	Negative V_{PSE}
	3	RX+	BI_DB+	Positive V_{PSE}
	4	—	BI_DC+	—
	5	—	BI_DC−	—
	6	RX−	BI_DB−	Positive V_{PSE}
	7	—	BI_DD+	—
	8	—	BI_DD−	—
	MDI-X mode			
	1	RX+	BI_DB+	Negative V_{PSE}
	2	RX−	BI_DB−	Negative V_{PSE}
	3	TX+	BI_DA+	Positive V_{PSE}
	4	—	BI_DD+	—
	5	—	BI_DD−	—
	6	TX−	BI_DA−	Positive V_{PSE}
	7	—	BI_DC+	—
	8	—	BI_DC−	—

Table 2: Pin assignment 10/100/1000/2500 Mbit/s twisted pair port, RJ45 socket, MDI and MDI-X mode

1.5.4 100 Mbit/s F/O port

This port is a DST/DSC socket or an SFP slot.

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, full duplex

Delivery state:
▶ 100 Mbit/s full duplex when using a Fast Ethernet Transceiver

Example:	Sending direction	Receiving direction
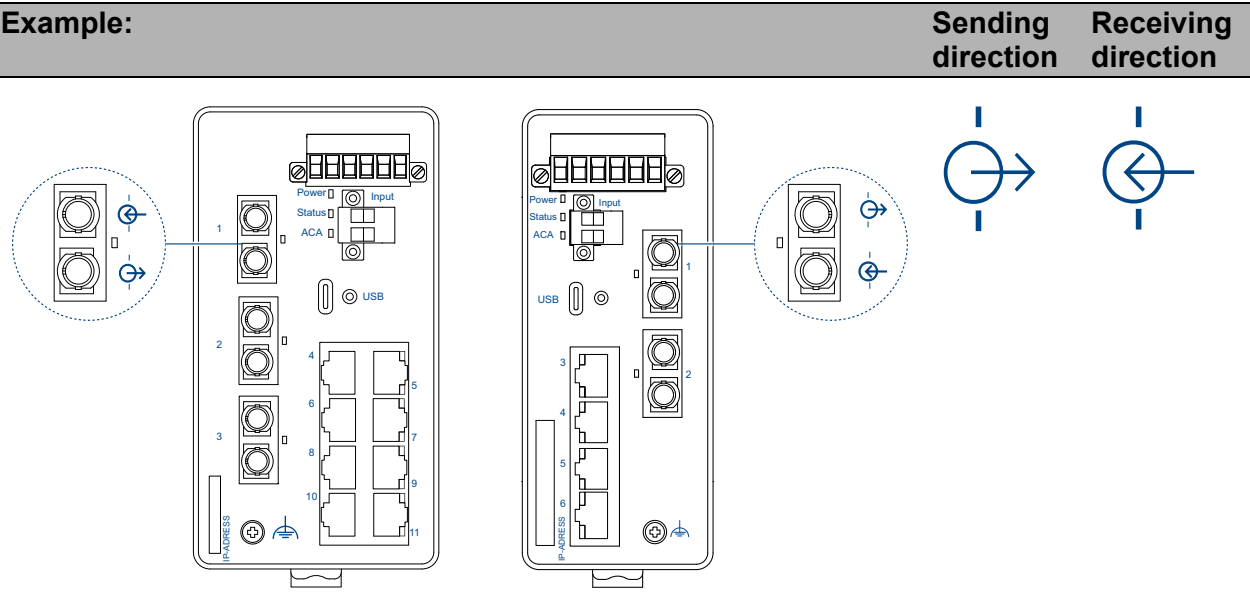
Table 3:   Sending and receiving directions

1.5.5   100/1000/2500 Mbit/s F/O port

This port is an SFP slot.
The 100 Mbit/s F/O port allows you to connect network components according to the standard IEEE 802.3 100BASE-FX.
The port allows you to connect network components according to standard IEEE 802.3 1000BASE-SX/1000BASE-LX.
The port allows you to connect network components according to IEEE P802.3bz 2.5 Gbit/s.
This port supports:
▶ 100 Mbit/s full duplex
▶ 1000 Mbit/s full duplex
▶ 2500 Mbit/s full duplex
Delivery state:
▶ 100 Mbit/s full duplex when using a Fast Ethernet SFP transceiver
▶ 1000 Mbit/s full duplex when using a Gigabit Ethernet SFP transceiver
▶ 2500 Mbit/s full duplex when using a Gigabit Ethernet SFP transceiver

1.5.6   Support of PoE(+)

The device variants BRS22/32/42/52 support Power over Ethernet (PoE) and Power over Ethernet Plus (PoE+).

PoE-capable Ethernet ports are designed as 8 × RJ45 sockets.

The port allows you to connect network components via a PoE voltage source according to the standard IEEE 802.3af/at.

With the presence of the PoE power supply, a separate power supply for the connected device is unnecessary.
The PoE power is supplied via the wire pairs transmitting the signal (phantom voltage).

The individual ports are not electrically insulated from each other (common PoE voltage).
For the maximum power available to PoE end devices in total, see the technical data: See "Technical data" on page 62.

Note: Connect only PoE-powered devices whose data connections are located in the interior of the building and are specified as SELV circuits according to IEC 60950-1 or ES1 circuits according to IEC/EN 62368-1.

1.6 Display elements

1.6.1 Device status

These LEDs provide information about conditions which affect the operation of the whole device.
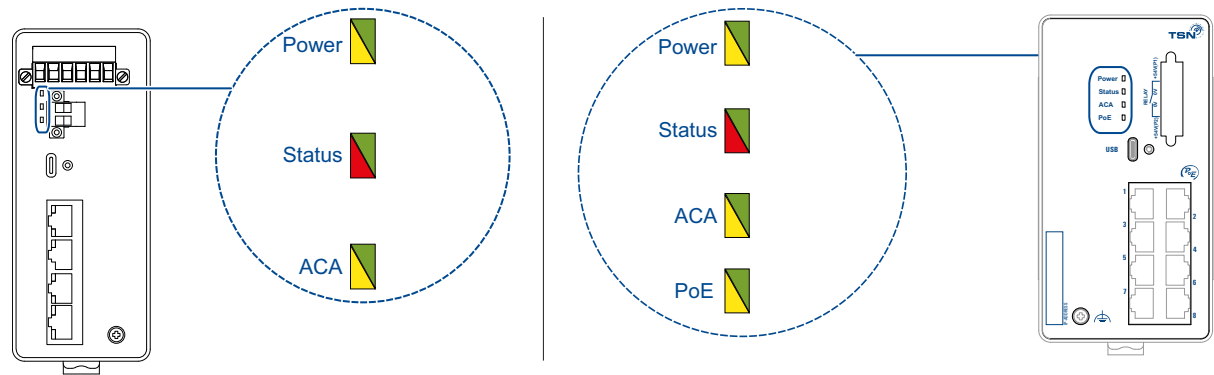
Figure 1: LED display elements for device status

LED	Display	Color	Activity	Meaning
Power	Supply voltage	—	none	Supply voltages 1 **and** 2 are too low.
		yellow	lights up	Supply voltage 1 **or** 2 is on
			flashes 4 × a period	Software update is running. Maintain the power supply.
		green	lights up	Supply voltage 1 **and** 2 is on
Status	Device status	—	none	Device starts Device is not ready for operation
		green	lights up	Device is ready for operation Characteristics can be configured
		red	lights up	Device is ready for operation Device has detected at least one error in the monitoring results
			flashes 1 × a period	The boot parameters used when the device has been started differ from the boot parameters saved. Start the device again.
			flashes 4 × a period	Device has detected a multiple IP address
		red/green	flashing alternately	Device is in the recovery mode.
ACA	Storage medium ACA22-USB-C (EEC)	—	none	No ACA connected
		green	lights up	ACA is plugged
			flashes 3 × a period	Device writes to/reads from the storage medium
		yellow	lights up	ACA is not ready for operation
PoE		—	none	Supply voltage is too low
		yellow	lights up	Supply voltage is too low for PoE support.
		green	lights up	PoE voltage is on

Table 4: Meaning of the device display elements

1.6.2 Port status

These LEDs display port-related information.

► For the position of the port display elements on the device variants with
4 × RJ45 sockets see figure 2.
For the meaning of the port display elements see table 5.
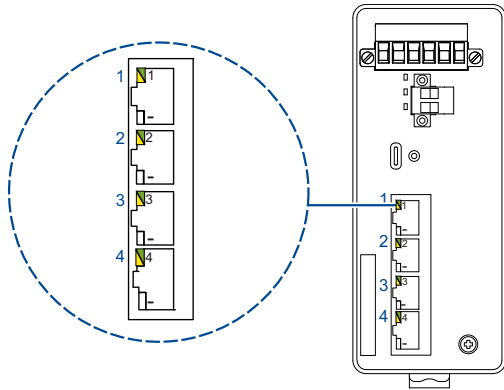
*Figure 2: Position of the port display elements on the device variants with 4 × RJ45
sockets*

► For the position of the port display elements on the device variants with
8 × RJ45 sockets see figure 3.
For the meaning of the port display elements see table 5.
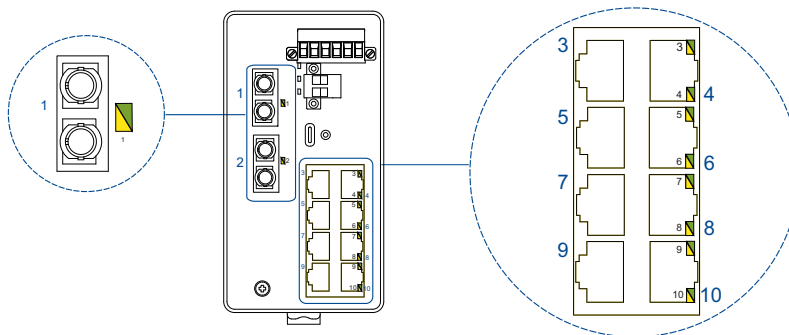
*Figure 3: Position of the port display elements on the device variants with 8 × RJ45
sockets*

► For the position of the port display elements on the device variants with
20 × RJ45 sockets see figure 3.
For the meaning of the port display elements see table 5.
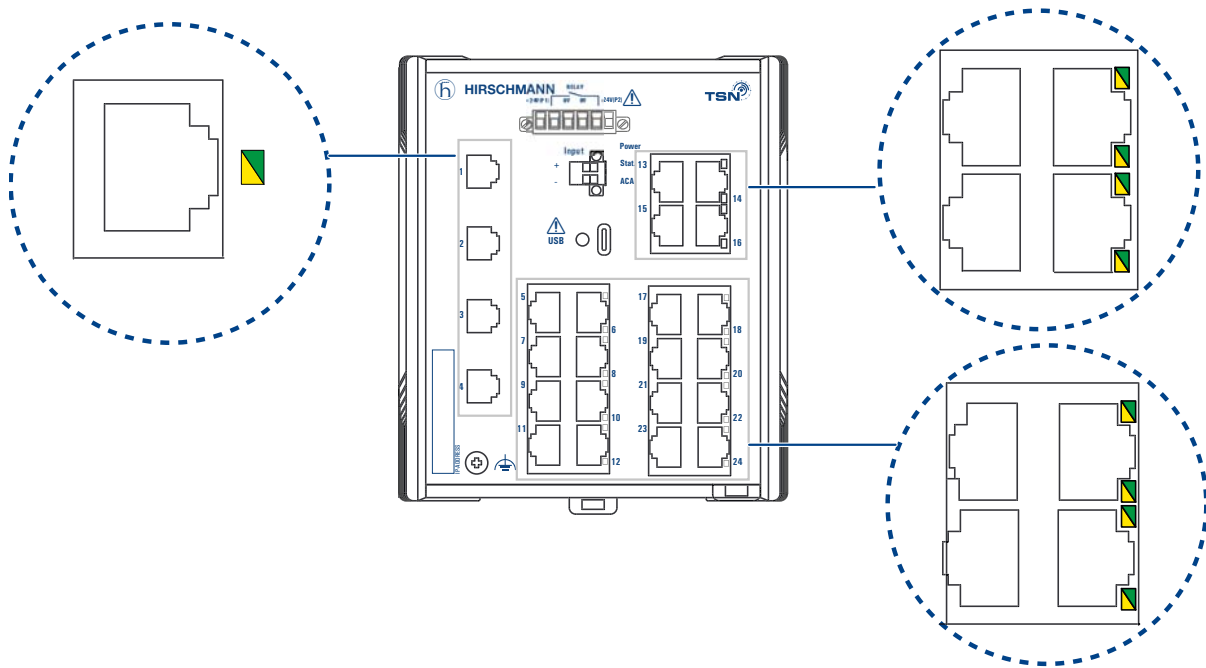
Figure 4:   Position of the port display elements on the device variants with 24 × RJ45 sockets

Display	Color	Activity	Meaning
LS/DA Link status Data traffic	—	none	Device detects an invalid or missing link
	green	lights up	Device detects a valid link
		flashes 1 × a period	Port is switched to stand-by
		flashes 3 × a period	Port is switched off
	yellow	flashing	Device is transmitting and/or receiving data
		flashes 3 × a period	The device deactivates the relevant port (auto-deactivation).

Table 5:   Meaning of the port display elements

1.6.3   PoE status

Note: Only PoE ports have these LEDs.

LED	Display	Color	Activity	Meaning
PoE	PoE status	—	none	No powered device connected
		green	lights up	Powered device is supplied with PoE voltage.
		yellow	flashes 1 × a period	Output budget has been exceeded Device has detected a connected powered device
			flashes 3 × a period	PoE administrator status deactivated

Table 6:   PoE status

1.7 Management interfaces

1.7.1 Signal contact
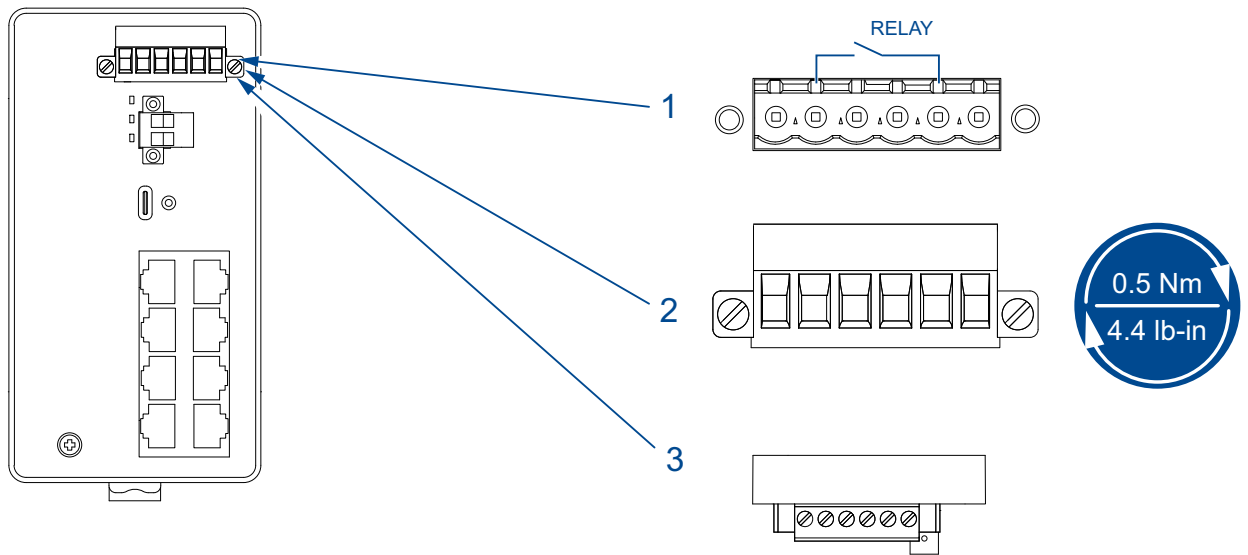
Figure 5: (1) Connection on the device, (2) terminal block mounted on the device (front view), tightening torque, (3) terminal block mounted on the device (view from above).

The signal contact is a potential-free relay contact. The signal contact is open when the device is not connected to a power supply.
The signal contact allows you to control external devices or monitor device functions.
In the configuration, you specify how the device uses the signal contact. You will find detailed information on possible applications and the configuration of the signal contact in the software user documentation. You will find the software user documentation as PDF files on the Internet at https://www.doc.hirschmann.com

1.7.2   USB-C interface

Name	Pin	Pin	Name
GND	B12	A1	GND
-	B11	A2	-
-	B10	A3	-
V BUS	B9	A4	V BUS
-	B8	A5	CC1
D-	B7	A6	D+
D+	B6	A7	D-
CC2	B5	A8	-
V BUS	B4	A9	V BUS
-	B3	A10	-
-	B2	A11	-
GND	B1	A12	GND
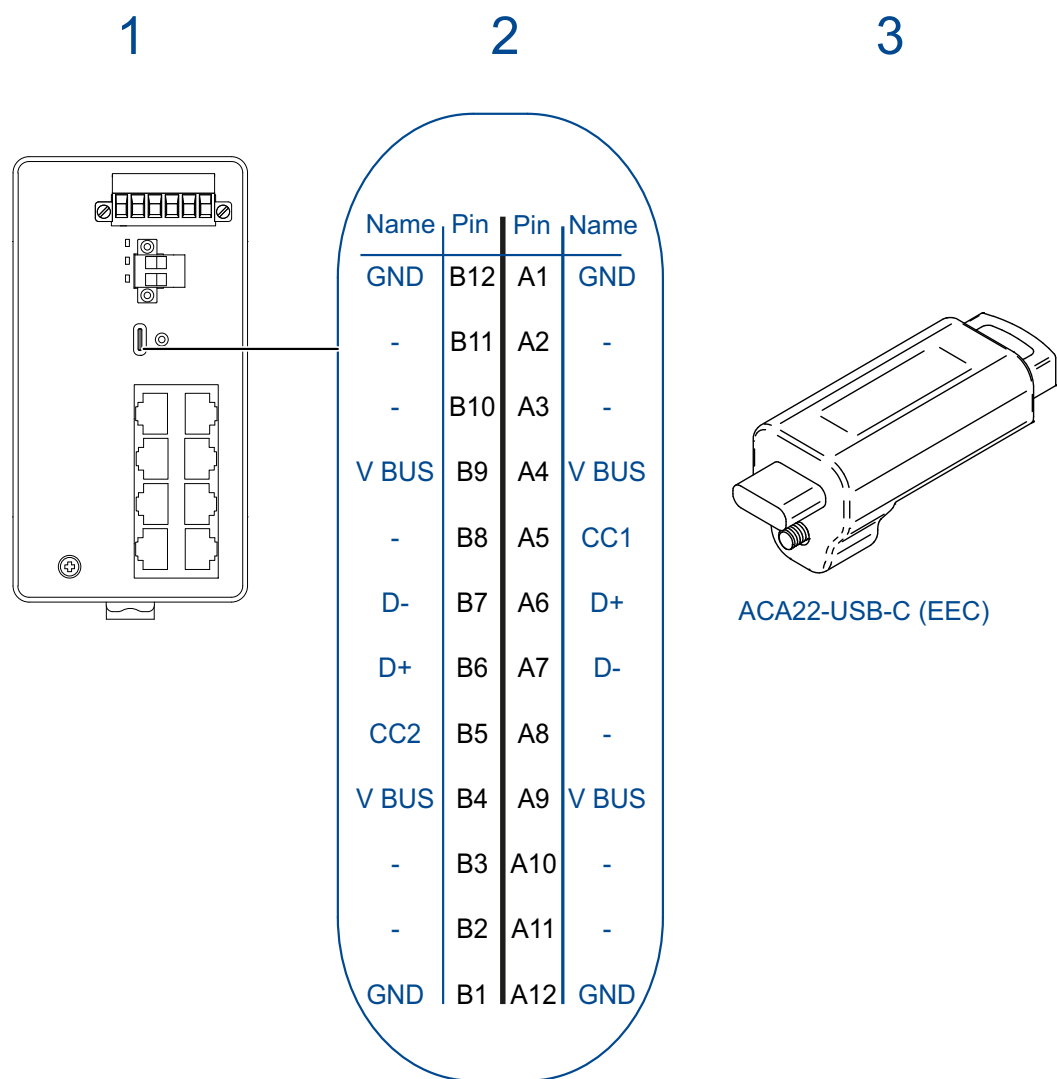
ACA22-USB-C (EEC)

Figure 6:   (1) Position of the USB-C interface on the device, (2) pin assignment of the USB-C interface, (3) view of the ACA22-USB-C (EEC).

The USB-C interface allows you to connect the AutoConfiguration Adapter ACA22-USB-C (EEC) storage medium. It is used for saving/loading the configuration data and diagnostic information, and for loading the software.

You have the option to configure your device using the USB-C interface. You find detailed information in the software user documentation. You find the software user documentation as PDF files on the Internet at http://www.doc.hirschmann.com

The USB-C interface has the following properties:
▶ Supports the USB master mode and slave
▶ Supports USB 2.0 (data rate max. 480 Mbit/s)
▶ Connector: type C
▶ Supplies current of max. 500 mA

► Voltage not electrically insulated
► Supported file system: FAT32

Note: A USB cable is used exclusively for the configuration of your device.

Note: The ACA22-USB-C (EEC) storage medium can remain permanently connected to the device.

1.8 Digital input
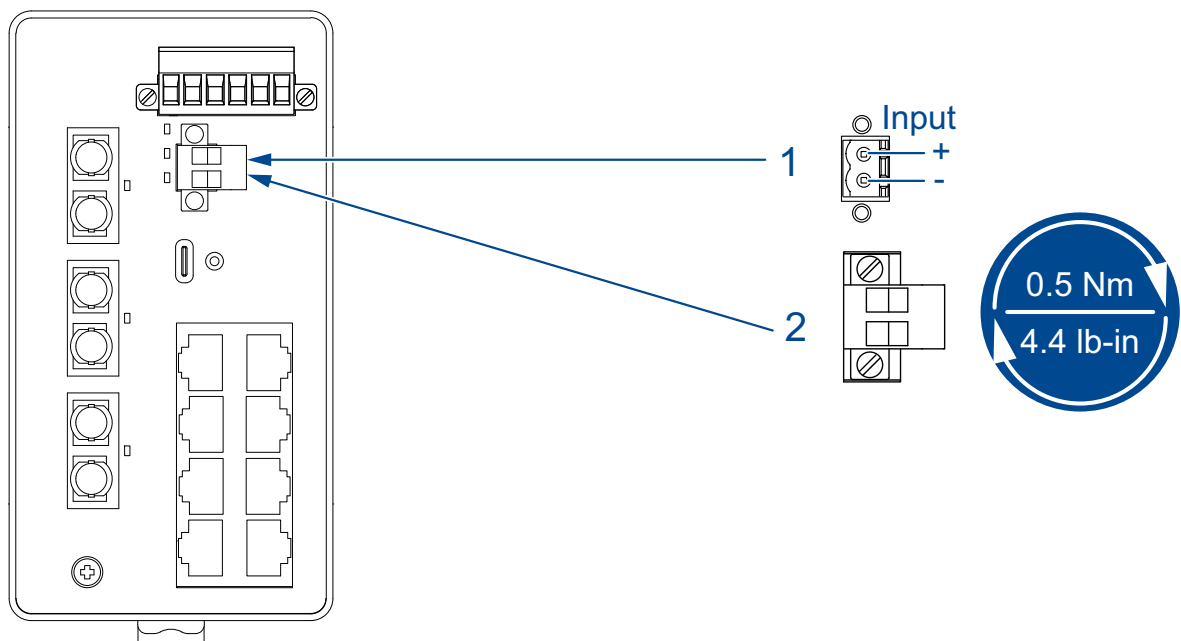
Figure 7: (1) Connection on the device, (2) terminal block mounted on the device (front view), tightening torque.

The digital input allows you to capture and forward signals from digital sensors. In the configuration, you specify how the device uses the digital input.
You will find detailed information on possible applications and the configuration of the digital input in the software user documentation. You will find the software user documentation as PDF files on the Internet at https://www.doc.hirschmann.com

Note: For PoE device variants, the digital input is only available for device variants with a wide casing.
See "General data" on page 62.

1.9 Hardware revision

1.9.1 Hardware revision 2

BRS device variants marked as "HW: Rev. 2" only support SW versions as of 08.7.02. You find the revision marking of your device on the side label of your device.
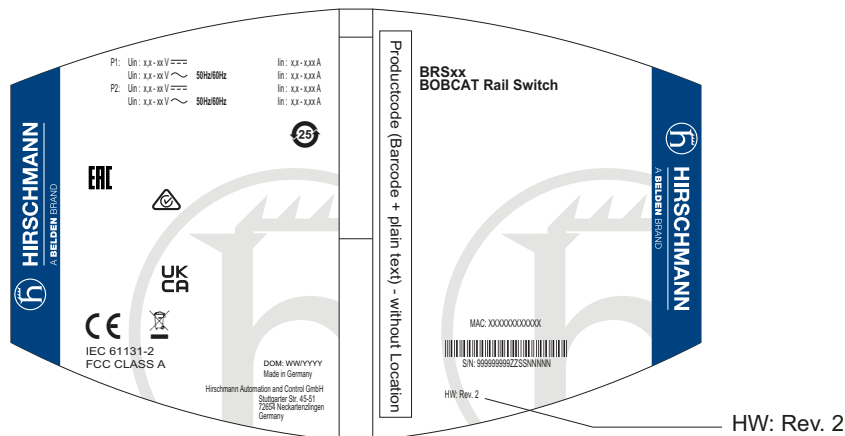
Figure 8: Revision marking on the side label

1.9.2 Hardware revision 3

BRS device variants marked as "HW: Rev. 3" only support SW versions as of 08.7.04. You find the revision marking of your device on the side label of your device.
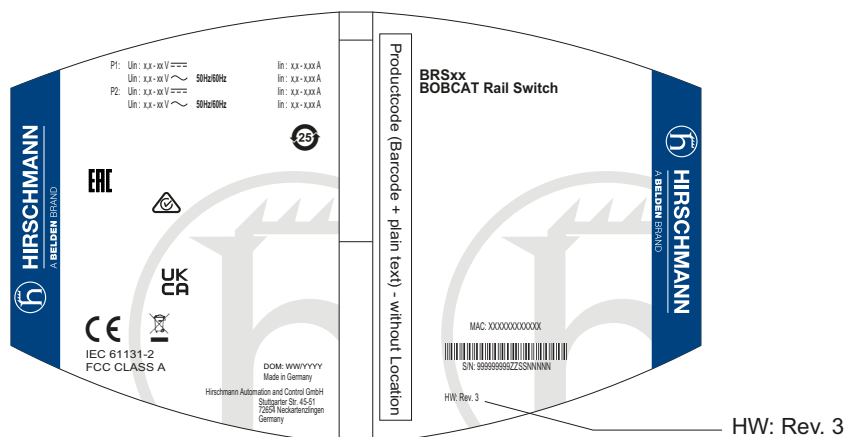
Figure 9: Revision marking on the side label

2   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
- ► Installing and grounding the device
- ► Connecting the ferrite (optional)
- ► Installing an SFP transceiver (optional)
- ► Connecting the terminal blocks
- ► Connecting data cables
- ► Filling out the inscription label
- ► Making basic settings

2.1   Checking the package contents

- ☐ Check whether the package includes all items named in the section "Scope of delivery" on page 95.
- ☐ Check the individual parts for transport damage.

2.2   Installing and grounding the device

2.2.1   Installing the device onto the DIN rail

Prerequisite:
- ☐ Verify that the minimum clearance at the ventilation slots is maintained to meet the climatic conditions during operation:
  Minimum clearance at the ventilation slots: 5 cm (2 in).

Note: Failure to observe the mounting instructions may result in damage to the locking gate, device casing or DIN rail.
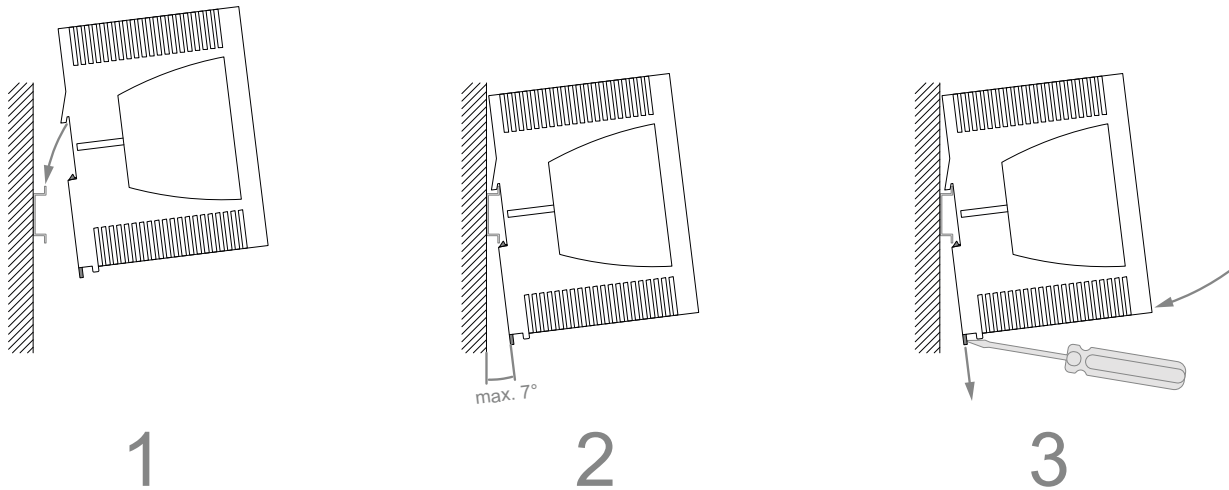
Figure 10: Mounting on the DIN rail

Perform the following work steps:
☐ Slide the upper snap-in guide of the device into the DIN rail.
☐ Verify that the snap-in guide of the device is correctly inserted into the top part of the DIN rail. Do **NOT** press the device against the DIN Rail or the flat surface behind the DIN rail.
☐ Insert a tool horizontally into the locking gate on the underside of the device.
☐ Using the tool, pull the locking gate downwards.
☐ With the locking gate pulled down, carefully push the device against the lower part of the DIN rail.
☐ Snap-in the device by carefully sliding the locking gate back up.
☐ Verify that the device is firmly mounted onto the DIN rail.

2.2.2 Grounding the device
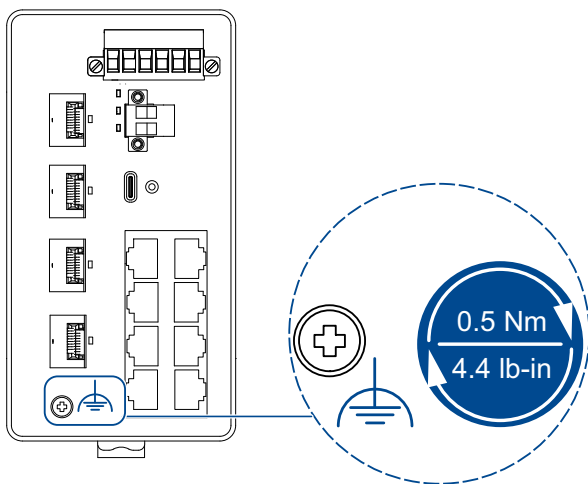
Figure 11: Position of the ground connection on the device; tightening torque.

All device variants have a functional ground connection.

Perform the following work steps:
☐ Ground the device via the ground screw.

2.2.3 Connecting the ferrite (optional)

Exclusively applies to device variants with 8 ... 12 ports and device variants with GL approval.

Device variants featuring supply voltage with characteristic value P do not require ferrites.

To adhere to EMC conformity, connect the one of the supplied ferrites to the voltage input via the power supply cable.

With redundant power supply, connect one of the supplied ferrites via both power supply cables.

Perform the following work steps:
☐ Insert the power supply cable through the ferrite 2 times.
☐ Position the ferrite as close as possible to the voltage input (max. distance 5 cm (2 in)).

2.3 Installing an SFP transceiver (optional)

Prerequisites:
Exclusively use Hirschmann SFP transceivers.
See "Accessories" on page 96.
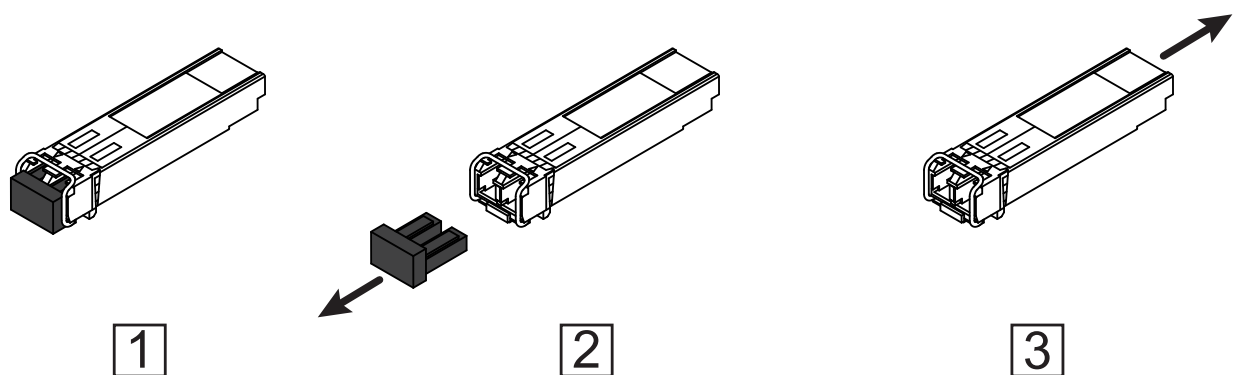
Figure 12: Installing SFP transceivers: Installation sequence

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).

2.4   Connecting the terminal blocks

2.4.1   Power supply

Note: The supply voltage is connected to the device casing through protective elements exclusively.

■ **Supply voltage with characteristic value T**

Figure 13: (1) DC voltage connection on the device, (2) terminal block mounted on the device (front view), tightening torque, (3) terminal block mounted on the device (view from above).

Type of the voltages that can be connected	Specification of the supply voltage	Pin assignment	
DC voltage	Rated voltage range DC: 12 V DC ... 24 V DC	+24 V	Plus terminal of the supply voltage
	Voltage range DC incl. maximum tolerances: 9.6 V DC ... 32 V DC	0 V	Minus terminal of the supply voltage

Table 7:   Supply voltage with characteristic value T: type and specification of the supply voltage, pin assignment

For the supply voltage to be connected, perform the following steps:
☐ 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 on the device using screws.

■ **Supply voltage with characteristic value F**
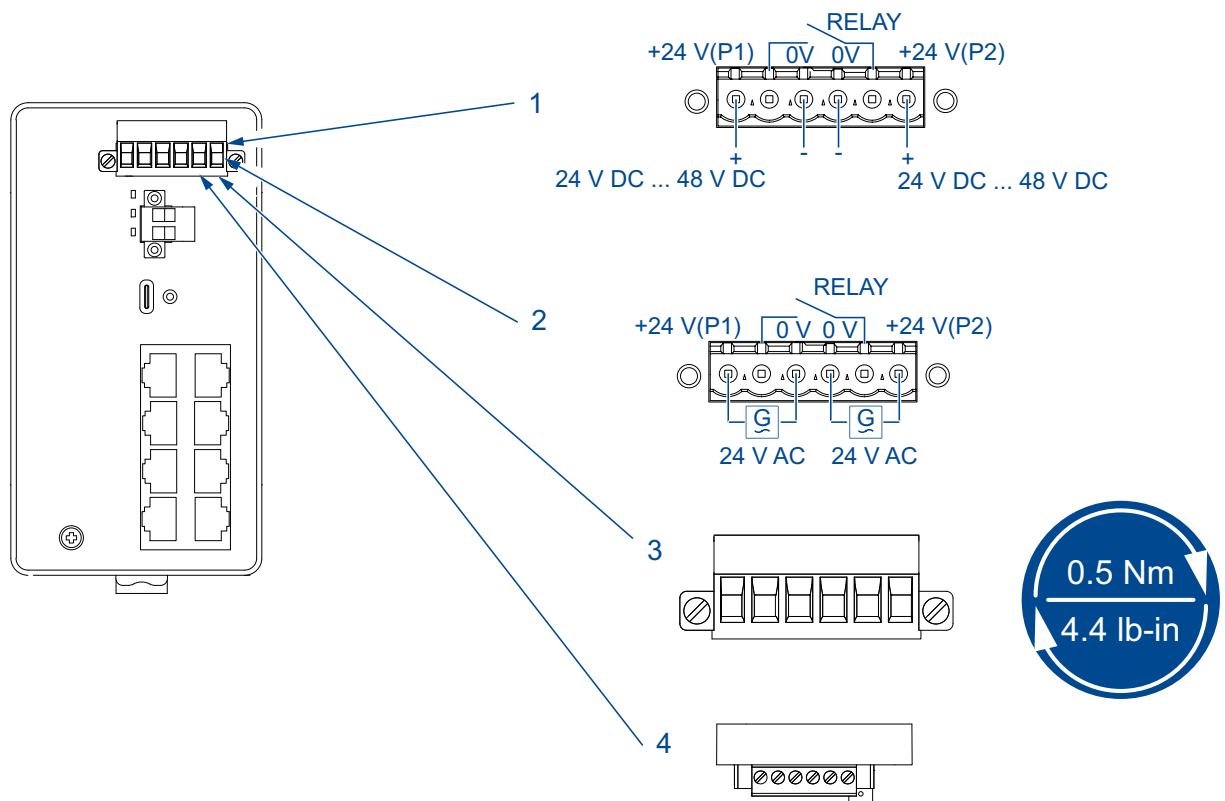
Figure 14: (1) DC voltage connection on the device, (2) AC voltage connection on the device, (3) terminal block mounted on the device (front view), tightening torque, (4) terminal block mounted on the device (view from above).

Type of the voltages that can be connected	Specification of the supply voltage	Pin assignment	
DC voltage	Rated voltage range DC: 24 V DC ... 48 V DC Voltage range DC incl. maximum tolerances: 18 V DC ... 60 V DC	+24 V	Plus terminal of the supply voltage
		0 V	Minus terminal of the supply voltage
AC voltage	Rated voltage AC: 24 V AC Voltage range AC incl. maximum tolerances: 18 V AC ... 30 V AC, 50 Hz ... 60 Hz		

Table 8: Supply voltage with characteristic value F: type and specification of the supply voltage, pin assignment

For the supply voltage to be connected, perform the following steps:
□ 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 on the device using screws.

■ Supply voltage with characteristic value U

Figure 15: (1) DC voltage connection on the device, (2) terminal block mounted on the device (front view), tightening torque, (3) terminal block mounted on the device (view from above).

Type of the voltages that can be connected	Specification of the supply voltage	Pin assignment	
DC voltage	Rated voltage DC: 24 V DC	+24 V	Plus terminal of the supply voltage
	Voltage range DC incl. maximum tolerances: 18 V DC ... 30 V DC	0 V	Minus terminal of the supply voltage

Table 9:   Supply voltage with characteristic value U: type and specification of the supply voltage, pin assignment

For the supply voltage to be connected, perform the following steps:
☐ 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 on the device using screws.

■ **Supply voltage with characteristic value P**
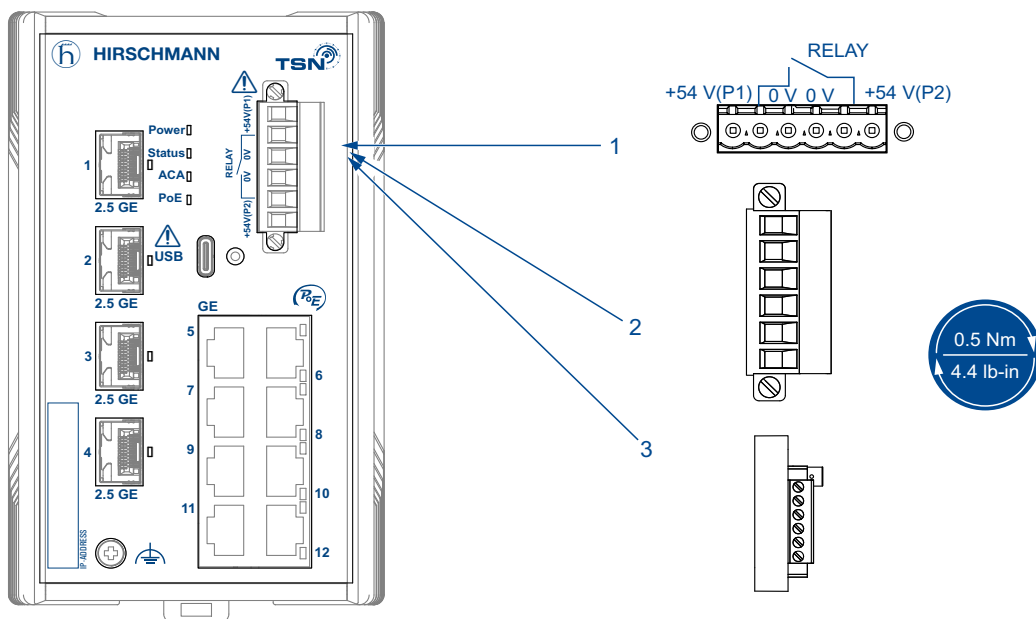
Figure 16: (1) DC voltage connection on the device, (2) terminal block mounted on the device (front view), tightening torque, (3) terminal block mounted on the device (view from above).

Type of the voltages that can be connected	Specification of the supply voltage	Pin assignment	
When using PoE: DC voltage	Rated voltage DC: 48 V DC	+	Plus terminal of the supply voltage
	Voltage range DC incl. maximum tolerances: 46 V DC ... 57 V DC	-	Minus terminal of the supply voltage
When using PoE+:	Rated voltage DC: 54 V DC	+	Plus terminal of the supply voltage
	Voltage range DC incl. maximum tolerances: 52 V DC ... 57 V DC	-	Minus terminal of the supply voltage
Without using PoE or PoE+: DC voltage	Rated voltage range DC: 24 V DC ... 48 V DC	+	Plus terminal of the supply voltage
	Voltage range DC incl. maximum tolerances: 19 V DC ... 60 V DC	-	Minus terminal of the supply voltage

Table 10: Supply voltage with characteristic value P: type and specification of the supply voltage, pin assignment

For the supply voltage to be connected, perform the following steps:
☐ 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 on the device using screws.

2.4.2 Signal contact (optional)
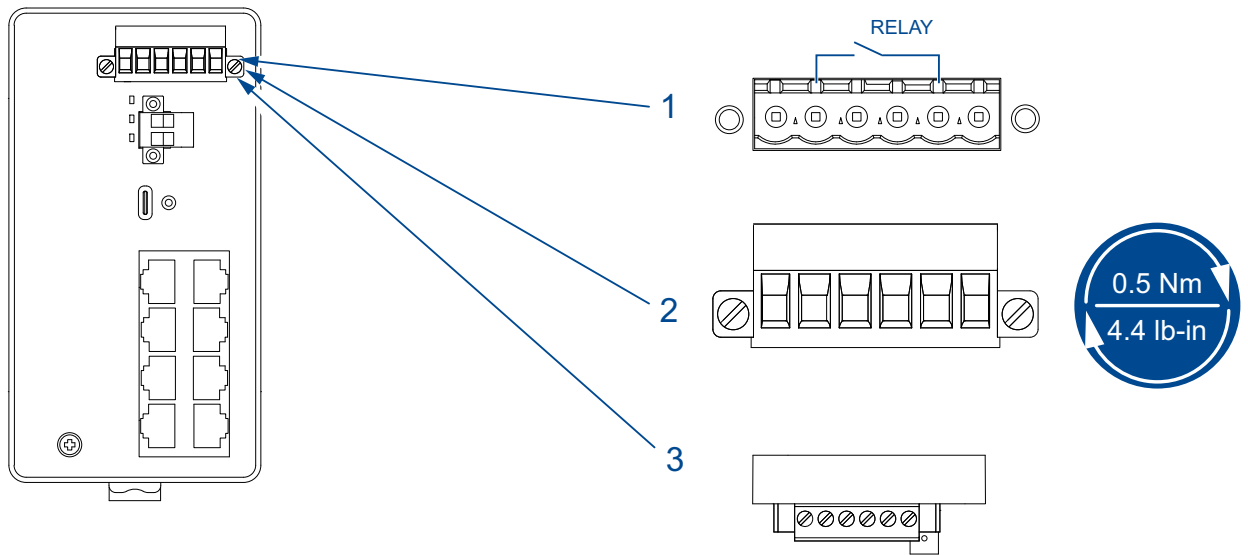
Figure 17: (1) Connection on the device, (2) terminal block mounted on the device (front view), tightening torque, (3) terminal block mounted on the device (view from above).

Perform the following work steps:
☐ Connect the signal contact lines with the terminal block connections.
☐ Fasten the wires in the terminal block by tightening the terminal screws.
☐ Mount the terminal block on the device using screws.
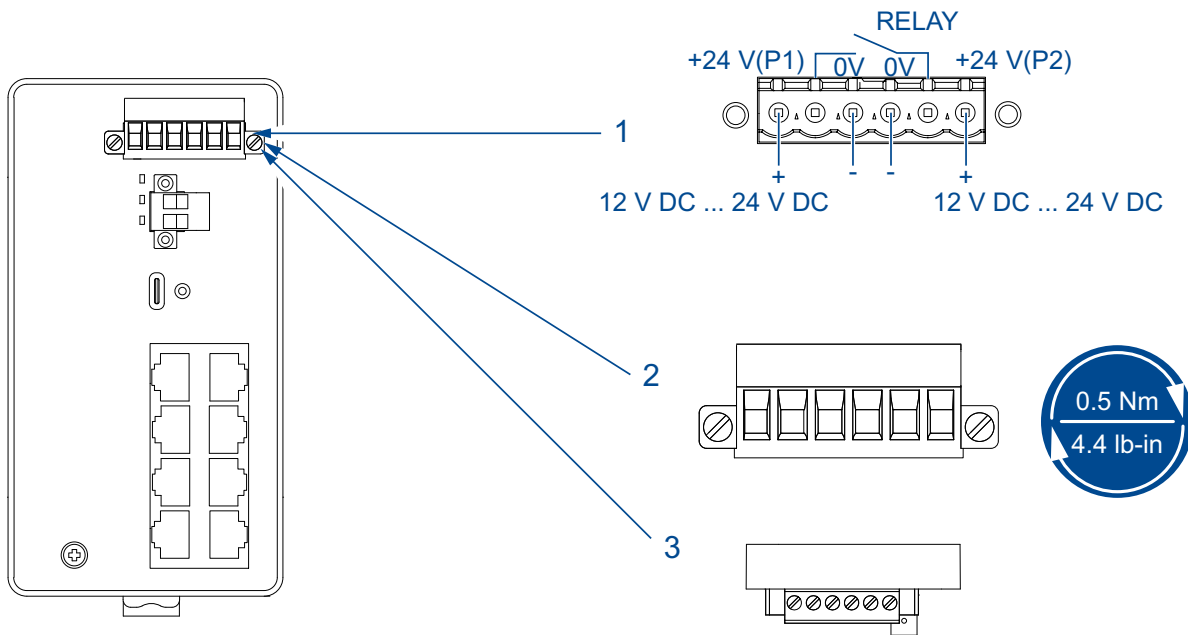
2.4.3 Digital input (optional)
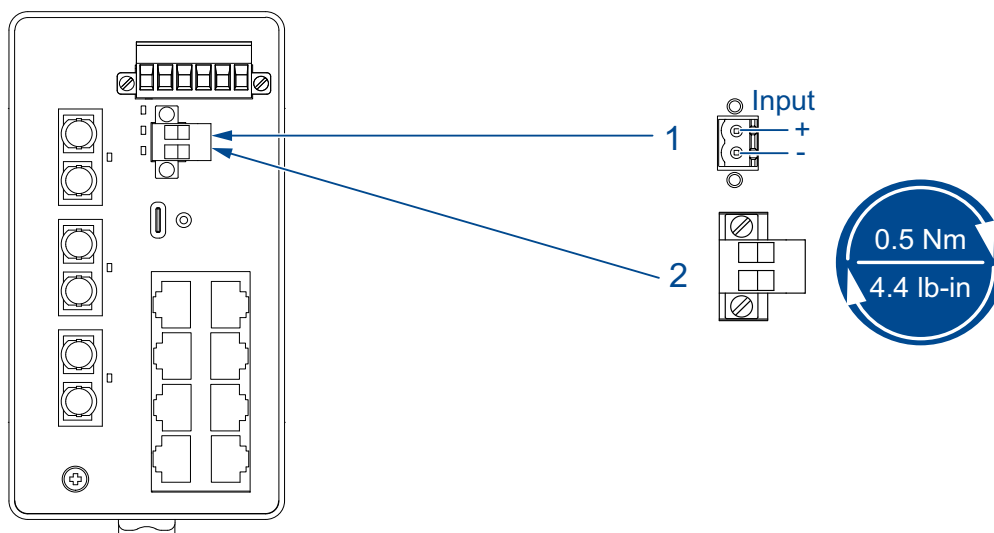
Figure 18: (1) Connection on the device, (2) terminal block mounted on the device (front view), tightening torque.

Pin	Signal, terminal	Function
1	DI (+)	Signal input
2	DI (−)	Reference potential

Table 11: Digital input: pin assignment

Perform the following work steps:

☐ 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 on the device using screws.

■ **Connection constellations of sensors**
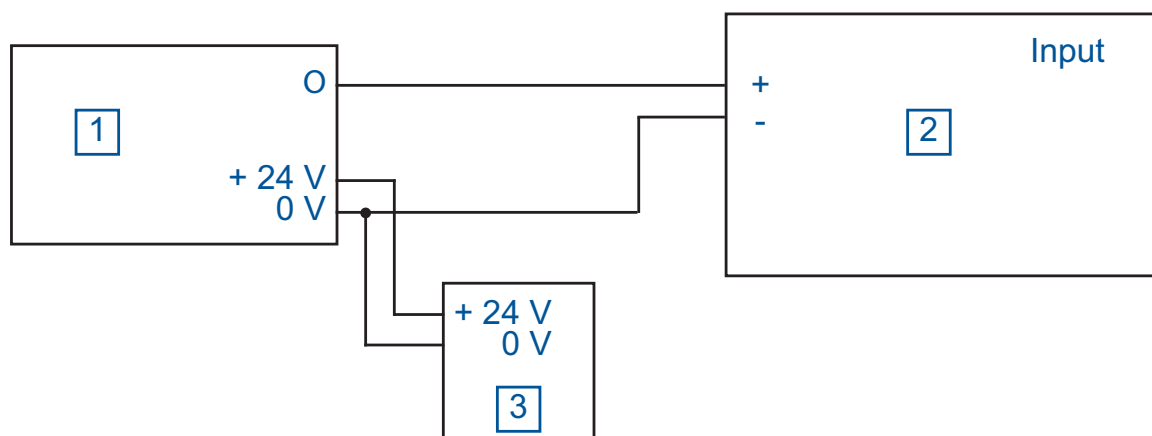
Figure 19: Connection of a sensor (3 pin) with separate power supply
> *1 - Sensor*
> *2 - BRS Familyl*
> *3 - Separate power supply for sensor*
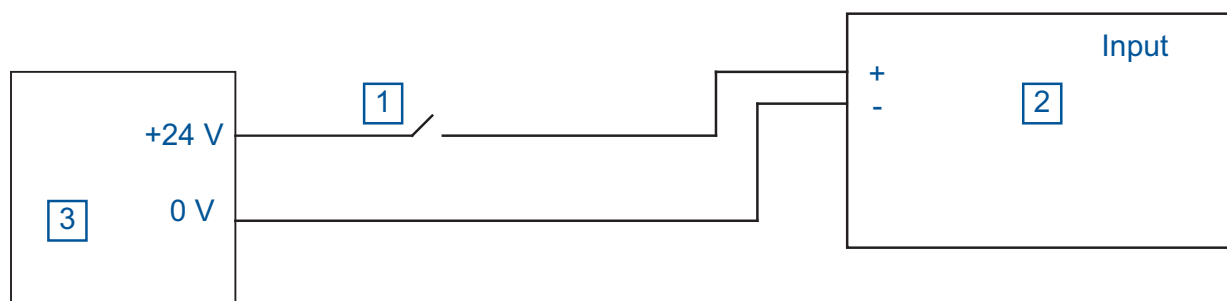
Figure 20: Connection of a sensor (2 pin) with separate power supply
> *1 - Sensor (2 pin sensor)*
> *2 - BRS Familyl*
> *3 - Separate power supply for sensor*

2.5 Operating the device

When you connect the supply voltage, you start up the device.

2.6 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.

☐ 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. If reducing the inductive coupling is necessary, verify that the power supply cables and data cables cross at a 90° angle.

☐ Use shielded data cables for gigabit transmission via copper cables. Only use shielded data cables to meet EMC requirements according to EN 50121-4 and marine applications.
  See "Electromagnetic compatibility (EMC)" on page 86.

☐ Connect the data cables according to your requirements.
  See "Ethernet ports" on page 34.

☐ Use CAT5e cable or higher for twisted pair connections.

2.7 Filling out the inscription label

The information field for the IP address helps you identify your device.

3 Making basic settings

Note: 2 or more devices configured with the same IP address can cause unpredictable operation of your network.
Install and maintain a process that assigns a unique IP address to every device in the network.

The IP parameters must be entered when the device is installed for the first time. The device provides the following options for configuring IP addresses:

▶ Input via the HiView or Industrial HiVision application. You find further information about the applications HiView or Industrial HiVision on the Internet at the Hirschmann product pages:
   HiView
   http://www.hirschmann.com/en/QR/INET-HiView
   Industrial HiVision
   http://www.hirschmann.com/en/QR/INET-Industrial-HiVision
▶ Configuration via BOOTP
▶ Configuration via DHCP (Option 82)
▶ AutoConfiguration AdapterACA22-USB-C (EEC)
▶ Configuration via USB-C interface

■ **Default settings**
   ▶ IP address: The device looks for the IP address using DHCP
   ▶ Ethernet ports: link status is not evaluated (signal contact)
   ▶ Optical ports: Full duplex
      TP ports: Autonegotiation
   ▶ RSTP (Rapid Spanning Tree) activated

3.1 First login (Password change)

To help prevent undesired access to the device, it is imperative that you change the default password during initial setup.

Perform the following steps:
☐ Open the Graphical User Interface, the Command Line Interface, or HiView the first time you log on to the device.
☐ Log on to the device with the default password "private". The device prompts you to type in a new password.
☐ Type in your new password.
   To help increase security, choose a password that contains at least 8 characters which includes upper-case characters, lower-case characters, numerical digits, and special characters.

☐ When you log on to the device with the Command Line Interface, then the device prompts you to confirm your new password.
☐ Log on to the device again with your new password.

Note: If you lost your password, then use the System Monitor to reset the password.

For further information see:
https://hirschmann-support.belden.com/en/kb/required-password-change-new-procedure-for-first-time-login

4 Monitoring the ambient air temperature

Operate the device below the specified maximum ambient air temperature exclusively.

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.

The temperature displayed in the CLI (Command Line Interface) and the GUI (Graphical User Interface) is the internal temperature of the device. It is higher than the ambient air temperature. The maximum internal temperature of the device named in the technical data is a guideline that indicates to you that the maximum ambient air temperature has possibly been exceeded.

5 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.

▶ Hirschmann is continually working on improving and developing their software. Check regularly whether there is an updated version of the software that provides you with additional benefits. You find information and software downloads on the Belden product pages on the Internet: https://www.belden.com

▶ 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.

6 Disassembly

6.1 Removing an SFP transceiver (optional)
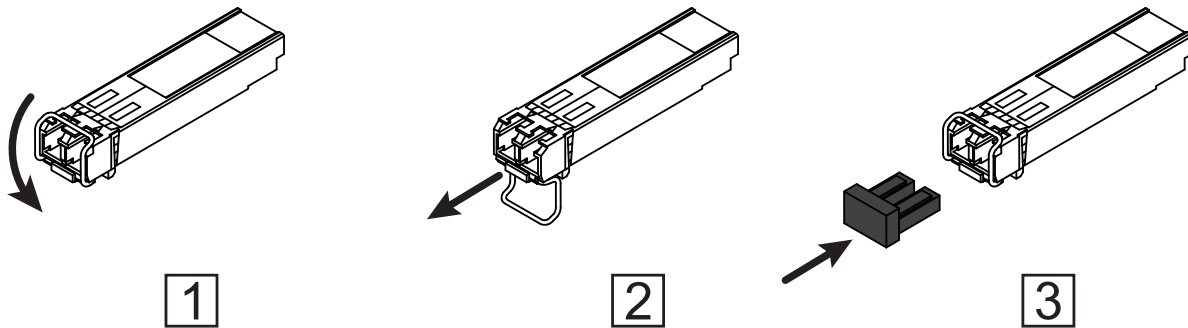
Figure 21: De-installing SFP transceivers: De-installation sequence

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).

6.2　Removing the device

Perform the following work steps:
- ☐ Disconnect the data cables.
- ☐ Disable the supply voltage.
- ☐ Disconnect the terminal blocks.
- ☐ Disconnect the grounding.
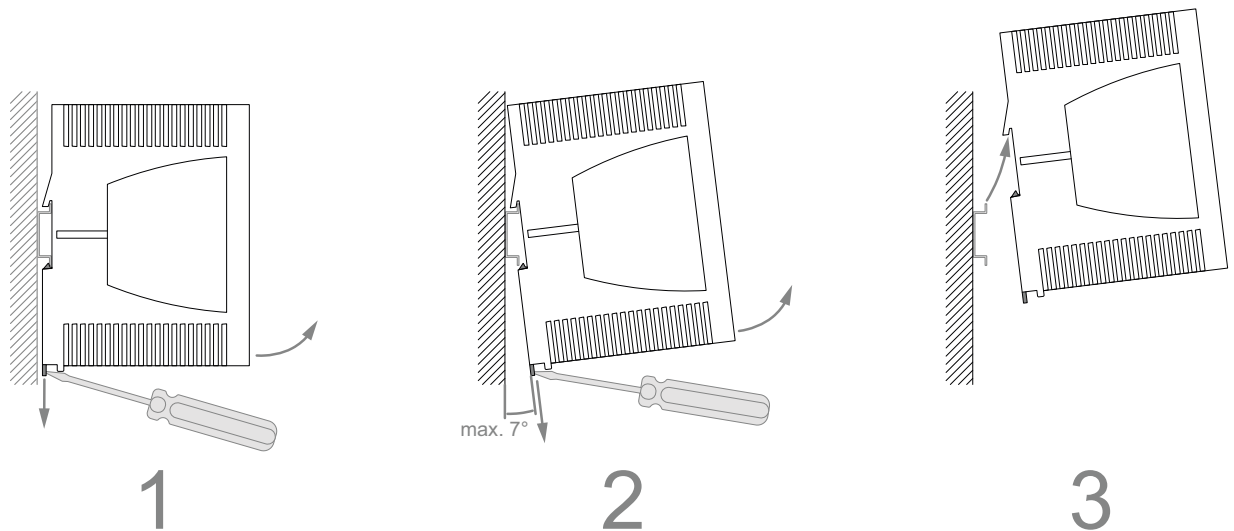
Figure 22: Removal from the DIN rail

- ☐ Insert a tool horizontally into the locking gate on the underside of the device.
- ☐ Using the tool, pull the locking gate downwards.
- ☐ With the locking gate pulled down, carefully tilt the device away from the DIN rail. Do **NOT** press the device against the DIN Rail or the flat surface behind the DIN rail.
- ☐ Detach the device from the DIN rail by lifting it upwards from the DIN rail.

7 Technical data

7.1 General data

Product name	Weight (Plastic casing)	Weight (Metal casing)	Casing width See "Dimension drawings" on page 80.	Degree of protection (Plastic casing)	Degree of protection (Metal casing)	Digital input available
BRS20 device variants						
BRS20-0400...	380 g (12.22 oz)	30.69 oz (870 g)	narrow	IP30	IP40	Yes
BRS20-0500...	420 g (14.82 oz)	910 g (32.09 oz)	narrow	IP30	IP40	Yes
BRS20-0600...	420 g (14.82 oz)	910 g (32.09 oz)	narrow	IP30	IP40	Yes
BRS20-08009999-S;C...	420 g (14.82 oz)	1020 g (35.98 oz)	medium	IP30	IP40	Yes
BRS20-08009999-T;E;G...	500 g (17.64 oz)	1020 g (35.98 oz)	medium	IP30	IP40	Yes
BRS20-0900....S;C...	500 g (17.64 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-0900....T;E;G...	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-1000....S;C...	500 g (17.64 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-1000....T;E;G...	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-1100....S;C...	500 g (17.64 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-1100....T;E;G...	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-12009999-S;C...	600 g (21.16 oz)	1260 g (44.4 oz)	medium	IP30	IP40	Yes
BRS20-12009999-T;E;G...	700 g (24.69 oz)	1260 g (44.4 oz)	medium	IP30	IP40	Yes
BRS20-1200ZZZZ-S;C...	500 g (17.64 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-1200ZZZZ-T;E;G...	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS20-16009999-S;C...	880 g (31.04 oz)	1450 g (51.14 oz)	wide	IP30	IP40	Yes
BRS20-16009999-T;E;G...	not available	1450 g (51.14 oz)	wide	not available	IP30	Yes

Table 12: General data

Product name	Weight (Plastic casing)	Weight (Metal casing)	Casing width See "Dimension drawings" on page 80.	Degree of protection (Plastic casing)	Degree of protection (Metal casing)	Digital input available
BRS20-20009999-S;C...	1060 g (37.3 oz)	1700 g (60 oz)	wide	IP30	IP40	Yes
BRS20-20009999-T;E;G...	not available	1700 g (60 oz)	wide	not available	IP30	Yes
BRS20-2000ZZZZ-S;C...	950 g (33.51 oz)	1520 g (53.61 oz)	wide	IP30	IP40	Yes
BRS20-2000ZZZZ-T;E;G...	not available	1520 g (53.61 oz)	wide	not available	IP30	Yes
BRS20-24009999-S;C...	1160 g (41 oz)	1800 g (63.4 oz)	wide	IP30	IP40	Yes
BRS20-24009999-T;E;G...	not available	1800 g (63.4 oz)	wide	not available	IP30	Yes
BRS20-2400ZZZZ-S;C...	1050 g (37 oz)	1620 g (57.14 oz)	wide	IP30	IP40	Yes
BRS20-2400ZZZZ-T;E;G...	not available	1620 g (57.14 oz)	wide	not available	IP30	Yes
BRS21 device variants						
BRS21-1200ZZZZ-S;C...	630 g (22.22 oz)	1250 g (44 oz)	medium	IP30	IP40	Yes
BRS21-1200ZZZZ-T;E;G...	not available	1250 g (44 oz)	medium	not available	IP40	Yes
BRS21-2000ZZZZ-S;C...	1080 g (38.09 oz)	1680 g (59.26 oz)	wide	IP30	IP40	Yes
BRS21-2000ZZZZ-T;E;G...	not available	1680 g (59.26 oz)	wide	not available	IP30	Yes
BRS21-2400ZZZZ-S;C...	1180 g (41.62 oz)	1780 g (62.78 oz)	wide	IP30	IP40	Yes
BRS21-2400ZZZZ-T;E;G...	not available	1780 g (62.78 oz)	wide	not available	IP30	Yes
BRS22 PoE device variants featuring supply voltage with characteristic value U						
BRS22-08009999-S;C...	750 g (24.46 oz)	1400 g (49.38 oz)	wide	IP30	IP40	Yes
BRS22-08009999-T;E;G...	not available	1400 g (49.38 oz)	wide	not available	IP30	Yes
BRS22 PoE device variants featuring supply voltage with characteristic value P						
BRS22-08009999-S;C...	500 g (17.64 oz)	1100 g (38.80 oz)	medium	IP30	IP40	No
BRS22-08009999-T;E;G...	not available	1250 g (44 oz)	wide	not available	IP30	Yes
BRS30 device variants						
BRS30-08042T2T...	700 g (24.69 oz)	1260 g (44.4 oz)	medium	IP30	IP40	Yes
BRS30-0804OOOO...	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes

Table 12: General data

Product name	Weight (Plastic casing)	Weight (Metal casing)	Casing width See "Dimension drawings" on page 80.	Degree of protection (Plastic casing)	Degree of protection (Metal casing)	Digital input available
BRS30-16042T2T-S;C...	1060 g (37.3 oz)	1700 g (60 oz)	wide	IP30	IP40	Yes
BRS30-16042T2T-T;E;G...	not available	1700 g (60 oz)	wide	not available	IP30	Yes
BRS30-1604OOOO-S;C...	950 g (33.51 oz)	1520 g (53.61 oz)	wide	IP30	IP40	Yes
BRS30-1604OOOO-T;E;G...	not available	1520 g (53.61 oz)	wide	not available	IP30	Yes
BRS30-20042T2T-S;C...	1160 g (41 oz)	1800 g (63.4 oz)	wide	IP30	IP40	Yes
BRS30-20042T2T-T;E;G...	not available	1800 g (63.4 oz)	wide	not available	IP30	Yes
BRS30-2004OOOO-S;C...	1050 g (37 oz)	1620 g (57.14 oz)	wide	IP30	IP40	Yes
BRS30-2004OOOO-T;E;G...	not available	1620 g (57.14 oz)	wide	not available	IP30	Yes
BRS31 device variants						
BRS31-0804OOOO-S;C...	700 g (24.69 oz)	1250 g (44.09 oz)	medium	IP30	IP40	Yes
BRS31-0804OOOO-T;E;G...	not available	1250 g (44.09 oz)	medium	not available	IP40	Yes
BRS31-1604OOOO-S;C...	1080 g (38.09 oz)	1680 g (59.26 oz)	wide	IP30	IP40	Yes
BRS31-1604OOOO-T;E;G...	not available	1680 g (59.26 oz)	wide	not available	IP30	Yes
BRS31-2004OOOO-S;C...	1180 g (41.62 oz)	1780 g (62.78 oz)	wide	IP30	IP40	Yes
BRS31-2004OOOO-T;E;G...	not available	1780 g (62.78 oz)	wide	not available	IP30	Yes
BRS32 PoE device variants featuring supply voltage with characteristic value U						
BRS32-08042T2T-S;C..	930 g (32.80 oz)	1620 g (57.14 oz)	wide	IP30	IP40	Yes
BRS32-08042T2T-T;E;G...	not available	1620 g (57.14 oz)	wide	not available	IP30	Yes
BRS32-0804OOOO-S;C...	800 g (28.21 oz)	1450 g (51.14 oz)	wide	IP30	IP40	Yes
BRS32-0804OOOO-T;E;G...	not available	1450 g (51.14 oz)	wide	not available	IP30	Yes
BRS32 PoE device variants featuring supply voltage with characteristic value P						
BRS32-08042T2T-S;C...	680 g (24 oz)	1320 g (46.56 oz)	medium	IP30	IP40	No
BRS32-08042T2T-T;E;G...	not available	1470 g (52 oz)	wide	not available	IP30	Yes
BRS32-0804OOOO-S;C...	550 g (19.4 oz)	1150 g (40.56 oz)	medium	IP30	IP40	No

Table 12: General data

Product name	Weight (Plastic casing)	Weight (Metal casing)	Casing width See "Dimension drawings" on page 80.	Degree of protection (Plastic casing)	Degree of protection (Metal casing)	Digital input available
BRS32-0804OOOO-T;E;G...	not available	1300 g (45.85 oz)	wide	not available	IP30	Yes
BRS33 PoE device variants featuring supply voltage with characteristic value U						
BRS33-0804OOOO-S;C	930 g (32.80 oz)	1610 g (56.79 oz)	wide	IP30	IP40	Yes
BRS33-0804OOOO-T;E;G...	not available	1610 g (56.79 oz)	wide	not available	IP30	Yes
BRS33 PoE device variants featuring supply voltage with characteristic value P						
BRS33-0804OOOO-S;C	550 g (19.4 oz)	46.21 oz (1310 g)	medium	IP30	IP40	No
BRS33-0804OOOO-T;E;G...	not available	1460 g (51.49 oz)	wide	not available	IP30	Yes
BRS40 device variants						
BRS40-00089999...	500 g (17.64 oz)	1020 g (35.98 oz)	medium	IP30	IP40	Yes
BRS40-00129999...	700 g (24.69 oz)	1260 g (44.4 oz)	medium	IP30	IP40	Yes
BRS40-0012OOOO...	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes
BRS40-00169999-S;C...	880 g (31.04 oz)	1450 g (51.14 oz)	wide	IP30	IP40	Yes
BRS40-00169999-T;E;G...	not available	1450 g (51.14 oz)	wide	not available	IP30	Yes
BRS40-00209999-S;C...	1060 g (37.3 oz)	1700 g (60 oz)	wide	IP30	IP40	Yes
BRS40-00209999-T;E;G...	not available	1700 g (60 oz)	wide	not available	IP30	Yes
BRS40-0020OOOO-S;C...	950 g (33.51 oz)	1520 g (53.61 oz)	wide	IP30	IP40	Yes
BRS40-0020OOOO-T;E;G...	not available	1520 g (53.61 oz)	wide	not available	IP30	Yes
BRS40-00249999-S;C...	1160 g (41 oz)	1800 g (63.4 oz)	wide	IP30	IP40	Yes
BRS40-00249999-T;E;G...	not available	1800 g (63.4 oz)	wide	not available	IP30	Yes
BRS40-0024OOOO-S;C...	1050 g (37 oz)	1620 g (57.14 oz)	wide	IP30	IP40	Yes
BRS40-0024OOOO-T;E;G...	not available	1620 g (57.14 oz)	wide	not available	IP30	Yes
BRS41-Gerätevarianten						
BRS41-0012OOOO-S;C...	700 g (24.69 oz)	1250 g (44 oz)	medium	IP30	IP40	Yes
BRS41-0012OOOO-T;E;G...	not available	1250 g (44 oz)	medium	not available	IP40	Yes
BRS41-0020OOOO-S;C...	1080 g (38.09 oz)	1680 g (59.26 oz)	wide	IP30	IP40	Yes

Table 12: General data

Product name	Weight (Plastic casing)	Weight (Metal casing)	Casing width See "Dimension drawings" on page 80.	Degree of protection (Plastic casing)	Degree of protection (Metal casing)	Digital input available
BRS41-0020OOOO-T;E;G...	not available	1680 g (59.26 oz)	wide	not available	IP30	Yes
BRS41-0024OOOO-S;C...	1180 g (41.62 oz)	1780 g (62.78 oz)	wide	IP30	IP40	Yes
BRS41-0024OOOO-T;E;G...	not available	1780 g (62.78 oz)	wide	not available	IP30	Yes
BRS42 PoE device variants featuring supply voltage with characteristic value U						
BRS42-00089999-S;C...	750 g (24.46 oz)	1400 g (49.38 oz)	wide	IP30	IP40	Yes
BRS42-0008....T;E;G...	not available	1400 g (49.38 oz)	wide	not available	IP30	Yes
BRS42-00129999-S;C...	930 g (32.80 oz)	1620 g (57.14 oz)	wide	IP30	IP40	Yes
BRS42-00129999-T;E;G...	not available	1620 g (57.14 oz)	wide	not available	IP30	Yes
BRS42-0012OOOO-S;C...	800 g (28.21 oz)	1450 g (51.14 oz)	wide	IP30	IP40	Yes
BRS42-0012OOOO-T;E;G...	not available	1450 g (51.14 oz)	wide	not available	IP30	Yes
BRS42 PoE device variants featuring supply voltage with characteristic value P						
BRS42-00089999-S;C...	500 g (17.64 oz)	1100 g (38.80 oz)	medium	IP30	IP40	No
BRS42-00089999-T;E;G...	not available	1250 g (44 oz)	wide	not available	IP30	Yes
BRS42-00129999-S;C...	680 g (24 oz)	1320 g (46.56 oz)	medium	IP30	IP40	No
BRS42-00129999-T;E;G...	not available	1470 g (52 oz)	wide	not available	IP30	Yes
BRS42-0012OOOO-S;C...	550 g (19.4 oz)	1150 g (40.56 oz)	medium	IP30	IP40	No
BRS42-0012OOOO-T;E;G...	not available	1300 g (45.85 oz)	wide	not available	IP30	Yes
BRS43 PoE device variants featuring supply voltage with characteristic value U						
BRS43-0012OOOO-S;C...	930 g (32.80 oz)	1610 g (56.79 oz)	wide	IP30	IP40	Yes
BRS43-0012OOOO-T;E;G...	not available	1610 g (56.79 oz)	wide	not available	IP30	Yes
BRS43 PoE device variants featuring supply voltage with characteristic value P						
BRS43-0012OOOO-S;C...	550 g (19.4 oz)	46.21 oz (1310 g)	medium	IP30	IP40	No
BRS43-0012OOOO-T;E;G...	not available	1460 g (51.49 oz)	wide	not available	IP30	Yes
BRS50 device variants						
BRS50-00122Q2Q…	570 g (20.10 oz)	1090 g (38.45 oz)	medium	IP30	IP40	Yes

Table 12: General data

Product name	Weight (Plastic casing)	Weight (Metal casing)	Casing width See "Dimension drawings" on page 80.	Degree of protection (Plastic casing)	Degree of protection (Metal casing)	Digital input available
BRS50-00202Q2Q-S;C...	950 g (33.51 oz)	1520 g (53.61 oz)	wide	IP30	IP40	Yes
BRS50-00202Q2Q-T;E;G…	not available	1520 g (53.61 oz)	wide	not available	IP30	Yes
BRS50-00242Q2Q-S;C…	1050 g (37 oz)	1620 g (57.14 oz)	wide	IP30	IP40	Yes
BRS50-00242Q2Q-T;E;G…	not available	1620 g (57.14 oz)	wide	not available	IP30	Yes
BRS52 PoE device variants featuring supply voltage with characteristic value U						
BRS52-00122Q2Q-S;C…	800 g (28.21 oz)	1450 g (51.14 oz)	wide	IP30	IP40	Yes
BRS52-00122Q2Q-T;E;G…	not available	1450 g (51.14 oz)	wide	not available	IP30	Yes
BRS52 PoE device variants featuring supply voltage with characteristic value P						
BRS52-00122Q2Q-S;C…	550 g (19.4 oz)	1150 g (40.56 oz)	medium	IP30	IP40	No
BRS52-00122Q2Q-T;E;G…	not available	1300 g (45.85 oz)	wide	not available	IP30	Yes

Table 12: General data

General data	
Dimensions W × H × D	See "Dimension drawings" on page 80.
Mounting	See "Installing the device onto the DIN rail" on page 45.
Pollution degree	2
Degree of protection	IP30 See "General data" on page 62.
	IP40 See "General data" on page 62.
	Note: IP protection is not evaluated by UL.
Laser protection	Class 1 in compliance with IEC 60825-1

Table 13: General data

7.2 Supply voltage

Supply voltage with characteristic value T		
Rated voltage range DC:	12 V DC ... 24 V DC	
Voltage range DC incl. maximum tolerances:	9.6 V DC ... 32 V DC	
Connection type	6-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	0.75 mm² (AWG18)
	max. conductor diameter	2.5 mm² (AWG12)
Power loss buffer	>10 ms at 20.4 V DC	
Overload current protection on the device	Non-replaceable fuse	
Back-up fuse for each voltage input	Nominal rating:	2 A ... 10 A
	Characteristic:	slow blow
Current integral I²t	<1 A²s	
Connection for functional ground	See "Grounding the device" on page 46.	

Table 14: Supply voltage with characteristic value T

Supply voltage with characteristic value F		
Rated voltage range DC: Rated voltage AC:	24 V DC ... 48 V DC 24 V AC	
Voltage range DC incl. maximum tolerances:	18 V DC ... 60 V DC	
Voltage range AC incl. maximum tolerances:	18 V AC ... 30 V AC, 50 Hz ... 60 Hz	
Connection type	6-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	0.75 mm² (AWG18)
	max. conductor diameter	2.5 mm² (AWG12)
Power loss buffer	>10 ms at 20.4 V DC ... 48 V DC and 24 V AC	
Overload current protection on the device	Non-replaceable fuse	
Back-up fuse for each voltage input	Nominal rating:	2 A ... 10 A
	Characteristic:	slow blow
Current integral I²t	<1 A²s at 24 V DC	
Connection for functional ground	See "Grounding the device" on page 46.	

Table 15: Supply voltage with characteristic value F

Supply voltage with characteristic value U	
Rated voltage DC:	24 V DC
Voltage range DC incl. maximum tolerances:	18 V DC ... 30 V DC

Table 16: Supply voltage with characteristic value U

Supply voltage with characteristic value U		
Connection type	6-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	1 mm² (AWG16)
	max. conductor diameter	2.5 mm² (AWG12)
Power loss buffer	>10 ms at 20.4 V DC	
Overload current protection on the device	Non-replaceable fuse	
Back-up fuse for each voltage input	Nominal rating:	10 A
	Characteristic:	slow blow
Current integral I²t	<36 A²s	
Connection for functional ground	See "Grounding the device" on page 46.	

Table 16: Supply voltage with characteristic value U

Supply voltage with characteristic value P		
Rated voltage DC:	When using PoE:	48 V DC
	When using PoE+:	54 V DC
	Without using PoE or PoE+:	24 V DC ... 48 V DC
Voltage range DC incl. maximum tolerances:	When using PoE:	46 V DC ... 57 V DC
	When using PoE+:	52 V DC ... 57 V DC
	Without using PoE or PoE+:	19 V DC ... 60 V DC
Connection type	6-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	0.75 mm² (AWG18)
	max. conductor diameter	2.5 mm² (AWG12)
Power loss buffer	>10 ms at 20.4 V DC	
Overload current protection on the device	Non-replaceable fuse	
Back-up fuse for each voltage input	Nominal rating:	10 A
	Characteristic:	slow blow
Current integral I²t	<25 A²s	
Insulation requirement	2250 V DC to casing ground/functional ground for at least 60 seconds	
Connection for functional ground	See "Grounding the device" on page 46.	

Table 17: Supply voltage with characteristic value P

7.3 Power consumption/power output

Device name	Total power consumption	Thermal power output	PoE power output
BRS20			
BRS20-0400...	5 W	17 Btu (IT)/h	0 W
BRS20-0500...	6 W	20 Btu (IT)/h	0 W
BRS20-0600...	7 W	24 Btu (IT)/h	0 W
BRS20-0800...	6 W	20 Btu (IT)/h	0 W
BRS20-0900...	7 W	24 Btu (IT)/h	0 W
BRS20-1000...	8 W	27 Btu (IT)/h	0 W
BRS20-1100...	9 W	31 Btu (IT)/h	0 W
BRS20-1200...	9 W	31 Btu (IT)/h	0 W
BRS20-1600...	10 W	34 Btu (IT)/h	0 W
BRS20-2000...	15 W	51 Btu (IT)/h	0 W
BRS20-2400...	16 W	55 Btu (IT)/h	0 W
BRS21			
BRS21-1200...	12 W	41 Btu (IT)/h	0 W
BRS21-2000...	18 W	61 Btu (IT)/h	0 W
BRS21-2400...	19 W	65 Btu (IT)/h	0 W
BRS22			
BRS22-08009999U...	104 W	48 Btu (IT/h)	90 W
BRS22-08009999P...	247 W	24 Btu (IT)/h	240 W
BRS30			
BRS30-0804...	9 W	31 Btu (IT)/h	0 W
BRS30-1604...	15 W	51 Btu (IT)/h	0 W
BRS30-2004...	16 W	55 Btu (IT)/h	0 W
BRS31			
BRS31-0804...	16 W	55 Btu (IT)/h	0 W
BRS31-1604...	18 W	61 Btu (IT)/h	0 W
BRS31-2004...	19 W	65 Btu (IT)/h	0 W
BRS32			
BRS32-0804OOOOU...	107 W	58 Btu (IT)/h	90 W
BRS32-0804OOOP...	250 W	34 Btu (IT)/h	240 W
BRS33			
BRS33-0804OOOOU...	110 W	68 Btu (IT)/h	90 W
BRS33-0804OOOP...	254 W	48 Btu (IT/h)	240 W
BRS40			
BRS40-0008...	8 W	27 Btu (IT)/h	0 W
BRS40-0012...	11 W	38 Btu (IT/h)	0 W
BRS40-0016...	14 W	48 Btu (IT/h)	0 W
BRS40-0020...	17 W	58 Btu (IT/h)	0 W
BRS40-0024...	19 W	65 Btu (IT/h)	0 W
BRS41			
BRS41-0012...	14 W	48 Btu (IT/h)	0 W

Table 18: Power consumption/power output

Device name	Total power consumption	Thermal power output	PoE power output
BRS41-0020...	20 W	68 Btu (IT)/h	0 W
BRS41-0024...	22 W	75 Btu (IT)/h	0 W
BRS42			
BRS42-00089999U...	106 W	55 Btu (IT)/h	90 W
BRS42-00089999P...	249 W	31 Btu (IT)/h	240 W
BRS42-0012OOOOU...	109 W	65 Btu (IT)/h	90 W
BRS42-0012OOOOP...	252 W	41 Btu (IT)/h	240 W
BRS43			
BRS43-0012OOOOU...	112 W	75 Btu (IT)/h	90 W
BRS43-0012OOOOP...	256 W	55 Btu (IT)/h	240 W
BRS50			
BRS50-0012...	12 W	41 Btu (IT)/h	0 W
BRS50-0020...	17 W	58 Btu (IT)/h	0 W
BRS50-0024...	20 W	68 Btu (IT)/h	0 W
BRS52			
BRS52-00122Q2QU...	110 W	68 Btu (IT)/h	90 W
BRS52-00122Q2QP...	253 W	44 Btu (IT)/h	240 W

Table 18: Power consumption/power output

7.4 Signal contact

Signal contact **Device variants featuring supply voltage with characteristic value F, P and T**		
Connection type	6-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	0.08 mm^2 (AWG 28)
	max. conductor diameter	2.5 mm² (AWG12)
Nominal value	I_{max} = 1 A at U_{max} = 30 V AC (resistive load)	
	I_{max} = 1 A at U_{max} = 60 V DC (resistive load)	
Nominal value according to UL	I_{max} = 0.5 A at U_{max} = 30 V AC (resistive load)	
	I_{max} = 1 A at U_{max} = 30 V DC (resistive load)	
Nominal value according to ANSI/UL 121201	See control drawing in chapter "Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)" on page 12	

Table 19: Signal contact: device variants featuring supply voltage with characteristic value F, P and T

Signal contact
Device variants featuring supply voltage with characteristic value U

Connection type	6-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	0.08 mm^2 (AWG 28)
	max. conductor diameter	2.5 mm² (AWG12)
Nominal value	I_{max} = 1 A at U_{max} = 30 V AC (resistive load)	
	I_{max} = 0.5 A at U_{max} = 60 V DC (resistive load)	
	I_{max} = 1 A at U_{max} = 30 V DC (resistive load)	
Nominal value according to UL	I_{max} = 0.5 A at U_{max} = 30 V AC (resistive load)	
	I_{max} = 1 A at U_{max} = 30 V DC (resistive load)	
Nominal value according to ANSI/UL 121201	See control drawing in chapter "Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)" on page 12	

Table 20: Signal contact: device variants featuring supply voltage with characteristic value U

7.5 Digital input

Digital input

Connection type	2-pin terminal block with screw lock	
	Tightening torque	0.5 Nm (4.4 lb-in)
	min. conductor diameter	0.08 mm^2 (AWG 28)
	max. conductor diameter	2.5 mm² (AWG12)
Maximum permitted input voltage range	between -32 V DC and +32 V DC	
Nominal input voltage	+24 V DC	
Input voltage, low level, status "0"	-0.3 V DC … +5 V DC	
Input voltage, high level, status "1"	+11 V DC … +30 V DC	
Maximum input current at nominal input voltage	15 mA	
Permitted closed-circuit current for 2-wire sensors	1.5 mA	
Input characteristic according to IEC 61131-2 (current-consuming)	Typ 3	

Table 21: Digital input

7.6 Climatic conditions during operation

Climatic conditions during operation	
Humidity	1 % ... 95 % (non-condensing)
Air pressure	min. 795 hPa (+2000 m ASL; +6562 ft ASL)
	max. 1060 hPa (-400 m ASL; -1312 ft ASL)
	With temperature derating min. 540 hPa (+5000 m ASL; +16404 ft ASL)

Table 22: Climatic conditions during operation

7.7 Climatic conditions during storage

Climatic conditions during storage		
Ambient temperature	-40 °C ... +85 °C (-40 °F ... +185 °F)	up to 3 months
	-40 °C ... +70 °C (-40 °F ... +158 °F)	up to 1 year
	-40 °C ... +50 °C (-40 °F ... +122 °F)	up to 2 years
	0 °C ... +30 °C (+32 °F ... +86 °F)	up to 10 years
Humidity	1 % ... 95 % (non-condensing)	
Air pressure	▶ min. 540 hPa (+5000 m ASL; +16404 ft ASL)	
	▶ max. 1060 hPa (-400 m ASL; -1312 ft ASL)	

Table 23: Climatic conditions during storage

7.8 Maximum ambient air temperature

Note: Note the "Temperature derating" values for special installation, altitude and when using SFP transceiver.

7.8.1 BRS device variants without PoE

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS20 device variants		
BRS20-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F)
BRS21 device variants		
BRS21-xxxx...	0 °C ... +50 °C (+32 °F ... +122 °F)	-40 °C ... +60 °C (-40 °F ... +140 °F)
BRS30 device variants		
BRS30-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F)
BRS31 device variants		
BRS31-xxxx...	0 °C ... +50 °C (+32 °F ... +122 °F)	-40 °C ... +60 °C (-40 °F ... +140 °F)
BRS40 device variants		
BRS40-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F)
BRS41 device variants		
BRS41-xxxx...	0 °C ... +50 °C (+32 °F ... +122 °F)	-40 °C ... +60 °C (-40 °F ... +140 °F)
BRS50 device variants		
BRS50-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F)

Table 24: Maximum ambient air temperature of the BRS device variants without PoE

7.8.2 BRS device variants with PoE

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS22 PoE device variants featuring supply voltage with characteristic value U		
BRS22-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F) at maximum 60 W PoE power -40 °C ... +60 °C (-40 °F ... +140 °F) at 60 W ... 90 W PoE power

Table 25: Maximum ambient air temperature of the BRS device variants with PoE: BRS22

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS22 PoE device variants featuring supply voltage with characteristic value P		
BRS22-xxxx...	**IP40 metal casing:** 0 °C ... +60 °C (+32 °F ... +140 °F) at maximum 240 W PoE power **Plastic casing:** -40 °C ... +60 °C (-40 °F ... +140 °F) at maximum 120 W PoE power 0 °C ... +60 °C (+32 °F ... +140 °F) at 120 W PoE power 0 °C ... +55 °C (+32 °F ... +131 °F) at 120 W ... 180 W PoE power	-40 °C ... +70 °C (-40 °F ... +158 °F)

Table 25: Maximum ambient air temperature of the BRS device variants with PoE: BRS22

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS32 PoE device variants featuring supply voltage with characteristic value U		
BRS32-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F) at maximum 60 W PoE power -40 °C ... +60 °C (-40 °F ... +140 °F) at 60 W ... 90 W PoE power
BRS32 PoE device variants featuring supply voltage with characteristic value P		
BRS32-xxxx...	**IP40 metal casing:** 0 °C ... +60 °C (+32 °F ... +140 °F) at maximum 240 W PoE power **Plastic casing:** -40 °C ... +60 °C (-40 °F ... +140 °F) at maximum 120 W PoE power 0 °C ... +60 °C (+32 °F ... +140 °F) at 120 W PoE power 0 °C ... +55 °C (+32 °F ... +131 °F) at 120 W ... 180 W PoE power	-40 °C ... +70 °C (-40 °F ... +158 °F)
BRS33 PoE device variants featuring supply voltage with characteristic value U		
BRS33-xxxx...	0 °C ... +50 °C (+32 °F ... +122 °F)	-40 °C ... +60 °C (-40 °F°... +140 °F) with maximum 60 W PoE power -40 °C ... +50 °C (-40 °F ... +122 °F) at 60 W ... 90 W PoE power

Table 26: Maximum ambient air temperature of the BRS device variants with PoE: BRS32 / BRS33

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS33 PoE device variants featuring supply voltage with characteristic value P		
BRS33-xxxx...	**IP40 metal casing:** 0 °C ... +50 °C (+32 °F ... +122 °F) at maximum 240 W PoE power **Plastic casing:** 0 °C ... +50 °C (+32 °F ... +122 °F) at maximum 120 W PoE power 0 °C ... +45 °C (+32 °F ... +113 °F) at 120 W ... 180 W PoE power 0 °C ... +55 °C (+32 °F ... +131 °F) at 120 W ... 180 W PoE power	-40 °C ... +60 °C (-40 °F ... +140 °F)

Table 26: Maximum ambient air temperature of the BRS device variants with PoE: BRS32 / BRS33

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS42 PoE device variants featuring supply voltage with characteristic value U		
BRS42-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F) at maximum 60 W PoE power -40 °C ... +60 °C (-40 °F ... +140 °F) at 60 W ... 90 W PoE power
BRS42 PoE device variants featuring supply voltage with characteristic value P		
BRS42-xxxx...	**IP40 metal casing:** 0 °C ... +60 °C (+32 °F ... +140 °F) at maximum 240 W PoE power **Plastic casing:** -40 °C ... +60 °C (-40 °F ... +140 °F) at maximum 120 W PoE power 0 °C ... +60 °C (+32 °F ... +140 °F) at 120 W PoE power 0 °C ... +55 °C (+32 °F ... +131 °F) at 120 W ... 180 W PoE power	-40 °C ... +70 °C (-40 °F ... +158 °F)
BRS43 PoE device variants featuring supply voltage with characteristic value U		
BRS43-xxxx...	0 °C ... +50 °C (+32 °F ... +122 °F)	-40 °C ... +60 °C (-40 °F°... +140 °F) with maximum 60 W PoE power -40 °C ... +50 °C (-40 °F ... +122 °F) at 60 W ... 90 W PoE power

Table 27: Maximum ambient air temperature of the BRS device variants with PoE: BRS42 / BRS43

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS43 PoE device variants featuring supply voltage with characteristic value P		
BRS43-xxxx...	**IP40 metal casing:** 0 °C ... +50 °C (+32 °F ... +122 °F) at maximum 240 W PoE power **Plastic casing:** 0 °C ... +50 °C (+32 °F ... +122 °F) at maximum 120 W PoE power 0 °C ... +45 °C (+32 °F ... +113 °F) at 120 W ... 180 W PoE power 0 °C ... +55 °C (+32 °F ... +131 °F) at 120 W ... 180 W PoE power	-40 °C ... +60 °C (-40 °F ... +140 °F)

Table 27: Maximum ambient air temperature of the BRS device variants with PoE: BRS42 / BRS43

Product name	Temperature range Characteristic value S, C	Temperature range Characteristic value T, E, G
BRS52 PoE device variants featuring supply voltage with characteristic value U		
BRS52-xxxx...	0 °C ... +60 °C (+32 °F ... +140 °F)	-40 °C ... +70 °C (-40 °F ... +158 °F) at maximum 60 W PoE power -40 °C ... +60 °C (-40 °F ... +140 °F) at 60 W ... 90 W PoE power
BRS52 PoE device variants featuring supply voltage with characteristic value P		
BRS52-xxxx...	**IP40 metal casing:** 0 °C ... +60 °C (+32 °F ... +140 °F) at maximum 240 W PoE power **Plastic casing:** -40 °C ... +60 °C (-40 °F ... +140 °F) at maximum 120 W PoE power 0 °C ... +60 °C (+32 °F ... +140 °F) at 120 W PoE power 0 °C ... +55 °C (+32 °F ... +131 °F) at 120 W ... 180 W PoE power	-40 °C ... +70 °C (-40 °F ... +158 °F)

Table 28: Maximum ambient air temperature of the BRS device variants with PoE: BRS52

7.9 Temperature derating

Note: Add the deratings if more than one of the following conditions apply.

7.9.1 Derating depending on the mounting position

Mounting	Minimum clearance at the ventilation slots	Derating
Standard mounting (vertical)	5 cm (2 in)	0 K
	2 cm (0.8 in)	3 K
	0 cm (0 in)	15 K
90° rotated mounting (horizontal)	0 cm (0 in)	15 K

Table 29: Derating depending on the mounting position

7.9.2 Derating depending on the altitude above sea level

Altitude above sea level	Derating
-400 m ASL ... 2000 m ASL (-1312 ft ASL ... 6560 ft ASL)	0 K
2000 m ASL ... 3000 m ASL (6560 ft ASL ... 9842 ft ASL)	10 K
3000 m ASL ... 4000 m ASL (9842 ft ASL ... 13120 ft ASL)	15 K
4000 m ASL ... 4500 ASL (13120 ft ASL ... 14763 ft ASL)	20 K
4500 m ASL ... 5000 m ASL (14763 ft ASL ... 16404 ft ASL)	25 K

Table 30: Derating depending on the altitude above sea level

7.9.3 Derating depending on the SFP transceiver

■ Fast Ethernet SFP transceiver

Product code	Device variants featuring temperature range with characteristic value S, C Derating	Device variants featuring temperature range with characteristic value T, E and G Derating
M-FAST SFP-MM/LC	0 K	10 K
M-FAST SFP-MM/LC EEC	0 K	0 K
M-FAST SFP-SM/LC	0 K	10 K
M-FAST SFP-SM/LC EEC	0 K	0 K
M-FAST SFP-SM+/LC	0 K	10 K
M-FAST SFP-SM+/LC EEC	0 K	0 K
M-FAST SFP-LH/LC	0 K	10 K
M-FAST SFP-LH/LC EEC	0 K	0 K
SFP-FAST-MM/LC	0 K	10 K
SFP-FAST-MM/LC EEC	0 K	0 K
SFP-FAST-SM/LC	0 K	10 K
SFP-FAST-SM/LC EEC	0 K	0 K

Table 31: Fast Ethernet SFP transceiver

■ **Gigabit Ethernet SFP transceiver**

Product code	Device variants featuring temperature range with characteristic value S, C Derating	Device variants featuring temperature range with characteristic value T, E and G Derating
M-SFP-SX/LC	0 K	10 K
M-SFP-SX/LC EEC	0 K	0 K
M-SFP-LX/LC	0 K	10 K
M-SFP-LX/LC EEC	0 K	0 K
M-SFP-LH/LC	2 K per SFP transceiver	2 K per SFP transceiver + 10 K
M-SFP-LH/LC EEC	0 K	2 K per SFP transceiver
M-SFP-LH+/LC	2 K per SFP transceiver	2 K per SFP transceiver + 10 K
SFP-GIG-LX/LC	0 K	10 K
SFP-GIG-LX/LC EEC	0 K	0 K
M-SFP-LX+/LC	0 K	10 K
M-SFP-LX+/LC EEC	0 K	0 K
M-SFP-LH+/LC EEC	0 K	2 K per SFP transceiver
M-SFP-MX/LC EEC	0 K	2 K per SFP transceiver

Table 32: Gigabit Ethernet SFP transceiver

■ **2.5 Gigabit Ethernet SFP transceiver**

Product code	Device variants featuring temperature range with characteristic value S, C Derating	Device variants featuring temperature range with characteristic value T, E and G Derating
M-SFP-2,5-MM/LC EEC	0 K	0 K
M-SFP-2,5-SM-/LC EEC	0 K	0 K
M-SFP-2,5-SM/LC EEC	0 K	3 K per SFP transceiver
M-SFP-2,5-SM+/LC EEC	0 K	0 K
M-SFP-2,5-LH/LC	2 K per SFP transceiver	2 K per SFP transceiver + 10 K

Table 33: 2.5 Gigabit Ethernet SFP transceiver

7.10   Maximum internal air temperature

Note: For more information on the maximum internal air temperature, refer to chapter "Monitoring the ambient air temperature".

Maximum inner temperature of device (guideline)	
Plastic casing	
Device variants featuring temperature range with characteristic value T, E and G	+85 °C (+185 °F)
Metal casing	
Device variants featuring temperature range with characteristic value S and C	+80 °C (+176 °F)
Metal casing	
Device variants featuring temperature range with characteristic value T, E and G	+85 °C (+185 °F)

Table 34: Maximum internal air temperature

7.11 Dimension drawings

7.11.1 Device variants with casing with characteristic value C (plastic casing)

Figure 23: Device variants in narrow plastic casing
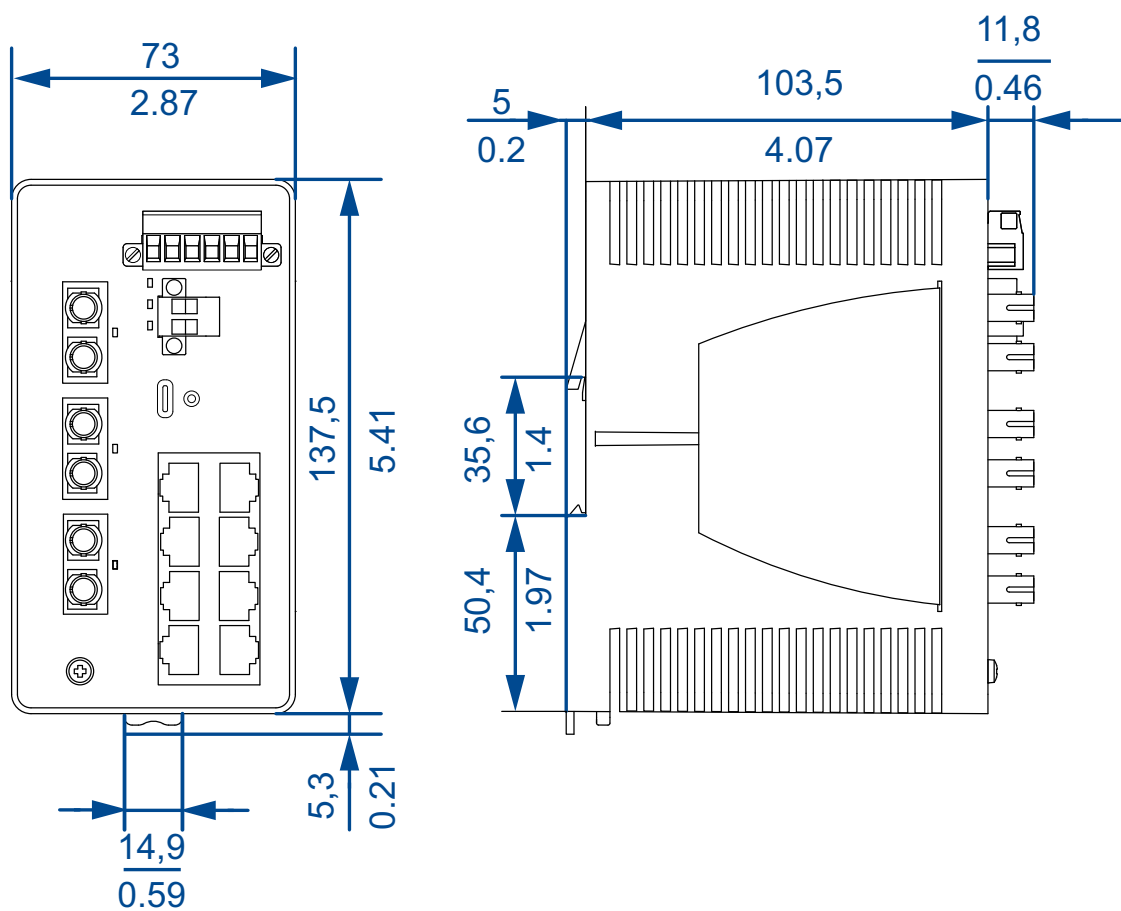
Figure 24: Device variants in medium plastic casing

mm / inch

108,8 / 4.28
137,5 / 5.41
5,3 / 0.21
14,9 / 0.59

5 / 0.2
103,5 / 4.07
11,8 / 0.46
35,6 / 1.4
50,4 / 1.97
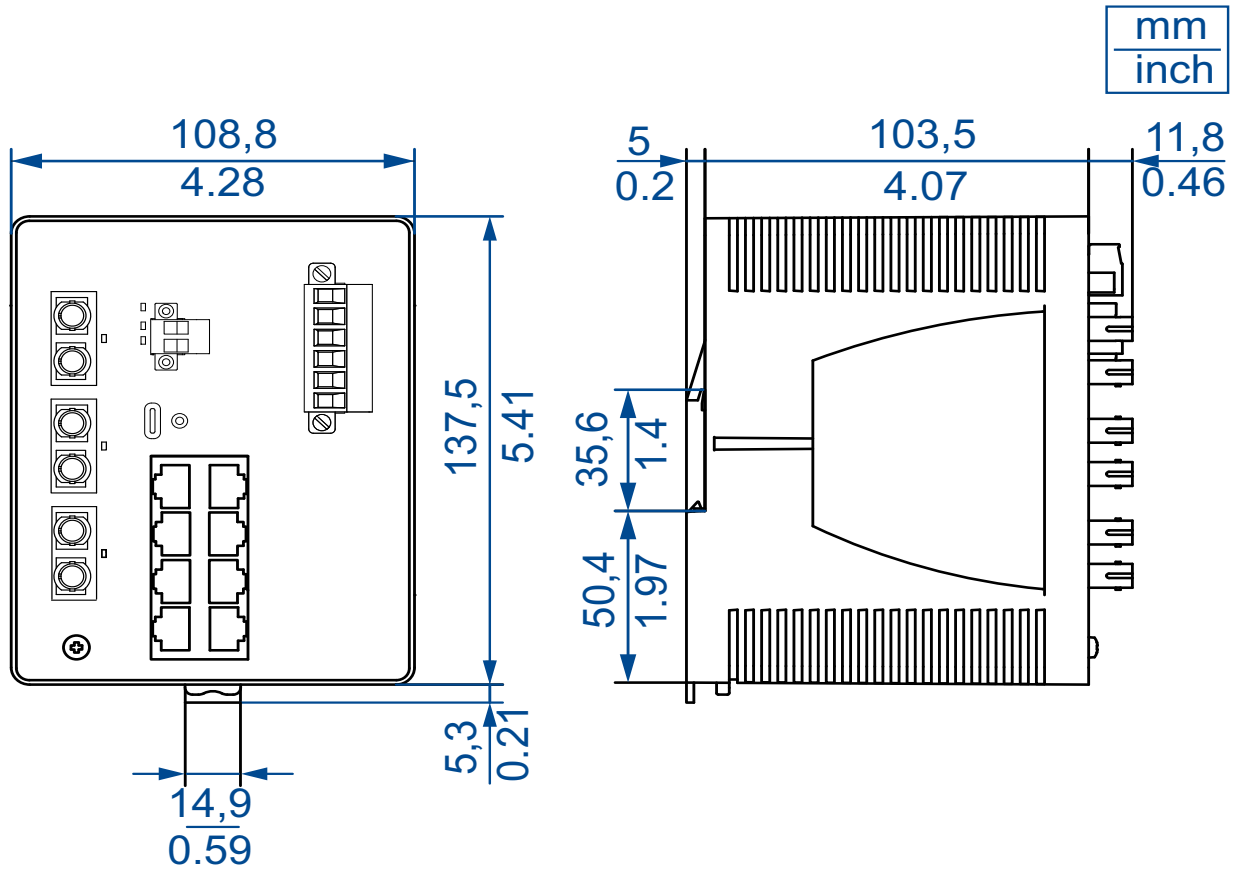
Figure 25: Device variants in wide plastic casing

7.11.2 Device variants with casing with characteristic value E/D (metal casing)

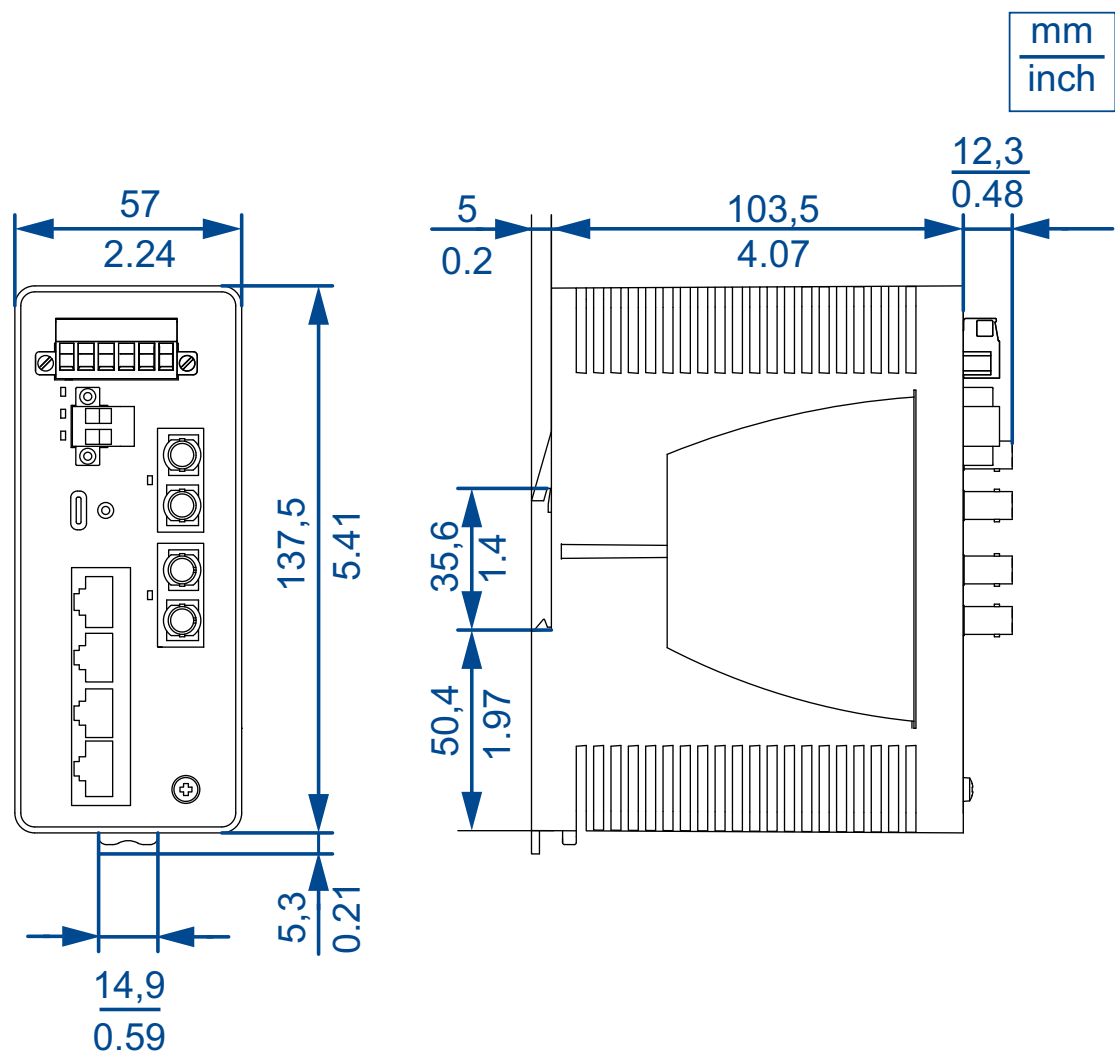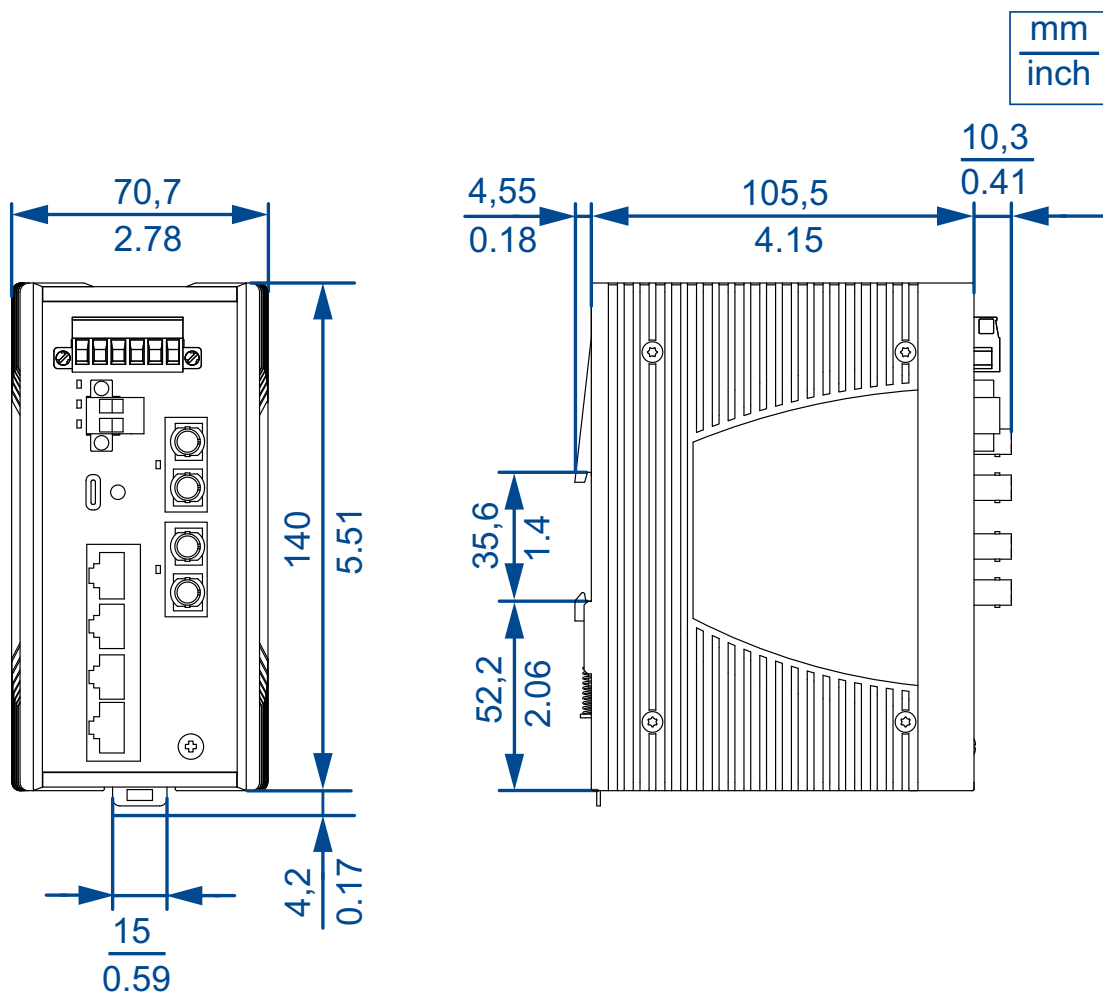*Figure 26: Device variants in narrow metal casing*
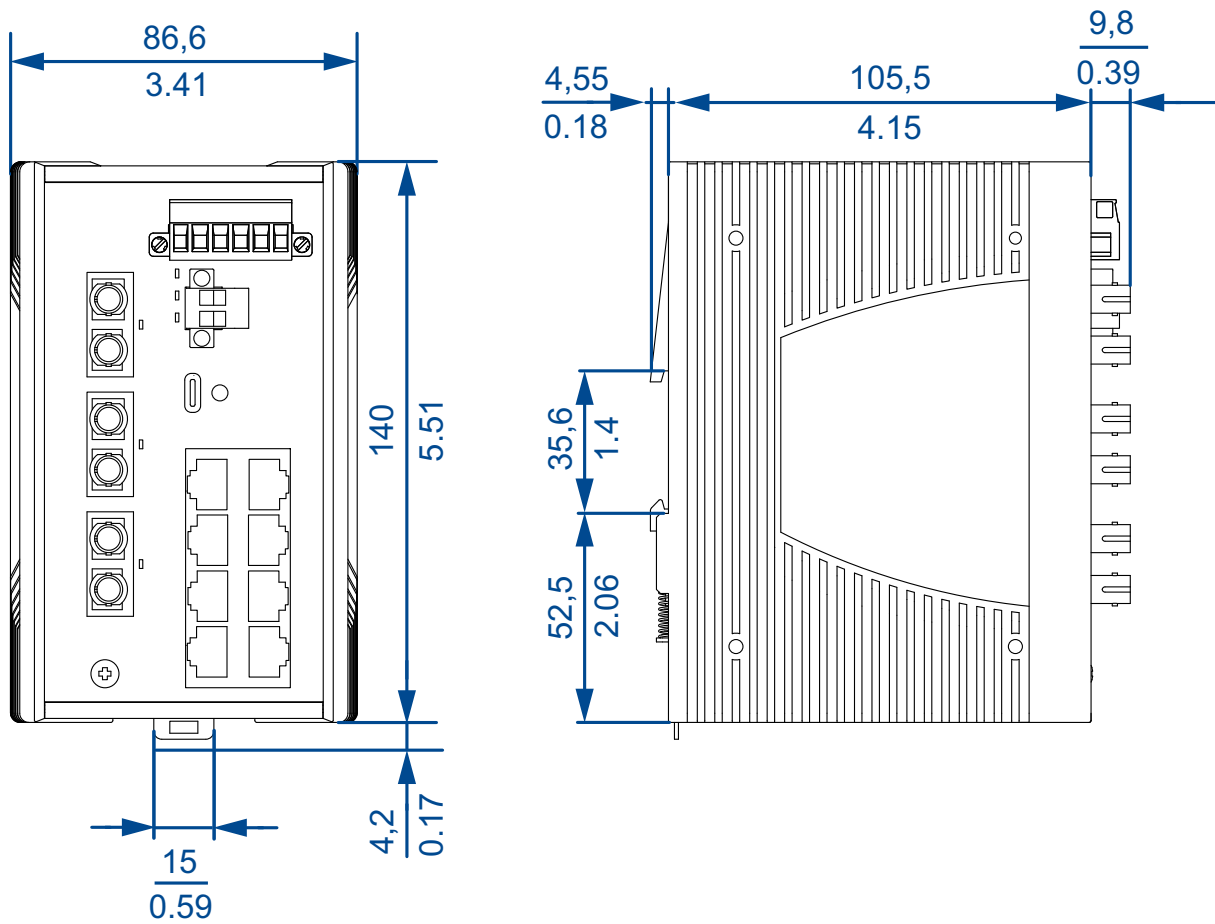
Figure 27: Device variants in medium metal casing
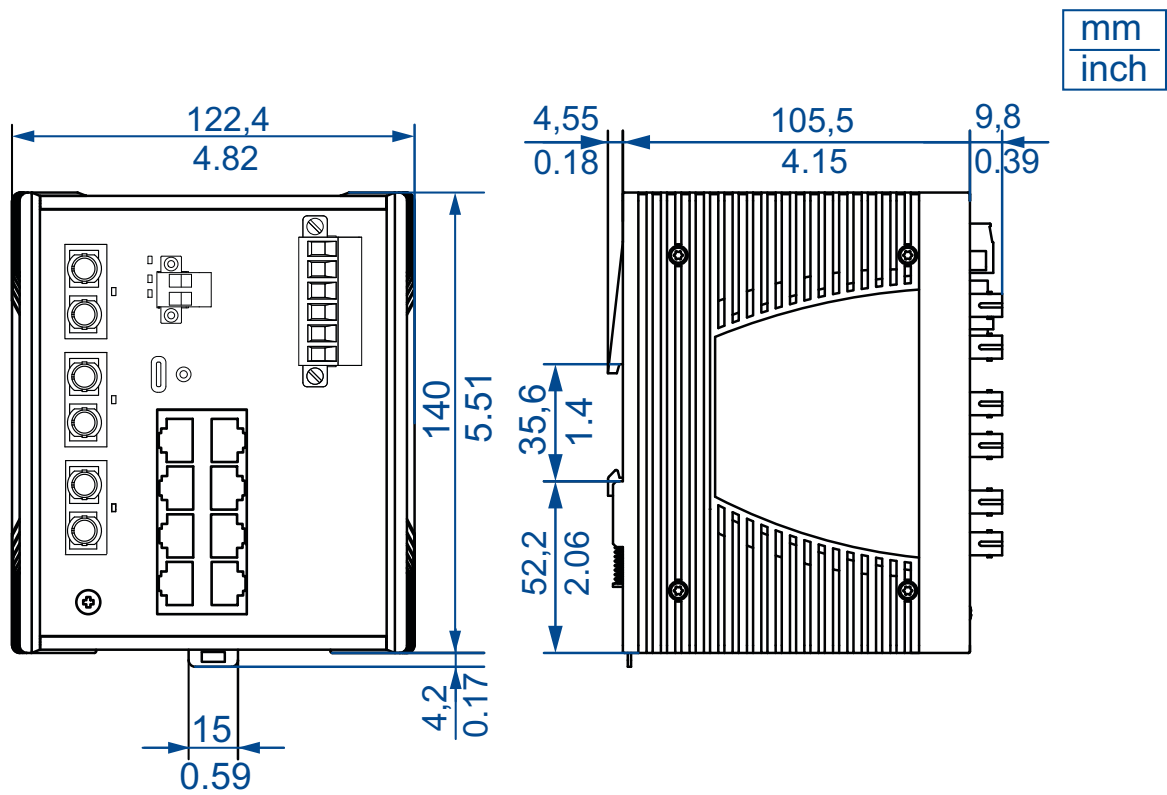
Figure 28: Device variants in wide metal casing

7.12 Immunity

Immunity		Standard applications[a]	Navy applications	Railway applications (trackside) as per EN 50121-4
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	—
		8.4 Hz ... 200 Hz with 1 g	13.2 Hz ... 100 Hz with 0.7 g	—
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms	—	—

Table 35: Immunity

a. EN 61131-2, CE, FCC – applies to all devices

7.13 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]	Navy applications	Railway applications (trackside) as per EN 50121-4
EN 55032	Class A	—	—
DNV Guidelines	—	EMC B	—
FCC 47 CFR Part 15	Class A	—	—
EN 61000-6-4	Fulfilled	—	Fulfilled

Table 36: EMC interference emission

a. EN 61131-2, CE, FCC – applies to all devices

EMC interference immunity		Standard applications[a]	Navy applications	Railway applications (trackside) as per EN 50121-4
Electrostatic discharge				
EN 61000-4-2	Contact discharge	±4 kV	±6 kV	±6 kV
EN 61000-4-2	Air discharge	±8 kV	±8 kV	±8 kV
Electromagnetic field				
EN 61000-4-3	80 MHz ... 800 MHz	—	—	max. 10 V/m
	80 MHz ... 1000 MHz	max. 10 V/m	—	—
	800 MHz ... 1000 MHz	—	—	20 V/m
	80 MHz ... 2000 MHz	—	max. 10 V/m	—
	1.4 GHz ... 2.0 GHz	3 V/m	—	max. 10 V/m
	2.0 GHz ... 2.7 GHz	1 V/m	—	5 V/m
	5.1 GHz ... 6.0 GHz	—	—	3 V/m
Fast transients (burst) – power supply connection				
EN 61000-4-4		±2 kV	±2 kV	±2 kV
Fast transients (burst) – data line				
EN 61000-4-4		±1 kV	±1 kV	±2 kV
Voltage surges – power supply connection				
EN 61000-4-5	line/ground	±2 kV	±1 kV	±2 kV
EN 61000-4-5	line/line	±1 kV	±0.5 kV	±1 kV
Voltage surges - data line				
EN 61000-4-5	line/ground	±1 kV	—	±2 kV
Conducted disturbances				
EN 61000-4-6	150 kHz ... 80 MHz	10 V	10 V	10 V

Table 37: EMC interference immunity

a. EN 61131-2, CE, FCC – applies to all devices

7.14 Network range

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

7.14.1 10/100/1000 Mbit/s twisted pair port

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

Table 38: Network range: 10/100/1000 Mbit/s twisted pair port

7.14.2 Fast Ethernet SFP transceiver

Product code	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	BLP/Dispersion
M-FAST-SFP-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
M-FAST-SFP-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
M-FAST-SFP-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)
M-FAST-SFP-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)
M-FAST-SFP-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)

Table 39: F/O port 100BASE-FX (SFP 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
M-FAST-SFP-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)
SFP-FAST-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
SFP-FAST-MM/LC EEC	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
SFP-FAST-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)
SFP-FAST-SM/LC EEC	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)

Table 39: F/O 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, -MM	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
-M2, -MM	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
-M4, -NN	SM	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, -VV	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)
-S4, -UU	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 40: 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
-E2, EE	SM+	1300 nm	9/125 µm	7 dB ... 29 dB	25 km ... 65 km (12.43 mi ... 40.39 mi)	0.4 dB/km	3.5 ps/(nm×km)
-L2, -LL	LH	1550 nm	9/125 µm	3 dB ... 29 dB	14 km ... 104 km (8.70 mi ... 64.62 mi)	0.25 dB/km	19 ps/(nm×km)
-G2, -GG	LH+	1550 nm	9/125 µm	14 dB ... 47 dB	67 km ... 176 km (41.63 mi ... 109.36 mi)	0.25 dB/km	19 ps/(nm×km)

Table 40: 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.

7.14.3   Gigabit Ethernet SFP transceiver

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...	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...	MM	1310 nm	62,5/125 µm	0 dB ... 12 dB	0 km ... 0.50 km (0 km ... 0.31 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

Table 41: 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
-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)
-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)
-LH+/LC...	LH	1550 nm	9/125 µm	13 dB ... 32 dB	62 km ... 116 km (38.52 mi ... 72.07 mi)	0.25 dB/km	19 ps/ (nm×km)
-LH+/LC...	LH	1550 nm	9/125 µm	13 dB ... 32 dB	62 km ... 138 km (38.52 mi ... 85.75 mi)	0.21 dB/ km (typically)	19 ps/ (nm×km)
SFP-GIG-LX/LC...	MM	1310 nm[g]	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
SFP-GIG-LX/LC...	MM	1310 nm[h]	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
SFP-GIG-LX/LC...	SM	1310 nm	9/125 µm	0 dB ... 10,5 dB	0 km ... 20 km[i] (0 mi ... 12.43 mi)	0,4 dB/km	3,5 ps/ (nm×km)

Table 41: 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.
g. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).
h. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).
i. Including 2.5 dB system reserve when compliance with the fiber data is observed.

7.14.4   2.5 Gigabit Ethernet SFP transceiver

Product code M-SFP-2.5-...	Mode[a]	Wave length	Fiber	System attenuation	Example for F/O cable length	Fiber attenuation	BLP/dispersion
MM/LC EEC	MM	850 nm	50/125 µm	0 dB ... 4 dB	0.55 km (0.34 mi)	3.5 dB/km	2000 MHz×km (OM3)
MM/LC EEC	MM	850 nm	50/125 µm	0 dB ... 4 dB	0.4 km (0.25 mi)	3.5 dB/km	500 MHz×km (OM2)
MM/LC EEC	MM	850 nm	62.5/125 µm	0 dB ... 4 dB	0.17 km (0.11 mi)	3.5 dB/km	200 MHz×km (OM1)
SM-/LC EEC	SM	1310 nm	9/125 µm	0 dB ... 8.5 dB	5 km (3.11 mi)	0.4 dB/km	3.5 ps/(nm×km)
SM/LC EEC	SM	1310 nm	9/125 µm	0 dB ... 12 dB	20 km (12.43 mi)	0.4 dB/km	3.5 ps/(nm×km)
SM+/LC EEC	SM	1310 nm	9/125 µm	12 dB ... 25 dB	45 km (27.96 mi)	0.4 dB/km	3.5 ps/(nm×km)
LH/LC	SM	1551 nm	9/125 µm	14 dB ... 28 dB	80 km[b] (49.70 mi)	0.25 dB/km	19 ps/(nm×km)

Table 42: F/O port 2.5 Gbit/s (SFP fiber optic Gigabit Ethernet transceiver)

a. MM = Multimode, SM = Singlemode, LH = Singlemode Longhaul
b. Typically the DWDM (Dense Wave Division Multiplexing) links have filters because the remaining attenuation budget is consumed by the filters.For point-to-point connections without filters and with max. 1.5 dB of connector losses you can cover up to 95 km (59 mi).

7.14.5 Bidirectional Fast Ethernet SFP transceiver

Product code SFP-FAST-B...	Mode[a]	Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	Dispersion
SFP-FAST-BA MM/LC EEC	MM	1310 nm	1550 nm	50/125 µm 62.5/125 µm	0 dB ... 16 dB	0 km ... 2 km (0 mi ... 1.24 mi)	1.0 dB/km	800 MHz×km 500 MHz×km
SFP-FAST-BB MM/LC EEC	MM	1550 nm	1310 nm	50/125 µm 62.5/125 µm	0 dB ... 16 dB	0 km ... 2 km (0 mi ... 1.24 mi)	1.0 dB/km	800 MHz×km 500 MHz×km
SFP-FAST-BA SM/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0 dB ... 18 dB	0 km ... 20 km (0 km ... 12.43 mi)	0.4 dB/km	3.5 ps/(nm×km)
SFP-FAST-BB SM/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0 dB ... 18 dB	0 km ... 20 km (0 km ... 12.43 mi)	0.25 dB/km	19 ps/(nm×km)
SFP-FAST-BA SM+/LC EEC	SM	1310 nm	1550 nm	9/125 µm	0 dB ... 29 dB	0 km ... 60 km (0 mi ... 37.29 mi)	0.4 dB/km	3.5 ps/(nm×km)
SFP-FAST-BB SM+/LC EEC	SM	1550 nm	1310 nm	9/125 µm	0 dB ... 29 dB	0 km ... 60 km (0 mi ... 37.29 mi)	0.25 dB/km	19 ps/(nm×km)

Table 43: F/O port (bidirectional Fast 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.

7.14.6 Bidirectional Gigabit Ethernet SFP transceiver

Product code SFP-GIG-B...	Mode[a]	Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	Dispersion
SFP-GIG-BA LX/ LC EEC	SM	1310 nm	1550 nm	9/125 µm	0 dB ... 15 dB	0 km ... 20 km (0 mi ... 12.43 mi)	0.4 dB/km	3.5 ps/(nm×km)
SFP-GIG-BB LX/ LC EEC	SM	1550 nm	1310 nm	9/125 µm	0 dB ... 15 dB	0 km ... 20 km (0 mi ... 12.43 mi)	0.25 dB/km	19 ps/(nm×km)
SFP-GIG-BA LX+/ LC EEC	SM	1310 nm	1550 nm	9/125 µm	3 dB ... 20 dB	12 km ... 40 km (7.45 mi ... 24.86 mi)	0.4 dB/km	3.5 ps/(nm×km)

Table 44: F/O port (bidirectional Gigabit Ethernet SFP transceiver)

Product code SFP-GIG-B...	Mode[a]	Wave length TX	Wave length RX	Fiber	System attenuation	Example for F/O cable length[b]	Fiber attenuation	Dispersion
SFP-GIG-BB LX+/ LC EEC	SM	1550 nm	1310 nm	9/125 µm	3 dB ... 20 dB	12 km ... 40 km (7.45 mi ... 24.86 mi)	0.25 dB/km	19 ps/(nm×km)
SFP-GIG-BA LH/ LC EEC	SM	1490 nm	1550 nm	9/125 µm	4 dB ... 24 dB	19 km ... 80 km (11.80 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)
SFP-GIG-BB LH/ LC EEC	SM	1550 nm	1490 nm	9/125 µm	4 dB ... 24 dB	19 km ... 80 km (11.80 mi ... 49.71 mi)	0.25 dB/km	19 ps/(nm×km)

Table 44: 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.

8 Scope of delivery

Scope of delivery
1 × Device
1 × Safety and general information sheet
1 × Terminal block for supply voltage and signal contact
1 × Terminal block for the digital input depending on device variant
2 × Ferrit with key depending on device variant See "Connecting the ferrite (optional)" on page 47.

Table 45: Scope of delivery

9 Accessories

9.1 General accessories

General accessories You find more information on available accessories in the Belden Online Catalog https://catalog.belden.com	
AutoConfiguration Adapter ACA22-USB-C (EEC)	942-239-001
6-pin terminal block with screw lock (10 pieces)	942 272-303
6-pin terminal block with screw lock (50 pieces)	943 845-013
2-pin terminal block with screw lock (10 pieces)	942 272-201
2-pin terminal block with screw lock (50 pieces)	943 845-009
Industrial HiVision Network Management Software	943 156-xxx
Wall mounting bracket for BRS device variants (metal housing widths in narrow, medium and wide versions only)	942-321-001

Table 46: Accessories: General accessories

9.2 Fast Ethernet SFP transceiver

Fast Ethernet SFP transceiver	Certification type[a]	Order number
M-FAST SFP-MM/LC	Standard level	943 865-001
M-FAST SFP-MM/LC EEC	Standard level	943 945-001
M-FAST SFP-SM/LC	Standard level	943 866-001
M-FAST SFP-SM/LC EEC	Standard level	943 946-001
M-FAST SFP-SM+/LC	Standard level	943 867-001
M-FAST SFP-SM+/LC EEC	Standard level	943 947-001
M-FAST SFP-LH/LC	Standard level	943 868-001
M-FAST SFP-LH/LC EEC	Standard level	943 948-001
SFP-FAST-MM/LC	Entry level	942 194-001
SFP-FAST-MM/LC EEC	Entry level	942 194-002
SFP-FAST-SM/LC	Entry level	942 195-001
SFP-FAST-SM/LC EEC	Entry level	942 195-002

Table 47: Accessory: Fast Ethernet SFP transceiver

a. Use Entry level SFP transceivers for industrial applications that exclusively require thefollowing approvals: CE, FCC or UL 61010-2-201.
Use Standard level SFP transceivers for industrial applications that exclusively require following approvals: CE, FCC, UL 61010-2-201, DNV, Lloyd's Register, Bureau Veritas, UL121201 (Hazardous Locations), IEC61850-3, EN 50121-4, ATEX or IECEx.

9.3 Gigabit Ethernet SFP transceiver

Gigabit Ethernet SFP transceiver	Certification type[a]	Order number
M-SFP-SX/LC	Standard level	943 014-001
M-SFP-SX/LC EEC	Standard level	943 896-001
M-SFP-MX/LC EEC	Standard level	942 108-001
M-SFP-LX/LC	Standard level	943 015-001
M-SFP-LX/LC EEC	Standard level	943 897-001
M-SFP-LX+/LC	Standard level	942 023-001
M-SFP-LX+/ LC EEC	Standard level	942 024-001
M-SFP-LH/LC	Standard level	943 042-001
M-SFP-LH/LC EEC	Standard level	943 898-001
M-SFP-LH+/LC	Standard level	943 049-001
M-SFP-LH+/LC EEC	Standard level	942 119-001
SFP-GIG-LX/LC	Entry level	942 196-001
SFP-GIG-LX/LC EEC	Entry level	942 196-002

Table 48: Accessory: Gigabit Ethernet SFP transceiver

a. Use Entry level SFP transceivers for industrial applications that exclusively require the
following approvals: CE, FCC or UL 61010-2-20.
Use Standard level SFP transceivers for industrial applications that exclusively require
following approvals: CE, FCC, UL 61010-2-201, DNV, Lloyd's Register, Bureau Veritas,
UL121201 (Hazardous Locations), IEC61850-3, EN 50121-4, ATEX or IECEx.

9.4 2.5 Gigabit Ethernet SFP transceiver

2.5 Gigabit Ethernet SFP transceiver	Certification type[a]	Order number
M-SFP-2.5-MM/LC EEC	Standard level	942 162-001
M-SFP-2.5-SM-/LC EEC	Standard level	942 163-001
M-SFP-2.5-SM/LC EEC	Standard level	942 164-002
M-SFP-2.5-SM+/LC EEC	Standard level	942 165-001
M-SFP-2.5-LH/LC	Standard level	942 220-001

Table 49: Accessory: 2.5 Gigabit Ethernet SFP transceiver

a. Use Standard level SFP transceivers for industrial applications that exclusively require
following approvals: CE, FCC, UL 61010-2-201, DNV, Lloyd's Register, Bureau Veritas,
UL121201 (Hazardous Locations), IEC61850-3, EN 50121-4, ATEX or IECEx.

9.5 Bidirectional Fast Ethernet SFP transceiver

Bidirectional Fast Ethernet SFP transceiver	Certification type[a]	Order number
SFP-FAST-BA MM/LC EEC	Entry level	942 204-001
SFP-FAST-BB MM/LC EEC	Entry level	942 204-002

Table 50: Accessory: Bidirectional Fast Ethernet SFP transceiver

Bidirectional Fast Ethernet SFP transceiver	Certification type[a]	Order number
SFP-FAST-BA SM/LC EEC	Entry level	942 205-001
SFP-FAST-BB SM/LC EEC	Entry level	942 205-002
SFP-FAST-BA SM+/LC EEC	Entry level	942 206-001
SFP-FAST-BB SM+/LC EEC	Entry level	942 206-002

Table 50: Accessory: Bidirectional Fast Ethernet SFP transceiver

a. Use Entry level SFP transceivers for industrial applications that exclusively require the following approvals: CE, FCC or UL 61010-2-20.

9.6 Bidirectional Gigabit Ethernet SFP transceiver

Bidirectional Gigabit Ethernet SFP transceiver	Certification type[a]	Order number
SFP-GIG-BA LX/LC EEC	Entry level	942 207-001
SFP-GIG-BB LX/LC EEC	Entry level	942 207-002
SFP-GIG-BA LX+/LC EEC	Entry level	942 208-001
SFP-GIG-BB LX+/LC EEC	Entry level	942 208-002
SFP-GIG-BA LH/LC EEC	Entry level	942 209-001
SFP-GIG-BB LH/LC EEC	Entry level	942 209-002

Table 51: Accessory: Bidirectional Gigabit Ethernet SFP transceiver

a. Use Entry level SFP transceivers for industrial applications that exclusively require the following approvals: CE, FCC or UL 61010-2-20.

10 Underlying technical standards

Name	
ANSI/UL 121201	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
DNV-CG-0339	Environmental test specification for electrical, electronic and programmable equipment and systems.
FCC 47 CFR Part 15	Code of Federal Regulations
NEMA TS 2	Traffic Controller Assemblies with NTCIP Requirements (environmental requirements)
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment
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
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
IEEE 802.3	Ethernet

Table 52: 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 Belden website at https://www.belden.com in the product information.
The device generally fulfills the technical standards named in their current versions.

A   Further support

Technical questions

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

You find the addresses of our partners on the Internet at
https://www.belden.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at
https://hirschmann-support.belden.com.

This site also includes a free of charge knowledge base and a software download section.

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