



HIRSCHMANN

A **BELDEN** BRAND

User Manual

Installation

Industrial Ethernet Rail Switch Rugged RSR20/RSR30 Family



039698002041015000

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You find the latest version of this manual on the internet at Hirschmann product pages (www.hirschmann.com).

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Safety Information



WARNING

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

■ 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.

- 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.

■ Intended usage

- Use the product only for the application cases described in the Hirschmann product information, including this manual.
- Operate the product only according to the technical specifications. [See "General technical data" on page 54.](#)
- Connect to the product only components suitable for the requirements of the specific application case.

■ Installation site requirements

- Install the device in a fire enclosure according to EN 60950-1.
- Install this device only in a switch cabinet or in a restricted access location, to which maintenance staff have exclusive access.

■ Device casing

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

- Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- Keep the ventilation slits free to ensure good air circulation.
[See “General technical data” on page 54.](#)
- Install the device in the vertical position.
- At ambient temperatures > 60 °C:
The surfaces of the device casing may become hot. Avoid touching the device while it is operating.

■ Qualification requirements for personnel

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

Qualified personnel are characterized by the following points:

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

■ National and international safety regulations

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

■ Grounding

The device is grounded by the separate ground screw on the front panel.

- Use a wire diameter for the ground conductor that is no smaller than the diameter of the supply voltage connection, however of at least 0.75 mm² (AWG18).
- Ground the device before connecting any other cables.
- Disconnect the grounding only after disconnecting all other cables.

■ Shielding ground

The overall shield of a connected shielded twisted pair cable is connected to the ground connector on the front panel as a conductor.

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

■ Supply voltage

The supply voltage is electrically isolated from the housing.

- The devices are designed for operation with safety extra-low voltage. Connect only safety extra-low voltage circuits with voltage restrictions in line with IEC/EN 60950-1 to the supply voltage connections and signal contacts.
- Connect only a supply voltage that corresponds to the type plate of your device.
- Ground the device before connecting any other cables.
- Only for device variants featuring supply voltage with the characteristic value K:

Before connecting the electrical wires, **always** verify that all the following requirements are met:

- ▶ The power supply conforms to overvoltage category I or II.
- ▶ The voltage supply has an easily accessible disconnecting device (e.g. a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- ▶ The electrical wires are voltage-free.
- ▶ Supply with AC voltage:
A fuse is located in the outer conductor of the power supply. The neutral conductor is on ground potential at both voltage inputs. Otherwise, a fuse is also located in the neutral conductor.
Regarding the properties of this fuse: [See “General technical data” on page 54.](#)
- ▶ Supply with DC voltage:
A fuse suitable for DC voltage is located in the plus conductor of the power supply. The minus conductor is on ground potential. Otherwise, a fuse is also located in the minus conductor.
Regarding the properties of this fuse: [See “General technical data” on page 54.](#)
- ▶ The wire diameter of the power supply cable is at least 0.75 mm² (North America: AWG18) on the supply voltage input.
- ▶ The cross-section of the protective conductor is the same size as or bigger than the cross-section of the power supply cables.
- ▶ The cables used are permitted for the temperature range of the application case.
- ▶ Relevant for North America:
The power supply cables are suitable for ambient air temperatures of at least 167 °F (75 °C). The wires of the power supply cables are made of copper.

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

- Only for device variants featuring supply voltage with the characteristic value C:
 - ▶ The power supply is Class 2 compliant.
 - ▶ The power supply conforms to overvoltage category I or II.
 - ▶ The voltage supply has an easily accessible disconnecting device (e.g. a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
 - ▶ The electrical wires are voltage-free.
 - ▶ A fuse suitable for DC voltage is located in the plus conductor of the power supply.
The minus conductor is on ground potential. Otherwise, a fuse is also located in the minus conductor.
Regarding the properties of this fuse: [See “General technical data” on page 54.](#)
 - ▶ The wire diameter of the power supply cable is at least 0.75 mm² (North America: AWG18) on the supply voltage input.
 - ▶ The cables used are permitted for the temperature range of the application case.
 - ▶ Relevant for North America:
The power supply cables are suitable for ambient air temperatures of at least 167 °F (75 °C). The wires of the power supply cables are made of copper.

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

- Internal fuses are only triggered if there is a fault in the device. In case of damage or malfunction of the device, turn off the supply voltage and return the device to the plant for inspection.
- For supply voltage connections with protective conductor connection: First connect the protective conductor before connecting the wires for the supply voltage.
If your device comprises a 2nd supply voltage connection of this type: First connect the protective conductor before connecting the wires for the supply voltages.
- Enable the supply voltage for the device only when the following requirements are fulfilled:
 - ▶ the housing is closed
 - ▶ the terminal blocks are wired correctly
 - ▶ the terminal blocks for the power supply are connected

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

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D HAZARDOUS LOCATIONS, OR IN NON-HAZARDOUS LOCATIONS ONLY.

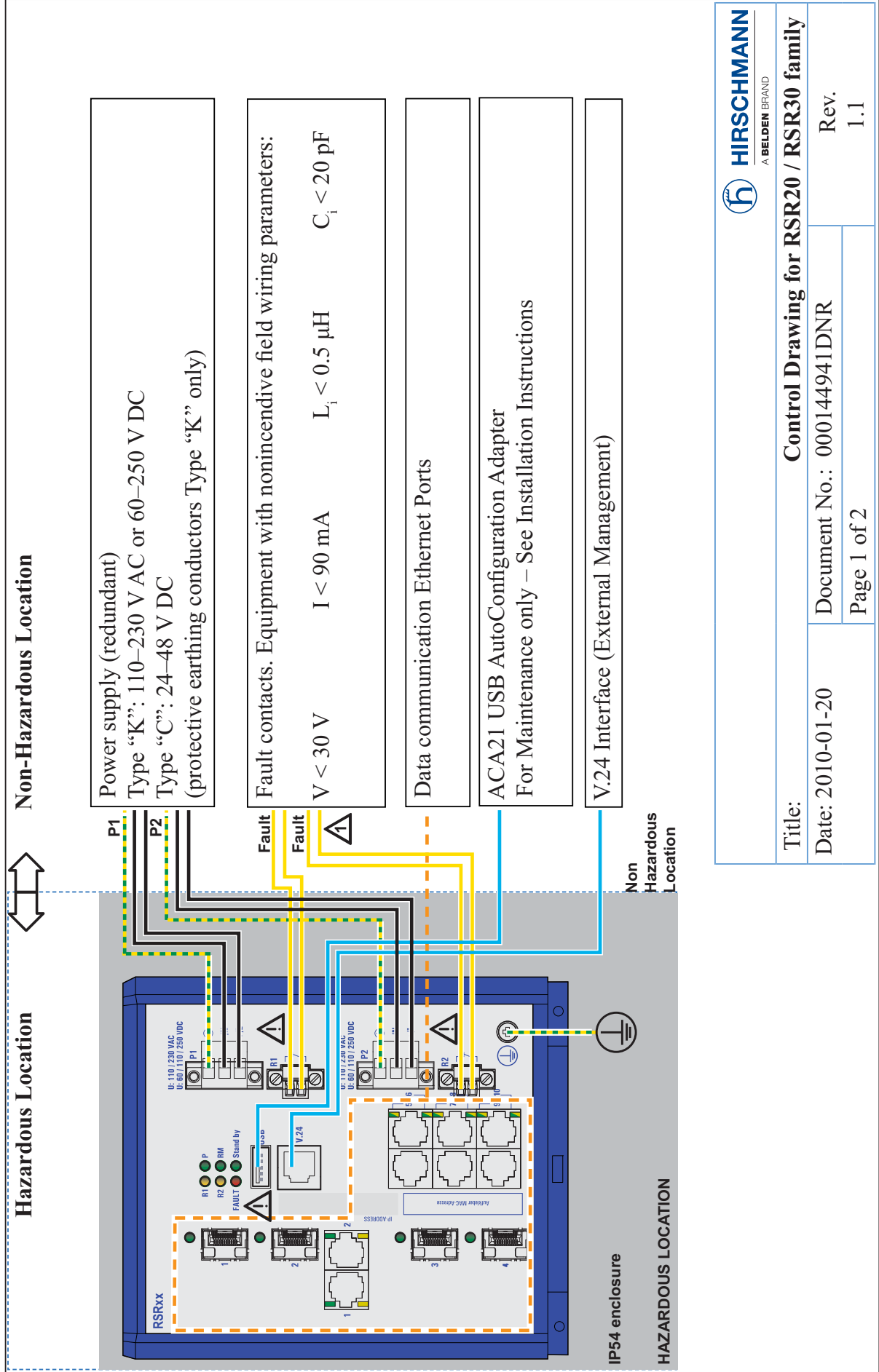
Substitution of any components may impair suitability for Class I, Division 2.

The USB connector is for temporary connection only. Do not use, connect or disconnect unless the area is known to be non-hazardous. Connection or disconnection in an explosive atmosphere could result in an explosion.

Do not disconnect equipment unless power has been turned off or the area is known to be free of ignitable concentrations.

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.



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Notes:

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 parameter conditions are met.

$$C_a \geq C_i + C_{\text{Cable}}; L_a \geq L_i + L_{\text{Cable}}$$

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

Nonincendive Field Wiring Parameters:

Entity Parameters for Class I, Division 2 Groups A, B, C, D	V_{max} [V]	I_{max} [mA]	C_i [pF]	L_i [μ H]
Connector: Contacts:				
2 pole	30	90	20	0.5
Fault contacts				



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.

DO NOT OPEN WHEN ENERGIZED.



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Date: 2010-01-20

Document No.: 000144941DNR

Rev.

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1.1

■ Casing

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

- Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- Keep the ventilation slits free to ensure good air circulation.
[See “General technical data” on page 54.](#)
- Install the device in the vertical position.
- At ambient temperatures > 60 °C:
The surfaces of the device casing may become hot. Avoid touching the device while it is operating.

■ CE marking

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

Device variant	Directive
All variants	2011/65/EU (RoHS) Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2004/108/EG (EMV) Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility.
Only for device variants featuring supply voltage with the characteristic value K:	2011/65/EU (RoHS) Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

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

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Tel.: +49 1805 141538

The product can be used in the industrial sector.

- ▶ Interference immunity: EN 61000-6-2
- ▶ Emitted interference: EN 55022
- ▶ Safety: EN 60950-1

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.

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

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

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

About this manual

The document “User Manual Installation” contains a device description, safety instructions, a description of the display and further information that you need to install the device before you start its configuration.

The following manuals are available as PDF files on the CD-ROM supplied:

- ▶ “Installation” user manual
- ▶ “Basic Configuration” user manual
- ▶ “Redundancy Configuration” user manual
- ▶ “Graphical User Interface” reference manual
- ▶ “Command Line Interface” reference manual

The Industrial HiVision Network Management Software provides you with additional options for smooth configuration and monitoring:

- ▶ ActiveX control for SCADA integration
- ▶ Auto-topology discovery
- ▶ Browser interface
- ▶ Client/server structure
- ▶ Event handling
- ▶ Event log
- ▶ Simultaneous configuration of multiple devices
- ▶ Graphical user interface with network layout
- ▶ SNMP/OPC gateway

Key

The symbols used in this manual have the following meanings:

▶	List
□	Work step
■	Subheading

1 Description

1.1 General description of the device

You can choose from between a wide range of variants. You have the option to set up your device individually based on different criteria:

- ▶ Number of Ports
- ▶ Data Rate
- ▶ Types of connectors
- ▶ Temperature range
- ▶ Supply voltage range
- ▶ Approvals

The RSR20/RSR30 devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

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

The devices work without a fan.

If desired, the power is supplied redundantly.

The following installation options are available:

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

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

The ring redundancy concept allows the network to be reconfigured quickly after a failure.

This gives you a quick overview of the product configuration through:

- ▶ diagnosis displays
- ▶ displaying the operating parameters
- ▶ a label area for the IP address

There are convenient options for managing the device. Administer your devices via:

- ▶ a Web browser
- ▶ Telnet
- ▶ SSH

- ▶ HiDiscovery (Software for commissioning the device)
- ▶ A network management software (e.g., Industrial HiVision)
- ▶ a V.24 interface (locally on the device)

The devices provide you with a large range of functions, which the manuals for the operating software inform you about. You will find these manuals in the form of PDF files on the enclosed CD/DVD; it is also available for downloading on the Internet on the Hirschmann product pages (www.hirschmann.com).

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

1.2 Description of the device variants

The RSR20 device variants are Rugged Rail Switches with 8 to 9 Fast Ethernet ports (10/100 Mbit/s).

The RSR30 device variants are Rugged Rail Switches with 2 to 3 Gigabit Ethernet ports (1000 Mbit/s) and 6 to 8 Fast Ethernet ports (10/100 Mbit/s).

1.2.1 Combination options RSR20/RSR30

The product designation of your device is made from combining the desired product characteristics in accordance with the following table. The short designation is in column 3.

You have numerous options of combining the device characteristics. You can determine the possible combinations using the configurator which is available in the Belden E-Catalog (www.e-catalog.beldensolutions.com) on the web page of the device.

Position	Characteristic	Charac teristic value	Property
1 to 5	Product	RSR20	Rail Switch Rugged without gigabit ports
		RSR30	Rail Switch Rugged with gigabit ports
6	- (hyphen)	-	
7 to 8	Number of 100 Mbit/s ports	06	6 × 100 Mbit/s Ethernet
		07	7 × 100 Mbit/s Ethernet
		08	8 × 100 Mbit/s Ethernet
		09	9 × 100 Mbit/s Ethernet
9 and 10	Number of 1000 Mbit/s ports	00	0 × 1000 Mbit/s Ethernet
		02	2 × 1000 Mbit/s Ethernet
		03	3 × 1000 Mbit/s Ethernet
11 and 12	Port 1 and 2 or Port 1	CC	2 × Combo-Port 100/1000 Mbit/s Ethernet
		OO	2 × SFP slot 1000 Mbit/s Ethernet
		MM	2 × Multimode FX (DSC)
		JJ	2 × Multimode FX (MTRJ)
		NN	2 × Multimode FX (ST)
		VV	2 × Singlemode FX (DSC)
		UU	2 × Singlemode FX (ST)
		LL	2 × Singlemode Long Haul FX (DSC)
		GG	2 × Singlemode Long Haul FX (DSC) 200 km
		O7	1 × Combo-Port 100/1000 Mbit/s Ethernet
		O6	1 × SFP slot 1000 Mbit/s Ethernet
		T1	1 × Twisted Pair TX (RJ45 socket)
		M2	1 × Multimode FX (DSC)
		M3	1 × Multimode FX (MTRJ)
		M4	1 × Multimode FX (ST)
		S2	1 × Singlemode FX (DSC)
		S4	1 × Singlemode FX (ST)
L2	1 × Singlemode Long Haul FX (DSC)		
G2	1 × Singlemode Long Haul FX (DSC) 200 km		

Table 1: Combination options for the RSR20/RSR30 device variants

Position	Characteristic	Charac teristic value	Property
13 and 14	Port 2 or Port 3 or Port 3 and 4	ZZ	2 × SFP slot (100 Mbit/s)
		O7	1 × Combo-Port 100/1000 Mbit/s Ethernet
		O6	1 × SFP slot 1000 Mbit/s Ethernet
		T1	1 × Twisted Pair TX (RJ45 socket)
		M2	1 × Multimode FX (DSC)
		M3	1 × Multimode FX (MTRJ)
		M4	1 × Multimode FX (ST)
		S2	1 × Singlemode FX (DSC)
		S4	1 × Singlemode FX (ST)
		L2	1 × Singlemode Long Haul FX (DSC)
		G2	1 × Singlemode Long Haul FX (DSC) 200 km
15 and 16	Remaining ports	T1	1 × Twisted Pair TX (RJ45 socket)
		Z6	1 × SFP slot (100 Mbit/s)
17	Temperature range	S	Standard +32 °F to +140 °F (0 °C to +60 °C)
		U	Extended -40 °F to +185 °F (-40 °C to +85 °C)
		F	Extended -40 °F to +185 °F (-40 °C to +85 °C) and conformal coating
18	Voltage range 1	C	See “General technical data” on page 54.
		K	See “General technical data” on page 54.
19	Voltage range 2	9	Not present
		C	See “General technical data” on page 54.
		K	See “General technical data” on page 54.
20	Approvals	H	CE; UL508; GL; IEC61850; IEEE 1613 substation; EN 50121-4 railway (along track)
		C	CE; UL508; GL; IEC61850; IEEE 1613 substation; EN 50121-4 railway (along track)
21	Software variant	P	Professional

Table 1: Combination options for the RSR20/RSR30 device variants

1.2.2 Port number and media for RSR20-...

To put together your personal RSR20 device in the above table (see table 1), you have the following combination options

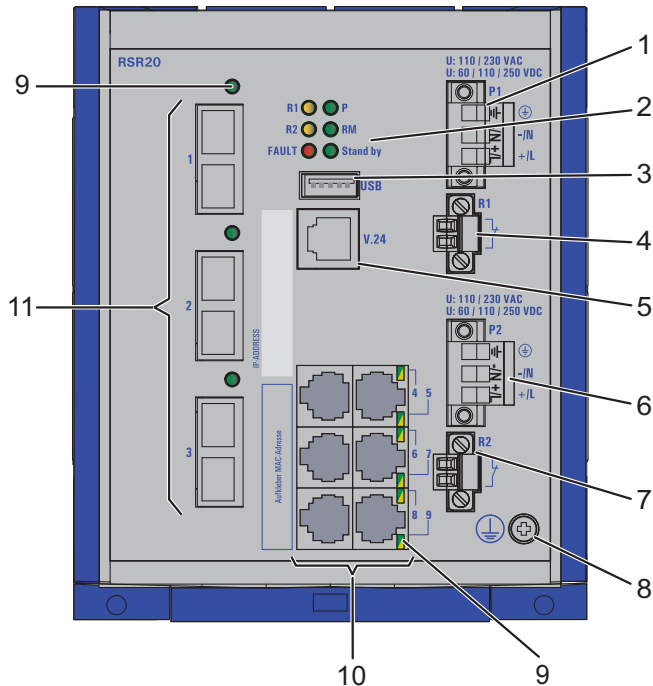
("?" = any value from the "Characteristic value column):

Position 1 to 10	Position 11 to 12	Position 13 to 14	Position 15 to 16	Position 17	Position 18 to 19	Position 20 to 21
RSR20-0900	JJ	M3	T1	?	KK, K9, KC, CC	?P
--	MM	M2, M4, S2, S4, L2, G2	--	--	--	--
--	NN	--	--	--	--	--
--	VV	--	--	--	--	--
--	UU	--	--	--	--	--
--	LL	--	--	--	--	--
--	GG	--	--	--	--	--

Table 2: Combination options for RSR20-0900...

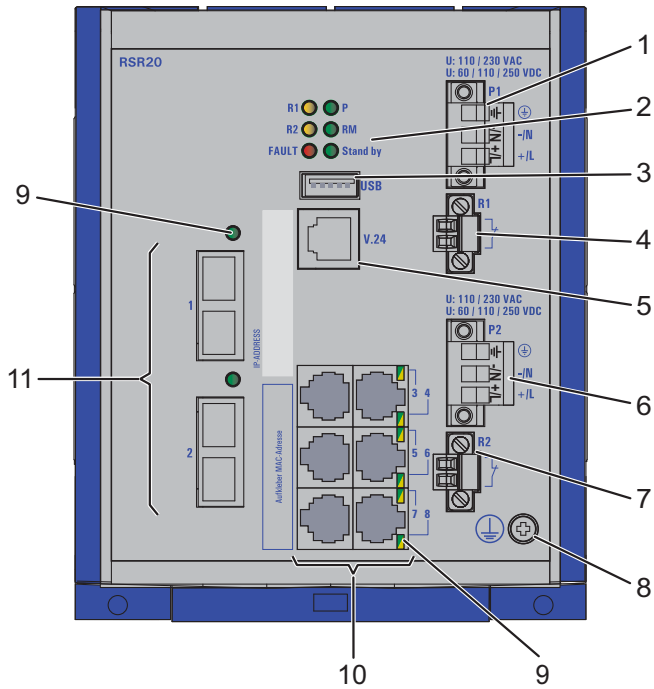
Position 1 to 10	Position 11 to 12	Position 13 to 14	Position 15 to 16	Position 17	Position 18 to 19	Position 20 to 21
RSR20-0800	T1	T1	T1	?	KK, K9, KC, CC	?P
--	M2	M2, M4, S2, S4, L2, G2	--	--	--	--
--	M4	--	--	--	--	--
--	S2	--	--	--	--	--
--	S4	--	--	--	--	--
--	L2	--	--	--	--	--
--	G2	--	--	--	--	--

Table 3: Combination options for RSR20-0800...



1	Supply voltage connection 1	Alternatively Product code , depending Position 18 on device variant	C	2-pin terminal block	Voltage range: See "General technical data" on page 54.
			K	3-pin terminal block	Voltage range: See "General technical data" on page 54.
2	LED display elements for device status				
3	USB interface				
4	Connection for signal contact 1				
5	V.24 connection for external management				
6	Supply voltage connection 2	Alternatively Product code , depending Position 19 on device variant	9	Without redundant power supply	
			C	2-pin terminal block	Voltage range: See "General technical data" on page 54.
			K	3-pin terminal block	Voltage range: See "General technical data" on page 54.
7	Connection for signal contact 2				
8	Ground screw				
9	LED display elements for port status				
10	Port 4 to 9	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX	RJ45 socket
11	Ports 1 to 3	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX	depending on the DSC device variant ST

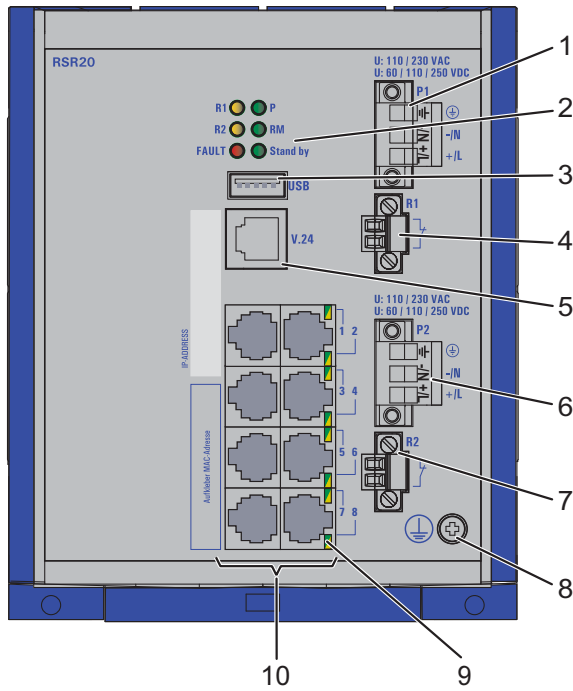
Table 4: RSR20 device variants with 3 fiber optic ports (DSC/ST) and 6 twisted pair ports (RJ45)



1 to 9 See table 4 on page 21.

10	Port 3 to 8	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Port 1 to 2	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX depending on the device variant <u>DSC</u> <u>ST</u>

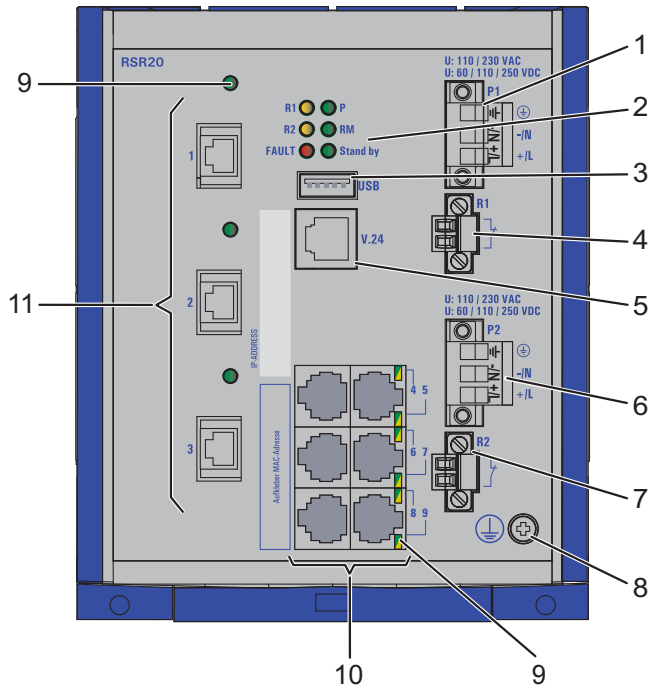
Table 5: RSR20 device variants with 2 fiber optic ports (DSC/ST) and 6 twisted pair ports (RJ45)



1 to 9 See table 4 on page 21.

10	Port 1 to 8	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
----	-------------	---------------------------	--------------------------	--

Table 6: RSR20 device variants with 8 twisted pair ports (RJ45)



1 to 9 See table 4 on page 21.

10	Port 4 to 9	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Ports 1 to 3	LAN port for Optical fiber	Fiber type Standard Connection type	Multimode IEEE 802.3 100BASE-FX MTRJ

Table 7: RSR20 device variants with 3 fiber optic ports (MTRJ) and 6 twisted pair ports (RJ45)

1.2.3 Port number and media for RSR30-...

To put together your personal RSR30 device in the above table (see table 1), you have the following combination options

("?" = any value from the "Characteristic value column):

Position 1 to 10	Position 11 to 12	Position 13 to 14	Position 15 to 16	Position 17	Position 18 to 19	Position 20 to 21
RSR30-0603	CC	O7	T1	?	KK K9 KC CC	?P

Table 8: Combination options for RSR30-0603...

Position 1 to 10	Position 11 to 12	Position 13 to 14	Position 15 to 16	Position 17	Position 18 to 19	Position 20 to 21
RSR30-0802	CC	ZZ	T1	?	KK K9 KC CC	?P
--	O7	O7	--	--	--	--
--	OO	ZZ	--	--	--	--
--	O6	O6	--	--	--	--

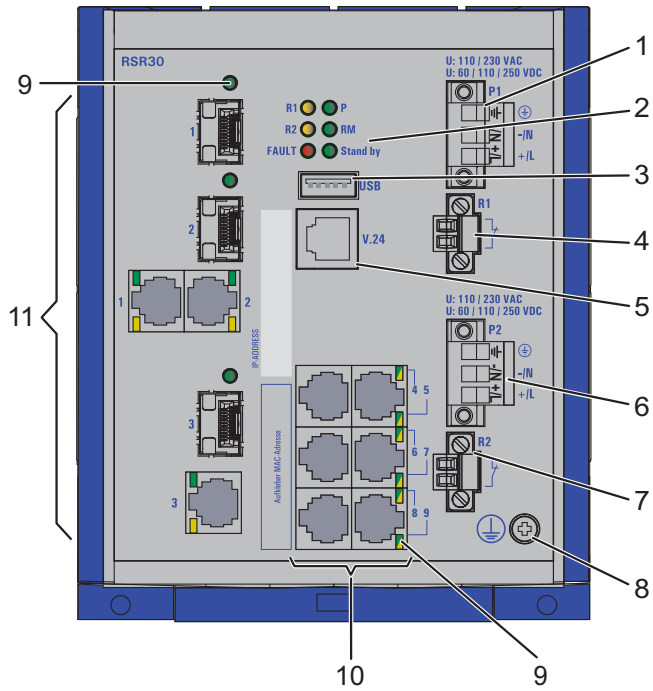
Table 9: Combination options for RSR30-0802...

Position 1 to 10	Position 11 to 12	Position 13 to 14	Position 15 to 16	Position 17	Position 18 to 19	Position 20 to 21
RSR30-0703	OO	O6	Z6	?	K9, KK	?P

Table 10: Combination options for RSR30-0703...

For device variants with combo ports:

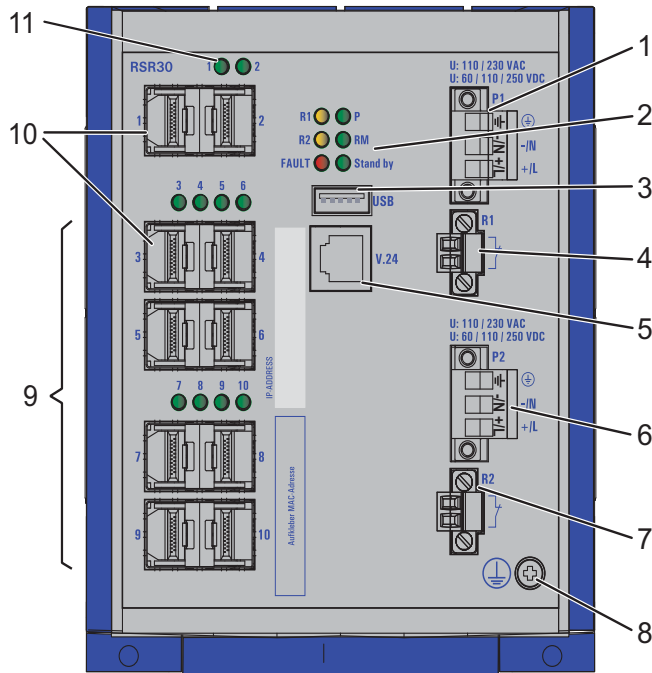
- ▶ Connections through optical fiber: 100/1000 Mbit/s
- ▶ Connections through twisted pair: 10/100/1000 MBit/s



1 to 9 See table 4 on page 21.

10	Port 4 to 9	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Ports 1 to 3 (Combo ports)	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX ISO/IEC 8802-03 1000BASE-SX/LX SFP slot
		LAN port for Twisted pair	Standard Connection type	ISO/IEC 8802-03 10BASE-T/100BASE-TX/1000BASE-T RJ45 socket

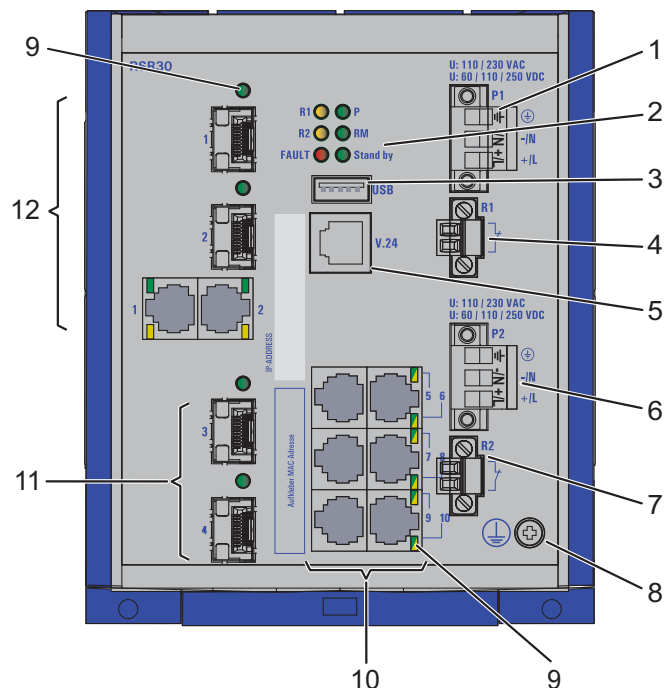
Table 11: RSR30 device variants with 3 combo ports and 6 twisted pair ports (RJ45)



1 to 8 See table 4 on page 21.

9	Port 4 to 10	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX SFP slot
10	Ports 1 to 3	LAN port for Optical fiber	Standard Connection type	ISO/IEC 8802-03 1000BASE-SX/LX SFP slot
11	LED display elements for port status			

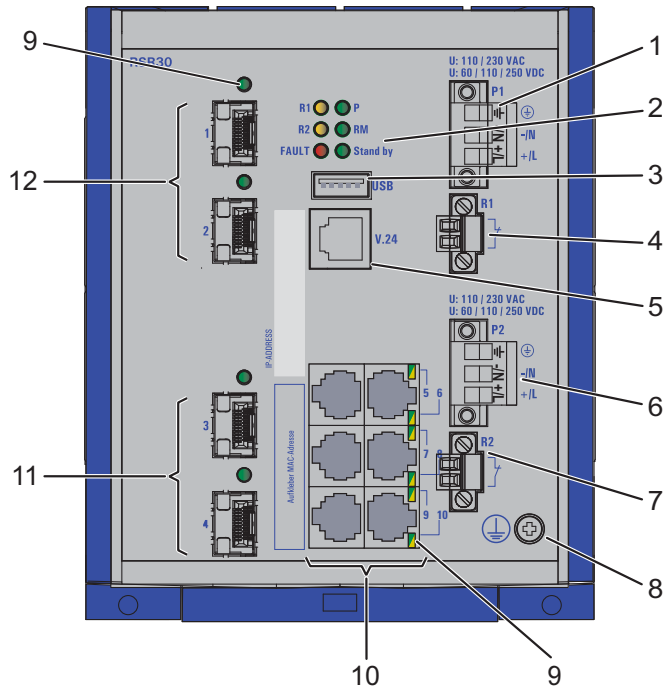
Table 12: RSR30 device variants with 10 SFP slots (100/1000 Mbit/s)



1 to 9 See table 4 on page 21.

10	Port 5 to 10	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Port 3 to 4	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX SFP slot
12	Port 1 to 2 (Combo ports)	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX ISO/IEC 8802-03 1000BASE-SX/LX SFP slot
		LAN port for Twisted pair	Standard Connection type	ISO/IEC 8802-03 10BASE-T/100BASE-TX/1000BASE-T RJ45 socket

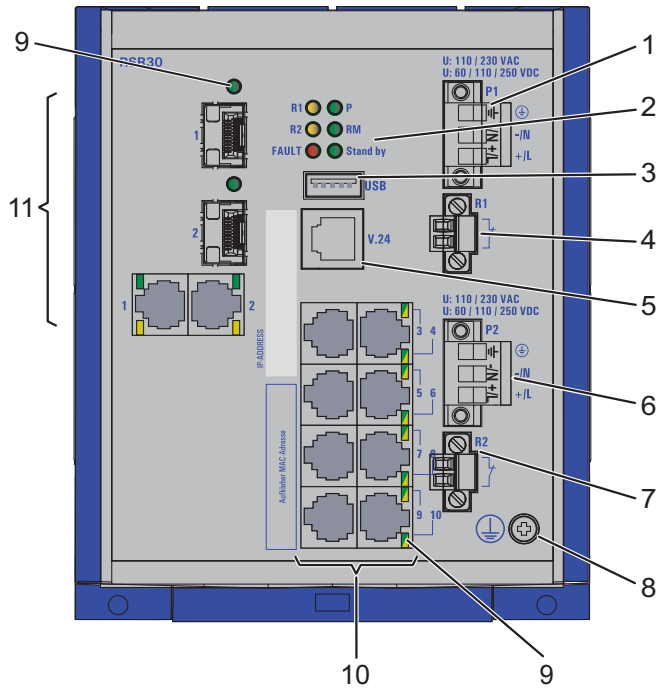
Table 13: RSR30 device variants with 2 combo ports, 2 SFP slots and 6 twisted pair ports (RJ45)



1 to 9 See table 4 on page 21.

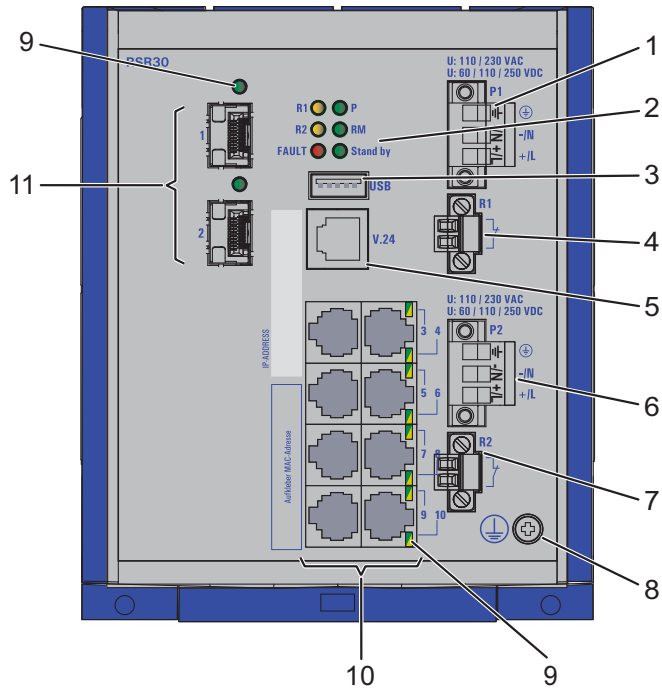
10	Port 5 to 10	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Port 3 to 4	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX SFP slot
12	Port 1 to 2	LAN port for Optical fiber	Standard Connection type	ISO/IEC 8802-03 1000BASE-SX/LX SFP slot

Table 14: RSR30 device variants with 4 SFP slots (100/1000 Mbit/s) and 6 twisted pair ports (RJ45)



1 to 9	See table 4 on page 21.			
10	Port 3 to 10	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Port 1 to 2 (Combo ports)	LAN port for Optical fiber	Standard Connection type	IEEE 802.3 100BASE-FX ISO/IEC 8802-03 1000BASE-SX/LX SFP slot
		LAN port for Twisted pair	Standard Connection type	ISO/IEC 8802-03 10BASE-T/100BASE-TX/1000BASE-T RJ45 socket

Table 15: RSR30 device variants with 2 combo ports and 8 twisted pair ports (RJ45)



1 to 9	See table 4 on page 21.			
10	Port 3 to 10	LAN port for Twisted pair	Standard Connection type	IEEE 802.3 10BASE-T/100BASE-TX RJ45 socket
11	Port 1 to 2	LAN port for Optical fiber	Standard Connection type	ISO/IEC 8802-03 1000BASE-SX/LX SFP slot

Table 16: RSR30 device variants with 2 SFP slots and 8 twisted pair ports (RJ45)

1.3 Power supply

You will find information on the characteristic values here:

[“Combination options RSR20/RSR30” on page 17](#)

1.3.1 Supply voltage with the characteristic value K

A 3-pin terminal block is available for the power supply to the device.

For more details, see [“Supply voltage with the characteristic value K” on page 32](#).

1.3.2 Supply voltage with the characteristic value C

A 2-pin terminal block is available for the power supply to the device.

For more details, see [“Supply voltage with the characteristic value C” on page 32](#).

1.4 Ethernet ports

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

1.4.1 10/100/1000 Mbit/s twisted pair port

This port is an RJ45 socket.

The 10/100/1000 Mbit/s twisted pair port offers you the ability to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T standard.

This port supports:

- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ Autocrossing (if autonegotiation is activated)
- ▶ 1000 Mbit/s full duplex
- ▶ 100 Mbit/s half duplex, 100 Mbit/s full duplex,
- ▶ 10 Mbit/s half duplex, 10 Mbit/s full duplex

Delivery state: Autonegotiation enabled

The socket housing is electrically connected with the front panel.

The pin assignments comply with MDI-X.

1.4.2 10/100 Mbit/s twisted pair port

This port is an RJ45 socket.

The 10/100 Mbit/s twisted pair port offers you the ability to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX standard.

This port supports:

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

Delivery state: Autonegotiation activated except for the HIPER-Ring ports:
100 Mbit/s full duplex

The socket housing is electrically connected with the front panel.

1.4.3 100/1000 Mbit/s F/O port

This port is an SFP slot.

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

This port supports:

- ▶ 1000 Mbit/s full duplex
- ▶ 100 Mbit/s half duplex, 100 Mbit/s full duplex,

State on delivery:

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

1.4.4 1000 Mbit/s F/O port

This port is an SFP slot.

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

This port supports:

- ▶ Autonegotiation
- ▶ Full duplex mode

Delivery state: Autonegotiation enabled

Note: Verify that you connect LH ports exclusively with LH ports, SX ports exclusively with SX ports, and LX ports exclusively with LX ports.

1.4.5 100 Mbit/s F/O port

This port is an MTRJ, ST, or DSC socket.

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

This port supports:

- Full or half duplex mode

Delivery state: full duplex

Note: Verify that the LH ports are connected exclusively with LH ports, SM ports exclusively with SM ports, and MM ports exclusively with MM ports.

1.4.6 Gigabit combo port

You have the option of alternatively connecting a twisted pair cable via a RJ45 socket or an optical fiber via a SFP transceiver to a combo port.

You obtain appropriate SFP transceivers as an accessory.

See [“Accessories” on page 62](#).

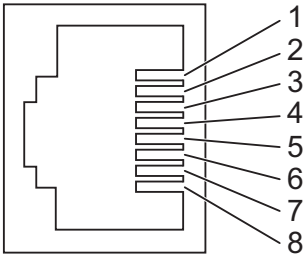
By inserting a SFP transceiver, you deactivate automatically the corresponding twisted pair interface.

Media type	Connection options		
twisted pair cable	Technical standard	IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T	
	Connection type	RJ45	
Optical fiber	either	Technical standard	IEEE 802.3 100BASE-FX
		Connection type	Fast Ethernet SFP transceiver
	or	Technical standard	IEEE 802.3 1000BASE-SX/LX
		Connection type	1 Gigabit Ethernet SFP transceiver

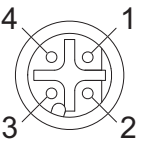
Table 17: Combo ports: Connection options

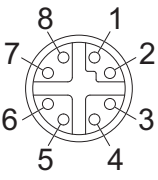
- 10/100/1000 Mbit/s twisted pair port
See [“10/100/1000 Mbit/s twisted pair port” on page 32](#).
- 100/1000 Mbit/s F/O port
See [“100/1000 Mbit/s F/O port” on page 33](#).

1.4.7 Pin assignments

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

- a. Phantom supply
b. Spare pair supply

M12 4-pin (D coded)	Pin	Data	PoE
	1	TX+	Positive V_{PSE}
	2	RX+	Negative V_{PSE}
	3	TX-	Positive V_{PSE}
	4	RX-	Negative V_{PSE}

M12 8-pin (X coded)	Pin	10/100 Mbit/s	1000 Mbit/s	PoE
	1	RX+	BI_DB+	Negative V_{PSE}
	2	RX-	BI_DB-	Negative V_{PSE}
	3	TX+	BI_DA+	Positive V_{PSE}
	4	TX-	BI_DA-	Positive V_{PSE}
	5	—	BI_DC+	—
	6	—	BI_DC-	—
	7	—	BI_DD-	—
	8	—	BI_DD+	—

1.5 Display elements

After the supply voltage is set up, the software starts and initializes itself. Afterwards, the device performs a self-test. During this process, various LEDs light up. The process takes around 40 seconds.

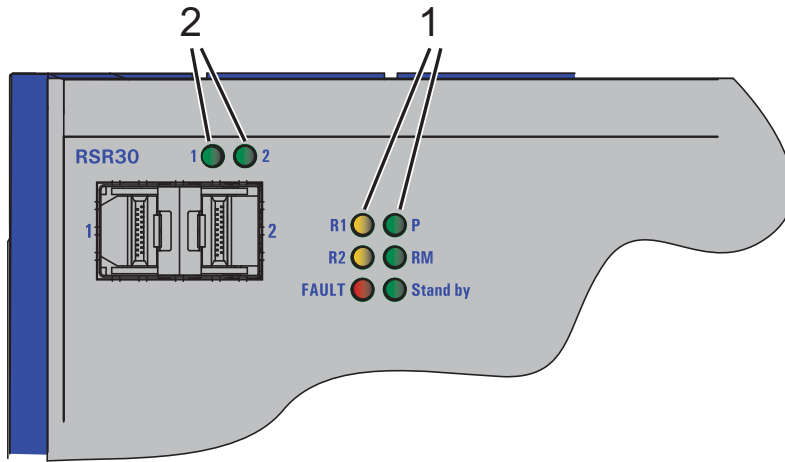


Figure 1: LED display elements
 1 – Device status
 2 – Port status

1.5.1 Device status

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



Figure 2: Device status LEDs

P - Power (green/yellow LED) Meaning	
Glowing green	Device variants with 1 power supply unit: Supply voltage is on
Glowing yellow	Device variants with 2 power supply units: only one supply voltage (P1 or P2) is on
Not glowing	Supply voltage is too low
RM - Ring Manager (green/yellow LED)	
Lights up green	RM function active, redundant port not active
Lit yellow	RM function active, redundant port active
Does not light up	RM function not active
Flashing green	Incorrect configuration of the HIPER-Ring (e.g. the ring is not connected to the ring port).

Stand-by (green LED)	Meaning
Glowing green	Stand-by mode enabled
Does not light up	Stand-by mode not enabled
RM and Stand-by during read or write access - display saving processes	
Flashing alternately	Error during saving process.
LEDs flash synchronously, 2 times a second	Loading the configuration from the AutoConfiguration Adapter ACA or from the device.
LEDs flash synchronously, 1 time a second	Saving the configuration on the AutoConfiguration Adapter ACA or on the device.

Applies to software releases **before** 06.0.00:

LED	Display	Color	Activity	Meaning
FAULT	Signal contact 1	red	Lights up	The signal contact is open - it is reporting a detected error.
			none	The signal contact is closed - it is not reporting any detected errors.
R1	Signal contact 1	Yellow	Lights up	The signal contact is closed in manual operation.
			none	The signal contact is open in manual operation.
R2	Signal contact 2	Yellow	Lights up	The signal contact is closed in manual operation.
			none	The signal contact is open in manual operation.

Applies to software releases **as of** 06.0.00:

LED	Display	Color	Activity	Meaning
FAULT	Signal contact 1	red	Lights up	The signal contact is open - it is reporting a detected error.
			none	The signal contact is closed - it is not reporting any detected errors.
	Detection of a duplicated IP	red	Flashes 4 times a period	Displays an IP conflict.
R1	Signal contact 1	Yellow	Lights up	The signal contact is closed in manual operation.
			none	The signal contact is open in manual operation.
R2	Signal contact 2	Yellow	Lights up	The signal contact is closed in manual operation.
			none	The signal contact is open in manual operation.

If the manual setting is active on the signal contact, then the error display is independent of the setting of the signal contact.

1.5.2 Port status

These LEDs display port-related information. During the boot phase, they indicate the status of the boot process.

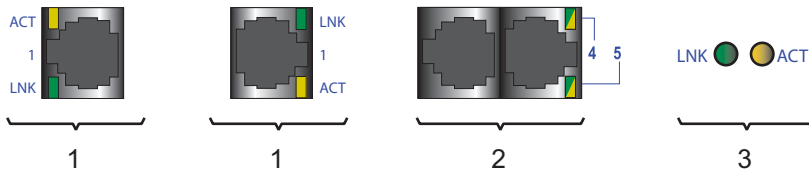


Figure 3: Port status LEDs

1 – Port status LEDs for single or single-row RJ45 sockets: one green and one yellow LED per port

2 – Port status LEDs for double-row RJ45 sockets: one LED per port that either shows yellow or green.

3 – Port status LEDs for DSC, SFP

1 to n - data, link status (green/yellow LED)	Meaning
Not glowing	No valid connection
Lights up green	Valid connection
Flashing green (1 time a period)	Port is switched to stand-by
Flashing green (3 times a period)	Port is disabled
Flashing yellow	Data reception at corresponding port

1.6 Management interfaces

1.6.1 USB interface

The USB socket has an interface for the local connection of a AutoConfiguration Adapters ACA21-M12 USB. It is used for saving/loading the configuration data and diagnostic information, and for loading the software.

The USB interface has the following properties:

- ▶ Supports the USB master mode
- ▶ Supports USB 1.1 (data rate max. 12 MBit/s)
- ▶ Connector: type A
- ▶ Supplies current of max. 500 mA
- ▶ Voltage not potential-separated

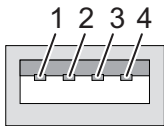
Figure	Pin	Function
	1	VCC (VBus)
	2	- Data
	3	+ Data
	4	Ground (GND)

Table 18: Pin assignment of the USB interface

1.6.2 V.24 interface (external management)

The V.24 interface is an RJ11 socket.

At the V.24 connection, a serial interface is provided for the local connection of an external management station (VT100 terminal or PC with corresponding terminal emulation) or an AutoConfiguration Adapter ACA 11. This enables you to set up a connection to the Command Line Interface (CLI) and to the system monitor.

VT 100 terminal settings	
Speed	9600 baud
Data	8 bit
Stopbit	1 bit
Handshake	off
Parity	none

The socket housing is electrically connected to the front panel of the device. The V.24 interface is electrically insulated from the supply voltage.

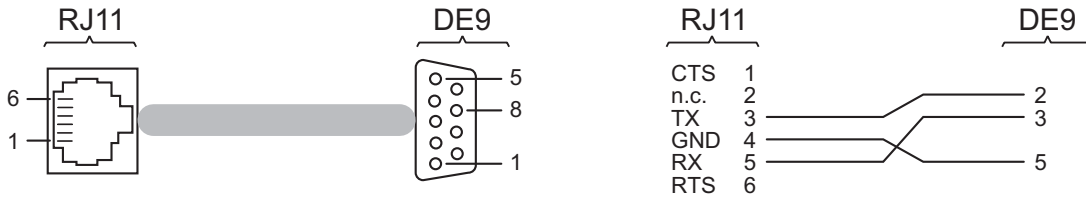


Figure 4: Pin assignment of the V.24 interface and the DB9 plug

Note: You find the order number for the terminal cable, which is available as accessory, under [“Accessories”](#) on page 62.

You will find a description of the V.24 interface in the “User Manual Basic Configuration” document on the CD/DVD supplied.

1.7 Signal contacts

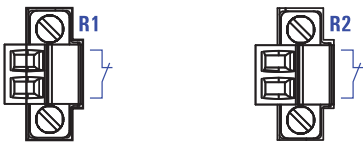


Figure 5: Signal contact: 2-pin terminal block with screw locking

The signal contact is a potential-free relay contact. The device allows you to perform remote diagnosis via the signal contact. In the process, the device signals events such as a line interruption. When an event occurs, the device opens the relay contact and interrupts the closed circuit. The management setting specifies which events switch a contact. You can also use the management to switch the signal contact manually and thus control external devices.

2 Installation

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

On delivery, the device is ready for operation.

To install and configure the device, please complete the following steps:

- ▶ [Checking the package contents](#)
- ▶ [Installing and grounding the device](#)
- ▶ [Installing an SFP transceiver \(optional\)](#)
- ▶ [Connecting the terminal block](#)
- ▶ [Mounting a terminal block](#)
- ▶ [Operating the device](#)
- ▶ [Connecting data cables](#)
- ▶ [Insert data in label area](#)

2.1 Checking the package contents

Proceed as follows:

- Check whether the package includes all items named in section [“Scope of delivery”](#) on page 61.
- Check the individual parts for transport damage.

2.2 Installing and grounding the device



WARNING

FIRE HAZARD

Install the device in a fire enclosure according to EN 60950-1.

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

Only for device variants featuring supply voltage with the characteristic value K:



WARNING

ELECTRIC SHOCK

Install this device only in a switch cabinet or in a restricted access location, to which maintenance staff have exclusive access.

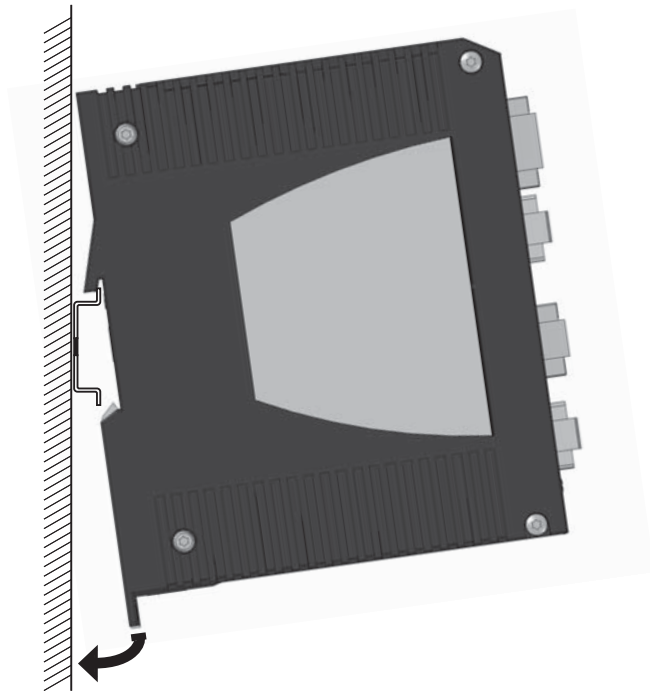
Install the device at ambient temperatures greater than 113 °F (45 °C) in “restricted access locations” based on EN 60950-1 exclusively.

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

2.2.1 Snapping a unit onto the DIN rail

Verify that the device maintains the minimum clearing in order to meet the climatic conditions:

- ▶ Top and bottom device side: 3.94 in (10 cm)
- ▶ Left and right device side: 0.79 in (2 cm)



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

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

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

2.2.2 Mounting on a vertical flat surface

You have the option of attaching the device to a vertical flat surface. You need a wall mounting plate for this, which you can purchase as an accessory. See [“Accessories” on page 62](#).

Verify that the device maintains the minimum clearing in order to meet the climatic conditions:

- ▶ Top and bottom device side: 3.94 in (10 cm)
- ▶ Left and right device side: 0.79 in (2 cm)



Figure 6: Mounting on the wall

Proceed as follows:

- Mount the device on the wall plate as shown in the illustration. Insert the upper snap-in guide of the device into the rail and press it down against the rail until it snaps into place.
- Attach the wall mounting plate ([see on page 62 “Accessories”](#)) to a flat surface of the wall using four screws.

2.2.3 Grounding

Use a wire diameter for the ground conductor that is no smaller than the diameter of the supply voltage connection, however of at least 0.75 mm² (AWG18).

The device is grounded by the separate ground screw on the front panel.

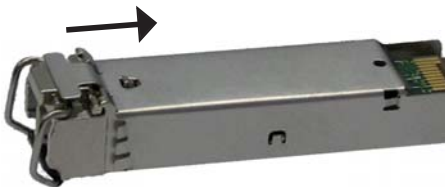
2.3 Installing an SFP transceiver (optional)

Use only Hirschmann SFP transceivers which are suitable for usage with the device.

See [“Accessories” on page 62](#).

Proceed as follows:

- Remove the protection cap from the SFP transceiver.
- Push the SFP transceiver with the lock closed into the slot until it latches in.



2.4 Connecting the terminal block



WARNING

ELECTRIC SHOCK

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

Never insert sharp objects (small screwdrivers, wires, etc.) into the connection terminals for electric conductors, and do not touch the terminals.

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

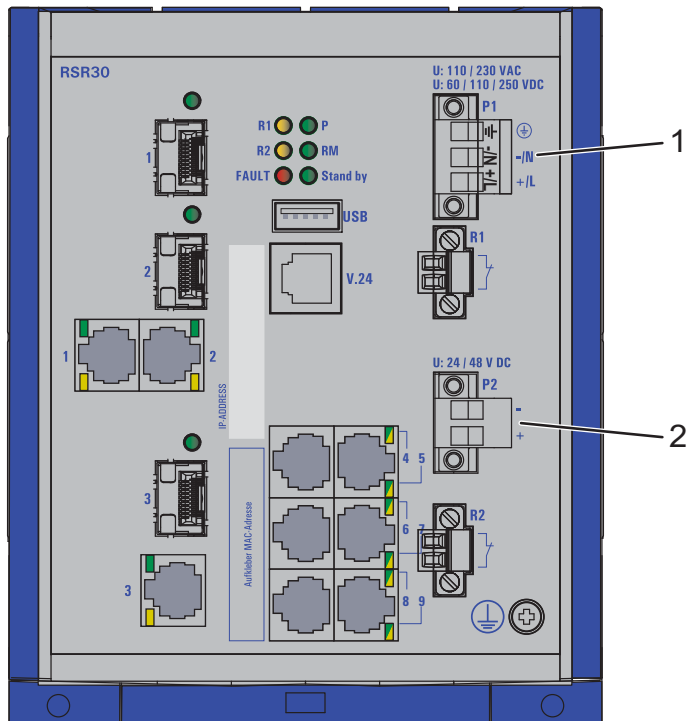
The supply voltage is connected via a 2-pin or 3-pin terminal block with screw locking, depending on the device variant.

The signal contacts are connected via a 2-pin terminal block with screw locking.

Note: Relevant for North America:

The torque for tightening the terminal block for the signal contact on the device is 3 lb-in (0.34 Nm).

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



1	Supply voltage connection 1	Alternatively, depending on device variant	Product code Position 18	C	2-pin terminal block	Voltage range: See 54 "General technical data" .
				K	3-pin terminal block	Voltage range: See 54 "General technical data" .
2	Supply voltage connection 2	Alternatively, depending on device variant	Product code Position 19	9	Without redundant power supply	
				C	2-pin terminal block	Voltage range: See 54 "General technical data" .
				K	3-pin terminal block	Voltage range: See 54 "General technical data" .

Table 19: Connecting the supply voltage

2.4.1 Supply voltage

In devices with two voltage inputs, the supply voltage can be connected redundantly. Both inputs are uncoupled. There is no distributed load. The supply voltage is electrically isolated from the housing.

Note: With a non-redundant supply of the supply voltage, the device reports the loss of a supply voltage. You can avoid this message by changing the configuration in the management, or, with power supply units of the same type, by feeding the supply voltage in through both inputs.

2.4.2 Supply voltage with the characteristic value K

You will find information on the characteristic values here:

[“Combination options RSR20/RSR30” on page 17](#)

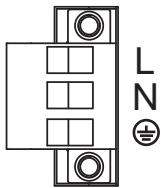


Figure 7: Supply voltage with the characteristic value K: 3-pin terminal block with screw lock

The supply voltage is connected via pin 2 and pin 3.
The protective conductor is connected via pin 1.



Type of the voltages that can be connected	Specification of the supply voltage	Connections
DC voltage	Rated voltage range DC 60 V ... 250 V Voltage range DC incl. maximum tolerances 48 V ... 320 V	+/L Plus terminal of the supply voltage
		-/N Minus terminal of the supply voltage
		 Protective conductor
AC voltage	Nominal voltage range AC 110 V ... 230 V, 50 Hz ... 60 Hz Voltage range AC incl. maximum tolerances 90 V ... 265 V, 47 Hz ... 63 Hz	+/L Outer conductor
		-/N Neutral conductor
		 Protective conductor

Table 20: Supply voltage with the characteristic value K: type and specification of the supply voltage, connections



WARNING

ELECTRIC SHOCK

Install this device only in a switch cabinet or in a restricted access location, to which maintenance staff have exclusive access.

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

For **every** supply voltage to be connected, perform the following steps:

- Pull the terminal block off the device.
- Connect the protective conductor according to the pin assignment on the device with the clamp.
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires connected by tightening the terminal screws.

With a non-redundant supply of the supply voltage, the device reports the loss of a supply voltage. You can prevent this message by changing the configuration in the Management.

2.4.3 Supply voltage with the characteristic value C

You will find information on the characteristic values here:

[“Combination options RSR20/RSR30” on page 17](#)

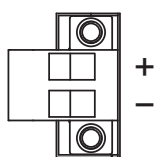


Figure 8: Supply voltage with the characteristic value C: 2-pin terminal block with screw lock

The supply voltage is connected via pin 1 and pin 2.

Type of the voltages that can be connected	Specification of the supply voltage	Connections
DC voltage	Rated voltage range DC 24 V ... 48 V	+ Plus terminal of the supply voltage
	Voltage range DC incl. maximum tolerances 18 V ... 60 V	- Minus terminal of the supply voltage

Table 21: Supply voltage with the characteristic value °C: type and specification of the supply voltage, pin assignment on the device

For **every** supply voltage to be connected, perform the following steps:

- Pull the terminal block off the device.
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires connected by tightening the terminal screws.

With a non-redundant supply of the supply voltage, the device reports the loss of a supply voltage. You can prevent this message by changing the configuration in the Management.

2.4.4 Signal contact

Proceed as follows:

- Connect the signal contact lines with the terminal block connections.
- Fasten the wires connected by tightening the terminal screws.

2.5 Mounting a terminal block

Proceed as follows:

- Mount the terminal block for the voltage supply and signal contact on the front of the device using the snap lock. Verify that the snap lock latches in place.

2.6 Operating the device

Proceed as follows:

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

2.7 Connecting data cables

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

- ▶ Keep the length of the data cables as short as possible.
- ▶ 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.
- ▶ Use shielded cables (SF/UTP cables as per ISO/IEC 11801:2002).

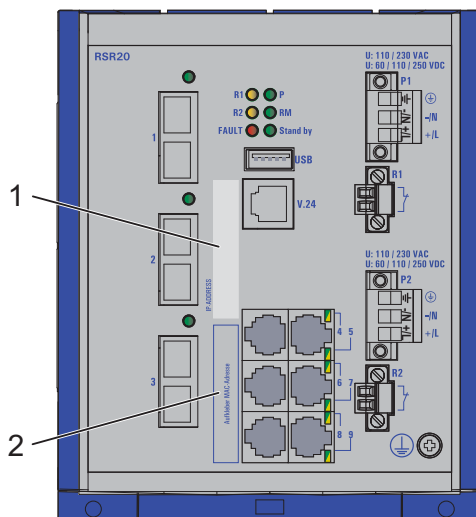
Proceed as follows:

- Connect the data cables according to your requirements.

For more details, see [“Description of the device variants”](#) on page 17.

2.8 Insert data in label area

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



*Figure 9: Labeling field for the device's IP address
1 – Device's IP address (labeling field)
2 – Device's MAC address (label)*

3 Making basic settings

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:

- ▶ Configuration via V.24 connection
- ▶ Configuration using the HiDiscovery protocol
- ▶ Configuration via BOOTP
- ▶ Configuration via DHCP
- ▶ Configuration via DHCP (Option 82)
- ▶ Configuration using AutoConfiguration Adapter

Further information on the basic settings of the device can be found in the “Basic Configuration” user manual on the CD/DVD.

■ Delivery state

- ▶ The device looks for the IP address using DHCP
- ▶ Management password:
 - user, password: public (read only)
 - admin, password: private (read/write)
- ▶ V.24 data rate: 9,600 Baud
- ▶ Ring redundancy: disabled
- ▶ Ethernet ports: link status is not evaluated (signal contact)
- ▶ Optical ports: full duplex
TP ports: Autonegotiation
- ▶ Ring Manager: disabled
- ▶ Stand-by coupling: disabled
- ▶ Rapid Spanning Tree (RSTP): enabled

4 Monitoring the ambient air temperature

Only operate the device up to the specified maximum ambient air temperature.

See [“General technical data” on page 54](#).

The ambient air temperature is the temperature of the air at a distance of 5 cm from the device. It depends on the installation conditions of the device, e.g. the distance from other devices or other objects, and the output of neighboring devices.

The temperature displayed in the CLI and the GUI 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.

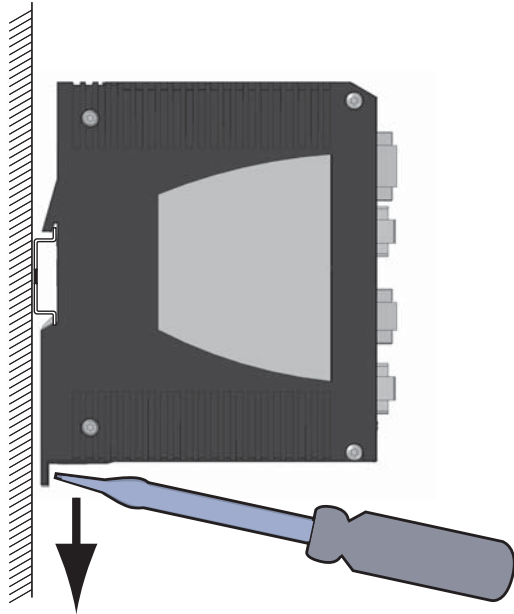
5 Maintenance and service

- ▶ When designing this device, Hirschmann largely avoided using 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. Depending on the frequency of the switching operations, check the volume resistance of the closed relay contacts and the switching function.
- ▶ Hirschmann continually works on improving and developing the software. Regularly check whether there is a new version of the software that provides you with additional benefits. You find information and software downloads on the Hirschmann product pages on the internet (www.hirschmann.com).
- ▶ Depending on the pollution degree 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 the device



Proceed as follows:

- Disconnect the data cables.
- Disable the supply voltage.
- Disconnect the terminal blocks.
- Disconnect the grounding.
- Insert a screwdriver horizontally below the housing into the locking gate.
- Without tilting the screwdriver, pull the locking gate down and tilt the device upwards.

6.2 Removing an SFP transceiver (optional)

Proceed as follows:

- Pull the SFP transceiver out of the slot by means of the opened lock.



- Close the SFP transceiver with the protection cap.

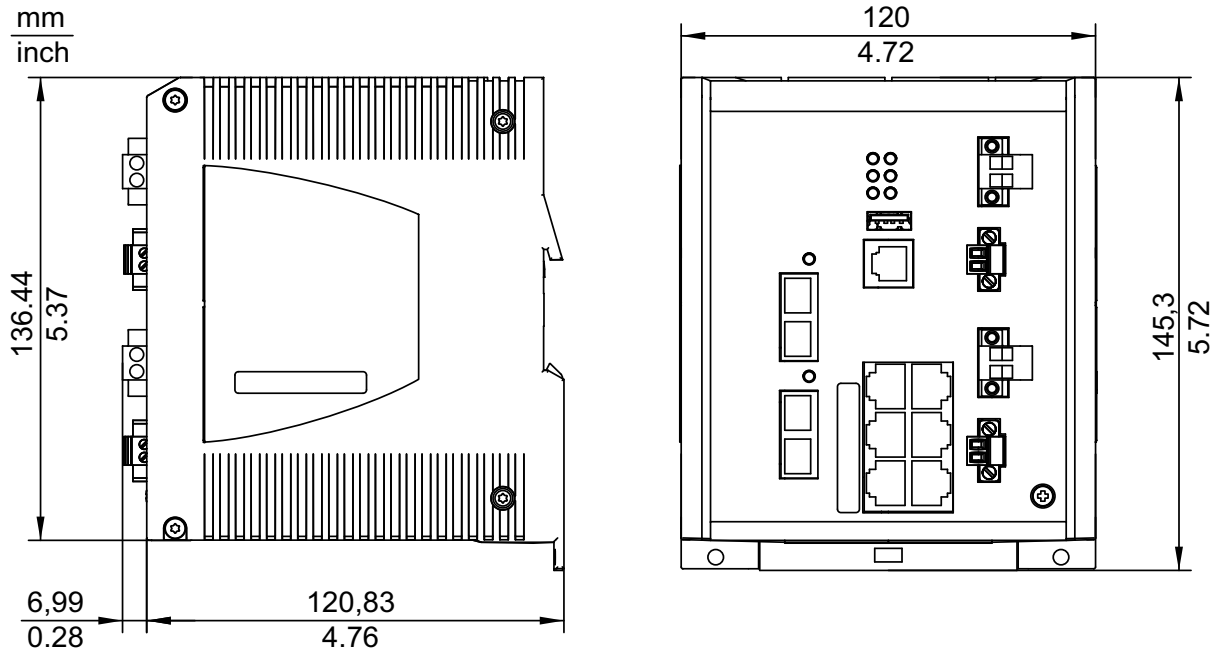
7 Technical Data

■ General technical data

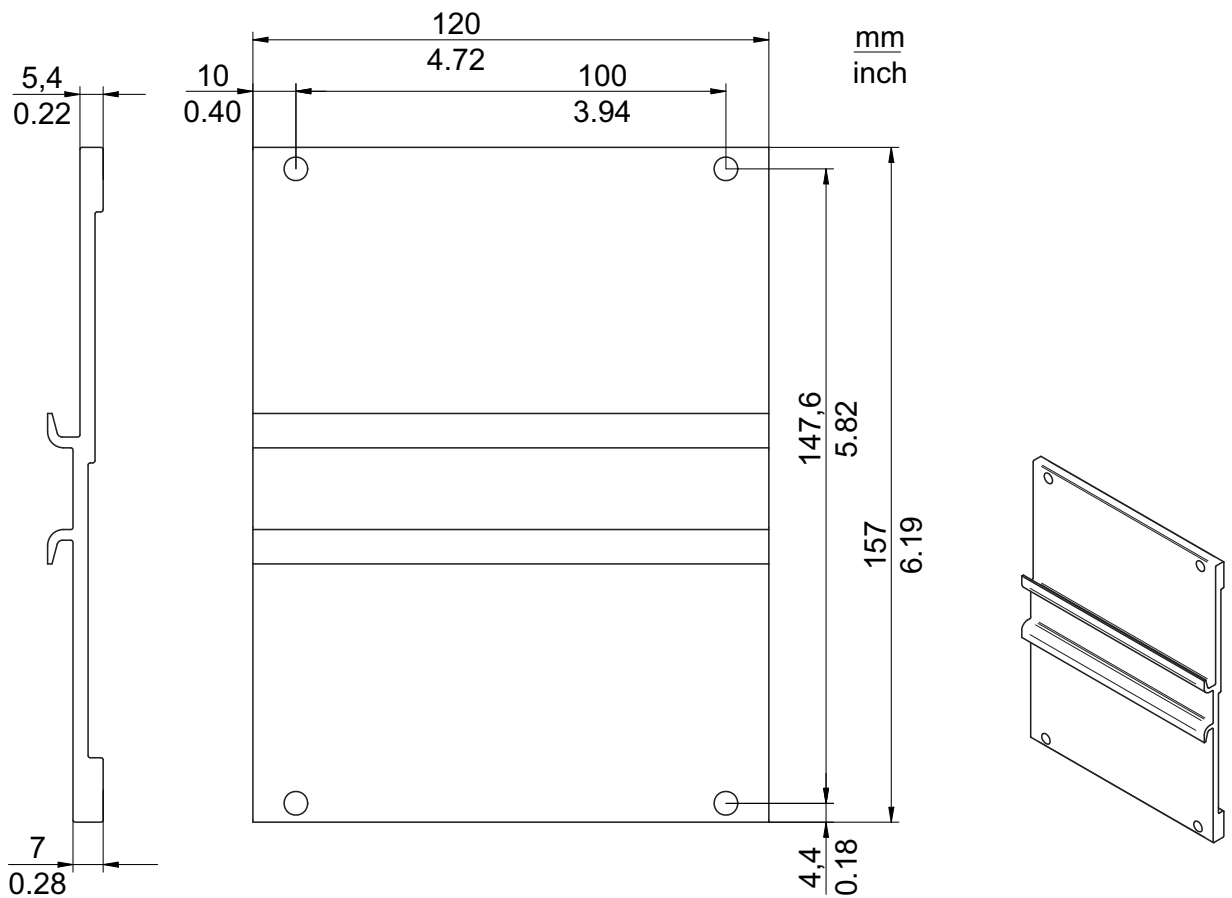
Dimensions W × H × D	RSR20-.../RSR30-...	4.72 × 5.39 × 4.53 in. (120 × 137 × 115 mm)
	incl. wall mounting plate	4.72 × 5.7 × 4.53 in. (120 × 145 × 115 mm)
Weight	RSR20-.../RSR30-...	approx. 2.2 lb (1 kg)
Supply voltage with characteristic value K	Rated voltage AC	110 - 230 V, 50 - 60 Hz
	Voltage range AC	90 - 265 V, 47 - 63 Hz (incl. max. tolerances)
	Rated voltage DC	60 - 250 V DC
	Voltage range DC	48 - 320 V (incl. max. tolerances)
	Connection type	3-pin terminal block
	Power loss buffer	> 10 ms at 98 V AC
	Back-up fuse for each voltage input	Nominal rating: 2.5 A Characteristic: slow blow
	peak inrush current	8 A
Supply voltage with characteristic value C	Rated voltage DC	24 - 48 V
	Voltage range DC	18 - 60 V (incl. max. tolerances)
	Connection type	3-pin terminal block
	Power loss buffer	> 10 ms at 20.4 V DC
	Back-up fuse for each voltage input	Nominal rating: 6.3 A Characteristic: slow blow
	peak inrush current	15 A
Signal contact	Rated value for AC	2 A at 230 V AC
	Rated value for DC	2 A at 30 V DC 0.2 A at 125 V DC 0.1 A at 250 V DC
	Connection type	2-pin terminal block
Climatic conditions during operation	Minimum clearance around the device	Top and bottom device side: 3.94 in (10 cm) Left and right device side: 0.79 in (2 cm)
	Ambient air temperature ^a .	Devices with operating temperature characteristic value S (Standard): +32 °F ... +140 °F (0 °C ... +60 °C) ^b Devices with operating temperature characteristic value U and F (Extended): -40 °F to +185 °F (-40 °C ... +85 °C) ^{c, d}
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure	Up to 2000 m (795 hPa), higher altitude on request
Climatic conditions during storage	Ambient air temperature ^b	-40 °F to +185 °F (-40 °C to +85 °C)
	Humidity	10 % ... 95 % (non-condensing)
	Air pressure	Up to 2000 m (795 hPa), higher altitude on request
Pollution degree		2
Protection classes	Laser protection Protection class	Class 1 in compliance with IEC 60825-1 IP30

- a. Temperature of the ambient air at a distance of 2 inches (5 cm) from the device
- b. Hirschmann recommends to use SFP transceivers with the "EEC" extension.
- c. Use only SFP transceivers with the "EEC" extension, otherwise the standard temperature range applies.
- d. Use the the following maximum number of SFP transceivers with the RSR30-0703... device:
 - at an ambient temperature of 185 °F (85 °C): max. 6 SFP transceivers
 - at an ambient temperature of 167 °F (75 °C): max. 8 SFP transceivers
 - at an ambient temperature of 158 °F (70 °C): max. 10 SFP transceivers

■ Dimension drawings



■ Drilling holes drawing for wall mounting plate



■ EMC and immunity

IEC/EN 61850-3:2002 EMI TYPE tests, test in comp. with	Description	Approval C	Approval H
		Test level	Test level
IEC/EN 61000-4-2	ESD		
	Contact discharge	+/- 8 kV	+/- 8 kV
	Air discharge	+/- 15 kV	+/- 15 kV
IEC/EN 61000-4-3	Electromagnetic field 80 - 2700MHz	20 V/m	20 V/m
IEC/EN 61000-4-4	Burst		
	DC Power line	+/- 4 kV	+/- 4 kV
	AC Power line	+/- 4 kV	+/- 4 kV
	Data line	+/- 4 kV	+/- 4 kV
IEC/EN 61000-4-5	Surge		
	DC Power line	+/- 2 kV line/ground +/- 1 kV line/line	+/- 2 kV line/ground +/- 1 kV line/line
	AC Power line	+/- 4 kV line/ground +/- 2 kV line/line	+/- 4 kV line/ground +/- 2 kV line/line
	Data line	+/- 4 kV line/ground	+/- 4 kV line/ground
IEC/EN 61000-4-6	Conducted disturbance 50kHz - 80MHz	10 V	10 V
IEC/EN 61000-4-12	Damped oscillation		
	DC Power line	+/- 2.5kV line/ground +/- 1kV line/line	+/- 2.5kV line/ground +/- 1kV line/line
	AC Power line	+/- 2.5kV line/ground +/- 1kV line/line	+/- 2.5kV line/ground +/- 1kV line/line
	Data line	+/- 2.5kV line/ground +/- 1kV line/line	+/- 2.5kV line/ground +/- 1kV line/line
IEC 60255-5	Electrical strength		
	DC Power line power supply unit type C	500 VAC ^a 2000 VAC ^b	500 VAC ^a 2000 VAC ^b
	AC Power line power supply unit type K	2000 VAC ^b 2000 VAC	2000 VAC ^b 2000 VAC
	DC Power line power supply unit type K		
	Signal contact type C and K		

- a. Protective elements limit this voltage to 60 VDC (1 mA)
b. Protective elements limit this voltage to 450 VDC (1 mA)

IEEE 1613:2009 EMI TYPE tests, test in comp. with	Description	Approval C Test level	Approval H Test level
IEEE C37.90.3	ESD Contact discharge Air discharge	+/- 8 kV +/- 15 kV	+/- 8 kV +/- 15 kV
IEEE C37.90.2	Electromagnetic field 80 - 2700MHz	35 V/m (peak)	35 V/m (peak)
IEEE C37.90.1	Burst DC Power line AC Power line Data line	+/- 4 kV +/- 4 kV +/- 4 kV	+/- 4 kV +/- 4 kV +/- 4 kV
IEEE C37.90.1	Damped oscillation DC Power line AC Power line Data line	+/- 2.5kV line/ground +/- 1kV line/line +/- 2.5kV line/ground +/- 1kV line/line +/- 2.5kV line/ground +/- 1kV line/line	+/- 2.5kV line/ground +/- 1kV line/line +/- 2.5kV line/ground +/- 1kV line/line +/- 2.5kV line/ground +/- 1kV line/line
IEEE C37.90	H.V. Impulse DC Power line AC Power line	+/- 5 kV line/ground +/- 5 kV line/ground	+/- 5 kV line/ground +/- 5 kV line/ground
IEEE C37.90	Electrical strength DC Power line power supply unit type C AC Power line power supply unit type K DC Power line power supply unit type K Signal contact type C and K	500 VAC ^a 2000 VAC ^b 2000 VAC ^b 2000 VAC	500 VAC ^a 2000 VAC ^b 2000 VAC ^b 2000 VAC

- a. Protective elements limit this voltage to 60 VDC (1 mA)
b. Protective elements limit this voltage to 450 VDC (1 mA)

Environment TYPE tests, test in comp. with	Description	Approval C Test level	Approval H Test level
IEC 60068-2-1	Cold	-40 °F (-40 °C), 16 hours	-40 °F (-40 °C), 16 hours
IEC 60068-2-2	Dry heat	+185 °F (+85 °C), 16 hours	+185 °F (+85 °C), 16 hours
IEC 60068-2-30	Relative humidity	95 % (non-condensed), 55 °C 4 cycles	95 % (non-condensed), 55 °C 4 cycles
IEC 60068-2-6	Vibration, test Fc	2- 9 Hz with 3 mm amplitude 1 g at 9 - 200 Hz 1.5 g at 200 - 500 Hz	2- 9 Hz with 3 mm amplitude 1 g at 9 - 200 Hz 1.5 g at 200 - 500 Hz
IEC 60068-2-27	Shock, test Ea	15 g at 11 ms	15 g at 11 ms
IEC 60068-2-27	Shock	5 g at 30 ms	-
IEC 60068-2-64	Vibration	5 Hz - 150 Hz broadband noise ^a	-

- a. During storage: 5.9 m/s² (vertical) 3.9 m/s² (horizontal), 5 h / axis

EMC emitted interference	Approval C	Approval H
EN 55022	Class A	Class A
FCC 47 CFR Part 15	Class A	Class A
Germanischer Lloyd	Classification and Construction Guidelines VI-7-3 Part 1 Ed.2003	Classification and Construction Guidelines VI-7-3 Part 1 Ed.2003

■ Network range

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

Product code M-SFP-...	Wave length	Fiber	System attenuation	Example of optical fiber line length ^a	Fiber attenuation	BLP ^b /Dispersion
-SX/LC...	MM 850 nm	50/125 μm	0-7.5 dB	0-550 m	3.0 dB/km	400 MHz×km
-SX/LC...	MM 850 nm	62.5/125 μm	0-7.5 dB	0-275 m	3.2 dB/km	200 MHz×km
-MX/LC EEC	MM 1310 nm	50/125 μm	0-12 dB	0-1.5 km	1.0 dB/km	800 MHz×km
-MX/LC EEC	MM 1310 nm	62.5/125 μm	0-12 dB	0-500 m	1.0 dB/km	500 MHz×km
-LX/LC...	MM 1310 nm ^c	50/125 μm	0-10.5 dB	0-550 m	1.0 dB/km	800 MHz×km
-LX/LC...	MM 1310 nm ^c	62.5/125 μm	0-10.5 dB	0-550 m	1.0 dB/km	500 MHz×km
-LX/LC...	SM 1310 nm	9/125 μm	0-10.5 dB	0-20 km ^d	0.4 dB/km	3.5 ps/(nm×km)
-LX+/LC...	SM 1310 nm	9/125 μm	5-20 dB	14-42 km	0.4 dB/km	3.5 ps/(nm×km)
-LH/LC...	LH 1550 nm	9/125 μm	5-22 dB	23-80 km	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH 1550 nm	9/125 μm	15-30 dB	71-108 km	0.25 dB/km	19 ps/(nm×km)
-LH+/LC	LH 1550 nm	9/125 μm	15-30 dB	71-128 km	0.21 dB/km (typically)	19 ps/(nm×km)

Table 22: F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet transceiver)

- Including 3 dB system reserve if compliance with the fiber data is observed
- Using the bandwidth length product is inappropriate for expansion calculations.
- With F/O adapter compliant with IEEE 802.3-2002 clause 38 (single-mode fiber offset-launch mode conditioning patch cord)
- Including 2.5 dB system reserve when compliance with the fiber data is observed

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

Table 23: Optical fiber port (bidirectional Gigabit Ethernet SFP transceiver)

- Including 3 dB system reserve if compliance with the fiber data is observed

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

Table 24: F/O port 100BASE-FX (SFP Fiber Optic Fast Ethernet Transceiver)

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

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

Product code	Wave length	Fiber	System attenuation	Example of optical fiber line length ^a	Fiber attenuation	BLP/dispersion	
JJ, MM, NN, M2, M3, M4	MM	1300 nm	50/125 μm	0-8 dB	0-5 km	1.0 dB/km	800 MHz×km
JJ, MM, NN, M2, M3, M4	MM	1300 nm	62.5/125 μm	0-11 dB	0-4 km	1.0 dB/km	500 MHz×km
VV, UU, S2, S4	SM	1300 nm	9/125 μm	0-16 dB	0-30 km	0.4 dB/km	3.5 ps/(nm×km)
LL, L2	LH	1550 nm	9/125 μm	7-29 dB	24-86 km	0.3 dB/km	19 ps/(nm×km)
GG, G2	LH	1550 nm	9/125 μm	14-47 dB	67-176 km	0.25 dB/km	19 ps/(nm×km)

Table 25: F/O port 100BASE-FX

- a. Including 3 dB system reserve if compliance with the fiber data is observed

10/100/1000 Mbit/s twisted pair port

Length of a twisted pair segment max. 100 m (for cat5e cable)

■ Power consumption/power output, order numbers

The order numbers correspond to the product codes of the devices.
See “[Combination options RSR20/RSR30](#)” on page 17.

RSR device	Power consumption (incl SFP transceivers)	Power output (incl SFP transceivers)
3 × combo port and 6 × TX port (100 Mbit/s)	15 W	51 Btu (IT)/h
2 × combo port, 2 × SFP slot (100 Mbit/s) and 6 × TX port (100 Mbit/s)	16 W	55 Btu (IT)/h
2 × combo port and 8 × TX port (100 Mbit/s)	14 W	48 Btu (IT)/h
2 × SFP slot (1000 Mbit/s), 2 × SFP slot (100 Mbit/s) and 6 × TX port (100 Mbit/s)	14 W	48 Btu (IT)/h
2 × SFP slot (1000 Mbit/s) and 8 × TX port (100 Mbit/s)	12 W	41 Btu (IT)/h
3 × SFP slot (1000 Mbit/s) and 7 × SFP slot (100 Mbit/s)	21 W	72 Btu (IT)/h
3 × FX port (100 Mbit/s) and 6 × TX port (100 Mbit/s)	14 W	48 Btu (IT)/h
2 × FX port (100 Mbit/s) and 6 × TX port (100 Mbit/s)	12 W	41 Btu (IT)/h
8 × TX port (100 Mbit/s)	10 W	34 Btu (IT)/h

■ Scope of delivery

Device	Scope of delivery
RSR20-.../ RSR30-...	RSR20-.../RSR30-... device 1 or 2 terminal blocks for the voltage supply, depending on the device variant: - 2-pin for low voltage inputs - 3-pin for high voltage inputs 2 terminal blocks (2-pin) for signal contacts CD/DVD with manual User Manual Installation

■ Accessories

Note that products recommended as accessories may have different characteristics to those of the device, which may limit the application range of the overall system. For example, if you add an accessory with IP 20 to a device with IP 65, the IP of the overall system is reduced to 20.

Gigabit Ethernet SFP transceiver	Order number
M-SFP-TX/RJ45	943 977-001

The following operating conditions apply to twisted pair transceivers:

- ▶ Usable with:
 - HiOS as of software version 03.0.00
 - Classic Switch software, as of software version 04.1.00.
 - HiSecOS as of software version 01.2.00
- Do not use with the following devices:
 - SPIDER II
 - MSP/MSM
 - EES
- ▶ Longer RSTP switching times and link loss detection times compared to twisted pair ports provided by the device directly.
- ▶ Not applicable for combo and Fast Ethernet ports.
- ▶ Only support of the autonegotiation mode including autocrossing.

M-SFP-SX/LC	943 014-001
M-SFP-SX/LC EEC	943 896-001
M-SFP-MX/LC EEC	942 108-001
M-SFP-LX/LC	943 015-001
M-SFP-LX/LC EEC	943 897-001
M-SFP-LX+/LC	942 023-001
M-SFP-LX+/ LC EEC	942 024-001
M-SFP-LH/LC	943 042-001
M-SFP-LH/LC EEC	943 898-001
M-SFP-LH+/LC	943 049-001

Bidirectional Gigabit Ethernet SFP transceiver	Order number
M-SFP-BIDI Type A LX/LC EEC	943 974-001
M-SFP-BIDI Type B LX/LC EEC	943 974-002
M-SFP-BIDI Type A LH/LC EEC	943 975-001
M-SFP-BIDI Type B LH/LC EEC	943 975-002
M-SFP-BIDI Bundle LX/LC EEC (type A + B)	943 974-101
M-SFP-BIDI Bundle LH/LC EEC (type A + B)	943 975-101

Fast Ethernet SFP transceiver	Order number
M-FAST SFP-TX/RJ45	942 098-001
M-FAST SFP-TX/RJ45 EEC	942 098-002

The following operating conditions apply to twisted pair transceivers:

- ▶ Usable with:
 - HiOS as of software version 03.0.00
 - for PRP ports on RSP devices, as of software version 02.0.01
 - for PRP ports on EES devices, as of software version 02.0.02
 - Classic switch software as of software version 08.0.00
 - HiSecOS ab Software-Version 01.2.00
- ▶ Longer RSTP switching times and link loss detection times compared to twisted pair ports provided by the device directly.
- ▶ Not applicable for combo ports.
- ▶ Not applicable for ports which support only Gigabit Ethernet.
- ▶ To set autocrossing manually is currently not possible.

M-FAST SFP-MM/LC	943 865-001
M-FAST SFP-MM/LC EEC	943 945-001
M-FAST SFP-SM/LC	943 866-001
M-FAST SFP-SM/LC EEC	943 946-001
M-FAST SFP-SM+/LC	943 867-001
M-FAST SFP-SM+/LC EEC	943 947-001
M-FAST SFP-LH/LC	943 868-001
M-FAST SFP-LH/LC EEC	943 948-001

Designation	Order number
AutoConfiguration Adapter ACA21-USB (EEC)	943 271-003
Terminal cable	943 301-001
3-pin terminal block (50 pcs.) for voltage supply (high voltage input 48 to 265 V DC or 90 to 320 V AC)	943 845-008
2-pin terminal block (50 pcs.) for voltage supply (low voltage input 18 to 60 V DC)	943 845-009
2-pin terminal block (50 pieces) for signal contact	943 845-010
Rail Power Supply RPS 30	943 662-003
Rail Power Supply RPS 80 EEC	943 662-080
Rail Power Supply RPS 120 EEC	943 662-120
Rail power supply RPS 60/48V EEC (for Power over Ethernet)	943 952-001
Industrial HiVision Network Management software	943 159-xxx
Wall mounting plate in DIN rail design, width 4.72 in. (120 mm)	943 971-001

■ Underlying technical standards

Standard	
Bureau Veritas	Rules for the Classification of Steel Ships – BV
CSA C22.2 No. 213	Canadian National Standard(s) for Nonincendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
EN 50121-4	Railway applications – EMC – emitted interference and interference immunity for signal and telecommunication systems
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
EN 60950-1	Information technology equipment – Safety – Part 1: General 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
FCC 47 CFR Part 15	Code of Federal Regulations
Germanischer Lloyd	Classification and Construction Guidelines VI-7-2 - GL
IEC/EN 61850-3	Communication networks and systems in substations – Part 3: General requirements
IEEE 802.1 D	Switching, GARP, GMRP, Spanning Tree
IEEE 802.1 D	Media access control (MAC) bridges (includes IEEE 802.1p Priority and Dynamic Multicast Filtering, GARP, GMRP)
IEEE 802.1Q	Virtual LANs (VLANs, MRP, Spanning Tree)
IEEE 802.1 Q	Virtual Bridged Local Area Networks (VLAN Tagging, GVRP)
IEEE 802.1w	Rapid Reconfiguration
IEEE 802.3	Ethernet
IEEE 1613	IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations
UL 508	Safety for Industrial Control Equipment

Table 26: List of the technical standards

The device has an approval based on a specific standard only if the approval indicator appears on the device casing.

If your device has a shipping approval according to Germanischer Lloyd, you find the approval mark printed on the device label. You find out whether your device has other shipping approvals on the Hirschmann website under www.hirschmann.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

<http://www.hirschmann.com>

Contact our support at

<https://hirschmann-support.belden.eu.com>

Contact us

in the EMEA region at

▶ Tel.: +49 (0)1805 14-1538

▶ Email: hac.support@belden.com

in the America region at

▶ Tel.: +1 (717) 217-2270

▶ Email: inet-support.us@belden.com

in the Asia-Pacific region at

▶ Tel.: +65 6854 9860

▶ Email: inet-ap@belden.com

■ Hirschmann Competence Center

The Hirschmann Competence Center is ahead of its competitors on three counts with its complete range of innovative services:

▶ Consulting incorporates comprehensive technical advice, from system evaluation through network planning to project planning.

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

You find the training courses on technology and products currently available at <http://www.hicomcenter.com>

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

With the Hirschmann Competence Center, you have decided against making any compromises. Our client-customized package leaves you free to choose the service components you want to use.

Internet:

<http://www.hicomcenter.com>



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