



HIRSCHMANN

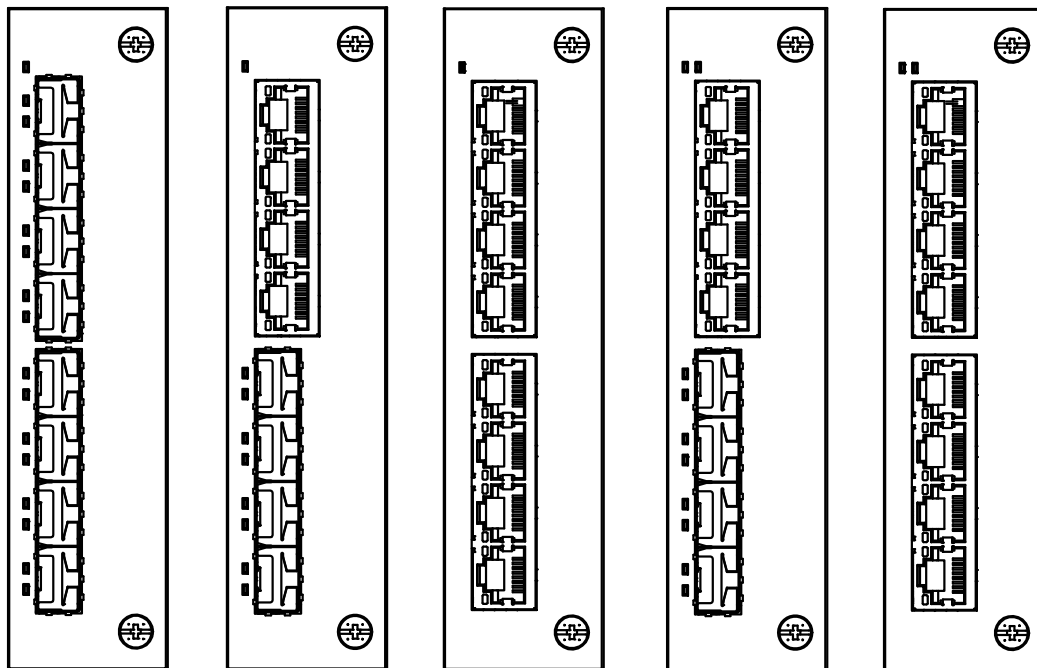
A **BELDEN** BRAND

User Manual

Installation

Industrial Ethernet Rail Switch Power Medienmodul

RSPM



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

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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

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

Safety instructions

■ General safety instructions

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

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

■ Certified usage

- Use the 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 32.](#)
- Connect to the product only components suitable for the requirements of the specific application case.

■ 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.

■ National and international safety regulations

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

■ Shielding ground

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

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

■ ESD Guidelines

The modules are equipped with electrostatically sensitive components. These can be destroyed, or their life cycles reduced, by the effects of an electrical field or by a charge equalization if the connections are touched. You will find information about electrostatically endangered assemblies in DIN EN 61340-5-1 (2007-08) and DIN EN 61340-5-2 (2007-08).

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

Relevant for RSPM devices when operating in explosive gas atmospheres the following applies:

- List of standards:

EN IEC 60079-0:2018
EN 60079-7:2015 + A1:2018

- Make sure that the device has the following label:



II 3G Ex ec IIC T4 Gc DEKRA 15ATEX0016X

Temperature class and code:

T4: $0\text{ °C} \leq T_a \leq +60\text{ °C}$ for “S” types or

T4: $-40\text{ °C} \leq T_a \leq +70\text{ °C}$ for “T” or “E” types

(item 14 of nomenclature breakdown)

- The equipment shall only be used 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 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.
- Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.
- Connectors shall be connected or disconnected exclusively in dead-voltage state.

- UK conformity regulations 2016, UK S.I. 2016:1107 (as amended by UK S.I. 2019:696) - Schedule 3A, Part 6 Relevant for RSPM devices when operating in explosive gas atmospheres the following applies:

- List of standards:

EN IEC 60079-0:2018

EN 60079-7:2015 + A1:2018

- Make sure that the device has the following label:



II 3G Ex ec IIC T4 Gc

DEKRA 21UKEX0071X

Temperature class and code:

T4: $0\text{ °C} \leq T_a \leq +60\text{ °C}$ for “S” types or

T4: $-40\text{ °C} \leq T_a \leq +70\text{ °C}$ for “T” or “E” types

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- Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.
- Connectors shall be connected or disconnected exclusively in dead-voltage state.

- Relevant for use in explosion hazard areas (Hazardous Locations, Class I, Division 2)
The **relay connections** are to be installed and used within their Entity Parameters as per Control Drawing 000182303DNR.

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.

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

Only allowed for RSPE/RSPM model No's. which are individually labeled "FOR USE IN HAZARDOUS LOCATIONS".

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

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 known to be non-hazardous.

Control Drawing for RSPE devices according to Class I Division 2 Hazardous Locations

Rev.: 1

Document No.: 000182303DNR

Page 1/2



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



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

WARNING!

The USB is for temporary connection only, for maintenance use. 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.

Relay contacts:

Equipment with nonincendive field wiring parameters. Polarity is not relevant.

The relay terminals are dependent upon the following Entity parameters:

U_i	I_i	C_i	L_i
30 V	90 mA	2 nF	1 μ H

Power Supply connectors

Temperature Code: T4

Ambient Temperature rating:

Ta: 0 °C to +60 °C for "S" temperature types

Ta: -40 °C to +70 °C for "T" or "E" temperature types

(Refer to the temperature code of the type designation on the device.)

***) 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 parametric conditions are met.
Capacity: $C_a \geq C_i + C_{Cable}$; Inductivity: $L_a \geq L_i + L_{Cable}$

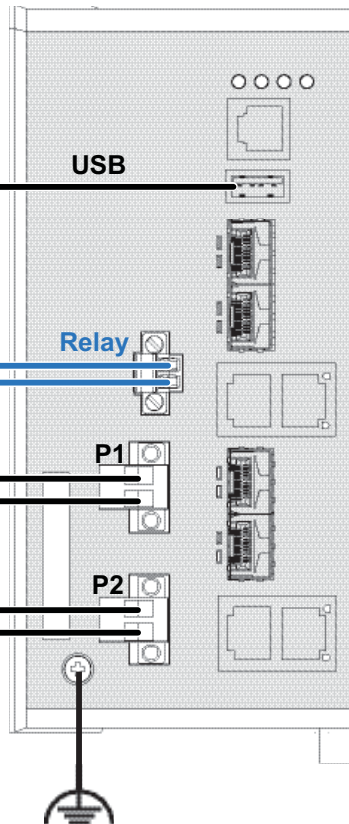
The maximum cable length has to be determined as follows:

(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.

RSPE - Industrial Ethernet
Rail Switch Power Enhanced



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

Control Drawing for RSPE devices according to Class I Division 2 Hazardous Locations

Rev.: 1

Document No.: 000182303DNR

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■ IECEx – Certification Scheme for Explosive Atmospheres



For RSPM devices labeled with an IECEx certificate number, the following applies:

- List of standards:
 - IEC 60079-0:2017
 - IEC 60079-7:2017
- Make sure that the device has the following label:
Ex ec IIC T4 Gc IECEx DEK 15.0013X
for RSPM types

Temperature class and code:

T4: $0\text{ °C} \leq T_a \leq +60\text{ °C}$ for “S” types or

T4: $-40\text{ °C} \leq T_a \leq +70\text{ °C}$ for “T” or “E” types

(item 14 of nomenclature breakdown)

- The equipment shall only be used 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 158 °F (70 °C) at the cable or conduit entry point, or 176 °F (80 °C) 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.
- Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 119 V.
- Connectors shall be connected or disconnected exclusively in dead-voltage state.

■ CE marking

The statements in this chapter refer only to media modules which are correctly mounted in a RSPE basic device (see on page 28 “Mounting a media module”).

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.

Note: The ATEX Directive applies exclusively to the device variants labeled with an ATEX certificate number: See “ATEX directive 2014/34/EU – specific regulations for safe operation” on page 8.

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

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

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

The device can be used in the industrial sector.

- ▶ Interference immunity: EN 61000-6-2
- ▶ Emitted interference: EN 55032
- ▶ Reliability: EN 62368-1

You find more information on technical standards here:

“Underlying technical standards” on page 41

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.

■ UKCA marking

The statements in this chapter refer exclusively to media modules that are correctly mounted in a RSPE basic device:

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

Note: The regulation applies exclusively to the device variants labeled with a UKEX certificate number:

See “UK conformity regulations 2016, UK S.I. 2016:1107 (as amended by UK S.I. 2019:696) - Schedule 3A, Part 6” on page 9.



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

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

You find the UKCA conformity declaration as PDF file for downloading on the Internet at <http://www.doc.hirschmann.com>

■ LED or laser components

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

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT

■ FCC note

The statements in this chapter refer only to media modules which are correctly mounted in a RSPE basic device (see on page 28 “Mounting a media module”).

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

RSPM

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

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

About this manual

The “Installation” user manual 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 description

The RSPM media modules are designed for exclusive use in a RSPE basic device.

By using media modules, you obtain up to 16 additional Fast Ethernet ports. You will find more information on the media modules in the “User Manual for Installation of RSPE”.

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

- ▶ Types of connectors
- ▶ Support of PoE(+)
- ▶ Temperature range
- ▶ Certifications

The RSPM media modules are designed for the special requirements of industrial automation. They meet the relevant technical standards, provide very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

You have the option of choosing various media to connect to the end devices and other network components:

- ▶ Multimode optical fiber
- ▶ Singlemode optical fiber
- ▶ Twisted pair cable

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	Characteristic value	Description
1 ... 4	Product	RSPM	Rail Switch Power Media Module
5	Data rate	2	10/100 Mbit/s
6	Hardware type	0	Standard
		2	Standard with PoE(+)
7	(hyphen)	–	
8 ... 10	Port configuration Part A	4Z6	4 × SFP slot for 100 Mbit/s F/O connections
		4T1	4 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
11 ... 13	Port configuration Part B	4Z6	4 × SFP slot for 100 Mbit/s F/O connections
		4T1	4 × RJ45 socket for 10/100 Mbit/s Twisted pair connections
14	Temperature range	S	Standard +32 °F ... +140 °F (0 °C ... +60 °C)
		T	Extended -40 °F ... +158 °F (-40 °C ... +70 °C)
		E	Extended with Conformal Coating -40 °F ... +158 °F (-40 °C ... +70 °C)
15 ... 16	Certificates and declarations	You will find detailed information on the certificates and declarations applying to your device in a separate overview. See table 2 on page 21.	
17 ... 18	Customer-specific version	HH	Hirschmann Standard
19	Hardware configuration	S	Standard
20	Software configuration	9	without configuration
21 ... 25	Software version	99.9.	without software
26 ... 27	Maintenance	99	without software

Table 1: Device name and product code

Application case	Certificates and declarations	Characteristic value ^a																		
		Z9	X9	W9	WX	WU	WD	WC	WB	WA	U9	UY	UX	UW	T9	TY	V9	VP	VU	P9
Standard applications	ATEX Zone 2			X	X	X	X	X	X	X				X						
	IECEX						X	X	X	X										
	CE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	EN 62368-1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	EN 61131-2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	FCC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	ANSI/UL 121201		X		X	X	X	X						X						
	UL 61010-1, UL 61010-2-210		X		X	X	X	X					X	X	X		X		X	X
Substation applications	IEC 61850-3																X	X	X	
	IEEE 1613																X	X	X	
Navy applications	DNV GL					X	X		X		X	X	X	X					X	
Railway applications (trackside)	EN 50121-4														X	X				

Table 2: Assignment: application cases, certificates and declarations, characteristic values

a. X = Approval or self-declaration present

1.3 Media module variants

The media modules have different interface types.
The different interfaces of the media modules provide you with the following functions:

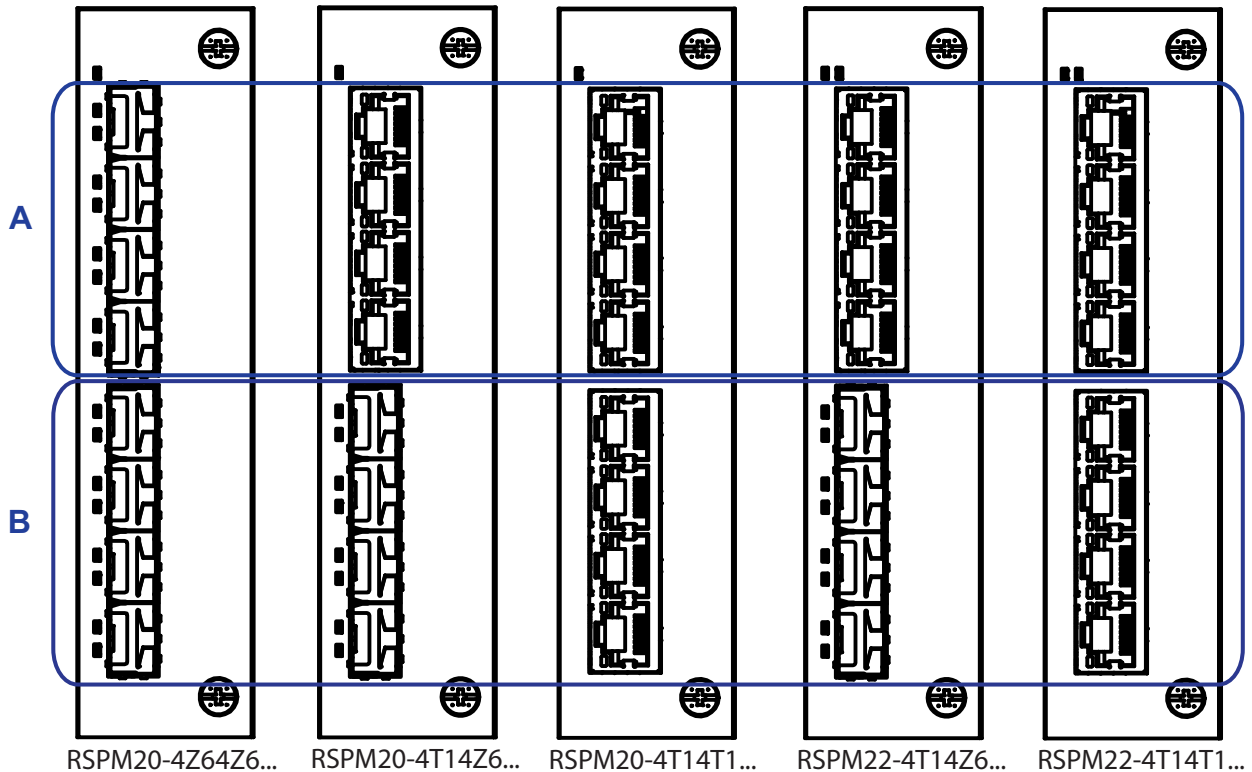
- ▶ Specific functions of the TP/TX interface
 - ▶ Auto Polarity Exchange
 - ▶ Autocrossing (device may be connected with a crossed-over or an uncrossed cable)
 - ▶ Autonegotiation (selecting the operating mode: speed/duplex)
 - ▶ Link Control
- ▶ Specific functions of the F/O interface
 - ▶ Link Down monitoring

1.3.1 Port configuration

The 8 ports of the media modules are arranged in the port configuration parts A and B, each part comprising 4 ports.
The media module variants provide one of the following interface types for each port configuration part:

- ▶ SFP slot for 100 Mbit/s F/O connections
- ▶ RJ45 socket for 10/100 Mbit/s Twisted pair connections

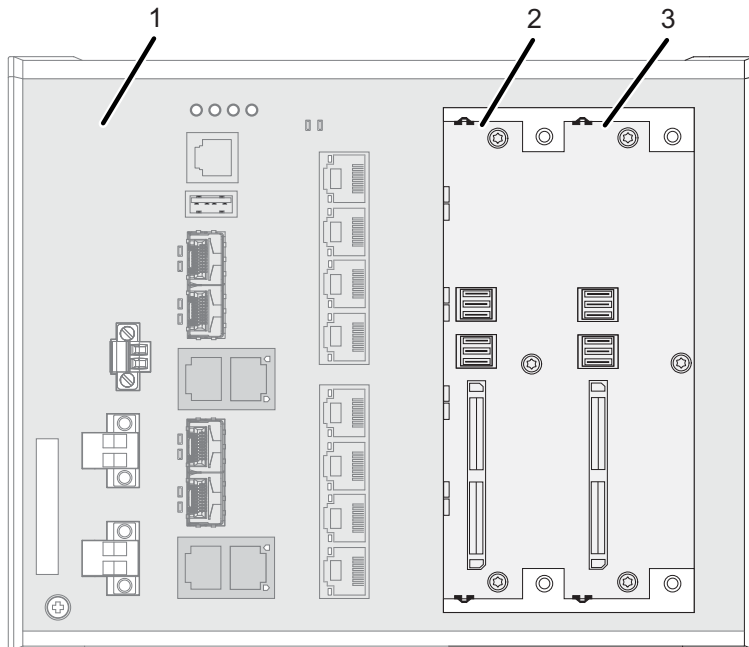
See “Device name and product code” on page 20.



A Port configuration Part A

B Port configuration Part B

1.3.2 Media module slots on the RSPE device



-
- | | |
|-------|---|
| 1 | RSPE basic device (slot 1) |
| <hr/> | |
| 2 | Slot 2 for media module RSPM
All media modules are pluggable except RSPM20-4Z64Z6... (8 F/O ports) |
| <hr/> | |
| 3 | Slot 3 for media module RSPM
All media modules are pluggable. |
-

1.4 Ethernet ports

You have the option to connect terminal devices or other segments to the ports of the media modules via twisted-pair cables or F/O cables. Connect the ports of the media modules plugged into the basic device as required in order to set up your industrial Ethernet or expand your existing network.

1.4.1 100 Mbit/s F/O port

This port is an SFP slot.

See [“Accessories” on page 39](#).

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

This port supports:

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

Default setting: Full duplex

Note: Insert the RSPM20-4Z64Z6... media module in the media module slot 3 only.

See “Media module slots on the RSPE device” on page 23.

1.4.2 10/100 Mbit/s twisted pair port

This port is an RJ45 socket.

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

This port supports:

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

Delivery state: Autonegotiation activated

The port casing is electrically connected to the front panel.

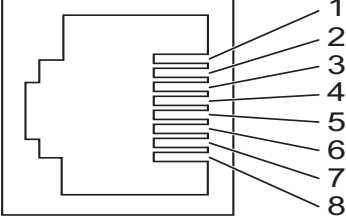
	Pin	Function
	1	RD+ Receive path
	2	RD- Receive path
	3	TD+ Transmission path
	6	TD- Transmission path
	4, 5, 7, 8	–

Table 3: Pin assignment 10/100 Mbit/s twisted pair port, RJ45 socket, MDI-X mode

1.4.3 Support of PoE(+)

See “Device name and product code” on page 20.

The 10/100 Mbit/s twisted pair port allows you to connect network components as a PoE voltage sink according to the standard IEEE 802.3 10BASE-T/100BASE-TX and 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 (joint PoE voltage) are not electrically insulated from each other.

Maximum power available to PoE end devices in total:

124 W

Maximum power available to a media module:

62 W

Note: Connect only PoE-supplier devices whose data connections are located in the interior of the building and are specified as SELV circuits.

The PoE support complies with the following technical standards:

Technical standard	Description	
IEEE 802.3af	Brief description	PoE
	Classes	max. Powered Device (PD) class 0 (15,4 W)
IEEE 802.3at	Brief description	PoE+
	Classes	max. Powered Device (PD) class 4 (30 W)

Table 4: PoE support: technical standards

In accordance with IEEE 802.3af and IEEE 802.3at:

- ▶ Endpoint PSE
- ▶ Alternative A

1.5 Display elements

1.5.1 Media module status

■ Device variant RSPM20

1 LED is located on the upper part of the media module.

This LED provides information on the supply voltage status of the media module.

□ Power

LED	Display	Color	Activity	Meaning
Power	Supply voltage	—	none	Media module is inoperative
		green	lights up	Supply voltage is on

■ Device variant RSPM22

2 LEDs are located on the upper part of the media module.

These LEDs combined provide information on the supply voltage status and the PoE status of the media module.

□ □ Power

LED	Display	Color	Activity	Meaning
Power	Supply voltage	—	none	Media module is inoperative
		green	lights up	Voltage supply to the media module is on Voltage supply to the PoE port is on
		yellow	lights up	PoE voltage is missing or is too low

1.5.2 Port status

These LEDs provide port-related information.
The LEDs are directly located on the ports.



LED	Display	Color	Activity	Meaning
L/D	Link status	—	none	Device detects an invalid or missing link
		green	lights up	Device detects a valid link
			flashes 1 time a period	Port is switched to stand-by
			flashes 3 times a period	Port is switched off
		yellow	lights up	Device detects a non-supported SFP transceiver or a non-supported data rate
			flashing	Device is transmitting and/or receiving data
PoE	PoE status	—	none	RSPM20: LED is without any function
				RSPM22: No powered device connected
		green	lights up	Powered device is supplied with PoE voltage.
		yellow	flashes 1 time a period	Output budget has been exceeded Device has detected a connected powered device
			flashes 3 times a period	PoE administrator status deactivated

2 Installation

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

Hirschmann supplies the media modules ready for operation.

Perform the following steps to install the device:

- ▶ [Checking the package contents](#)
- ▶ [Mounting a media module](#)
- ▶ [Installing an SFP transceiver \(optional\)](#)
- ▶ [Connecting data cables](#)

2.1 Checking the package contents

Proceed as follows:

- Check whether the package includes all items named in the section [“Scope of delivery” on page 39](#).
- Check the individual parts for transport damage.

2.2 Mounting a media module

The media modules provide restricted hot-swap-capability. You have the option of mounting the media modules while the device is operating. To start the operation, it is necessary to restart the device.

Proceed as follows:

- Remove the cover panel (if mounted) from the media module slot on the device.
- Insert the media module into the slot on the device.
- Fasten the media module to the device by tightening the 2 screws.
- Restart the device.

2.3 Installing an SFP transceiver (optional)

Prerequisites:

Exclusively use Hirschmann SFP transceivers.

See [“Accessories” on page 39](#).

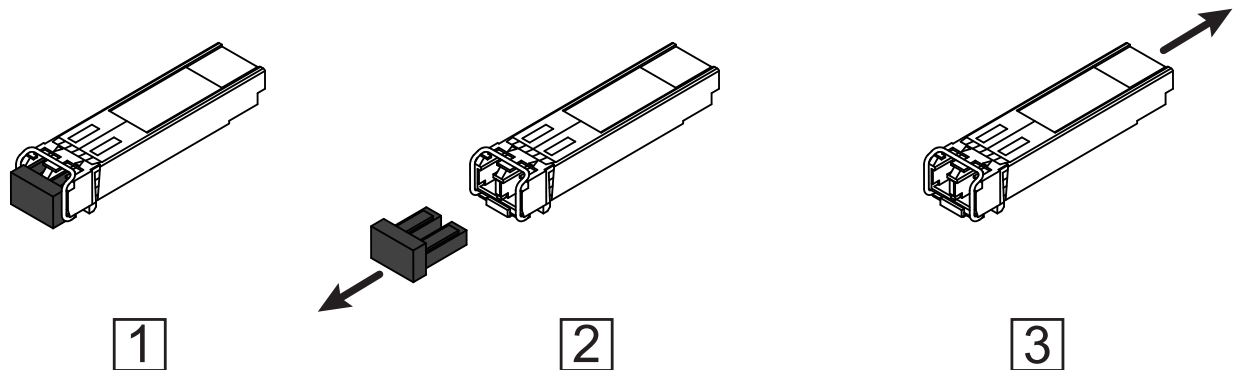


Figure 1: Installing SFP transceivers: Installation sequence

Proceed as follows:

- 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 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. To reduce inductive coupling, verify that the power supply cables and data cables cross at a 90° angle.
- Use shielded data cables for gigabit transmission via copper cables, for example SF/UTP cables according to ISO/IEC 11801. Exclusively use shielded data cables to meet EMC requirements according to EN 50121-4 and marine applications.
- Connect the data cables according to your requirements.

See [“Ethernet ports” on page 23](#).

3 Maintenance and service

- ▶ When designing this device, Hirschmann largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications.
- ▶ 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 Hirschmann product pages on the Internet (<http://www.hirschmann.com>).

Note: You find information on settling complaints on the Internet at <http://www.beldensolutions.com/en/Service/Repairs/index.phtml>.

4 Disassembly

4.1 Removing an SFP transceiver (optional)

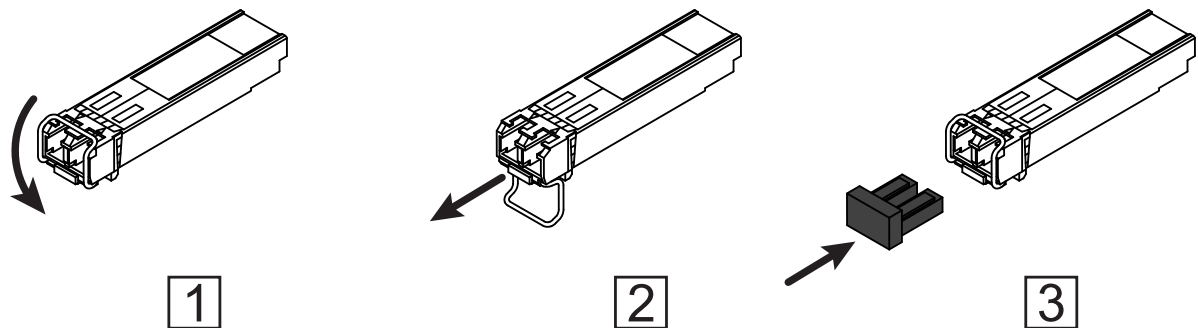


Figure 2: De-installing SFP transceivers: De-installation sequence

Proceed as follows:

- 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).

4.2 Removing a media module

You have the option to remove the media modules while the device is operating.

Proceed as follows:

- Loosen the 2 screws on the media module.
- Pull the media module out of the slot.
- Seal the media module slot on the device with a cover panel.

[See “Accessories” on page 39.](#)

5 Technical data

■ General technical data

Dimensions	RSPM	See "Dimension drawings" on page 33.
Weight	RSPM20-4Z64Z6...	10.23 oz (290 g)
	RSPM20-4T14T1...	4.59 oz (130 g)
	RSPM22-4T14T1...	
	RSPM20-4T14Z6...	7.76 oz (220 g)
	RSPM22-4T14Z6...	
Climatic conditions during operation	Ambient air temperature ^a	Devices with operating temperature characteristic value S (Standard): +32 °F ... +140 °F (0 °C ... +60 °C) ^b
		Devices with the operating temperature characteristic value E and T (Extended) ^c : -40 °F ... +158 °F (-40 °C ... +70 °C) ^d -40 °F ... +185 °F (-40 °C ... +85 °C) for 16 hours (tested in accordance with IEC 60068-2-2) ^d
	Maximum inner temperature of device (guideline)	Devices with operating temperature characteristic value S (Standard): 190 °F (88 °C)
		Devices with operating temperature characteristic value E and T (extended): 208 °F (98 °C)
	Humidity	5 % ... 95 % (non-condensing)
	Air pressure	min. 700 hPa (+9842 ft; +3000 m) max. 1060 hPa (-1312 ft; -400 m)
Climatic conditions during storage	Ambient air temperature ^a	-40 °F ... +185 °F (-40 °C ... +85 °C)
	Humidity	5 % ... 95 % (non-condensing)
	Air pressure	min. 700 hPa (+9842 ft; +3000 m) max. 1060 hPa (-1312 ft; -400 m)
Pollution degree		2
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection of the RSPE device	IP20

- a. Temperature of the ambient air at a distance of 2 in (5 cm) from the device
- b. Hirschmann recommends to use SFP transceivers with "EEC" extension.
- c. Note the specifications for the basic device in the "User Manual Installation RSPE".
- d. Use SFP transceivers with the "EEC" extension only, otherwise the standard temperature range applies.

■ Dimension drawings

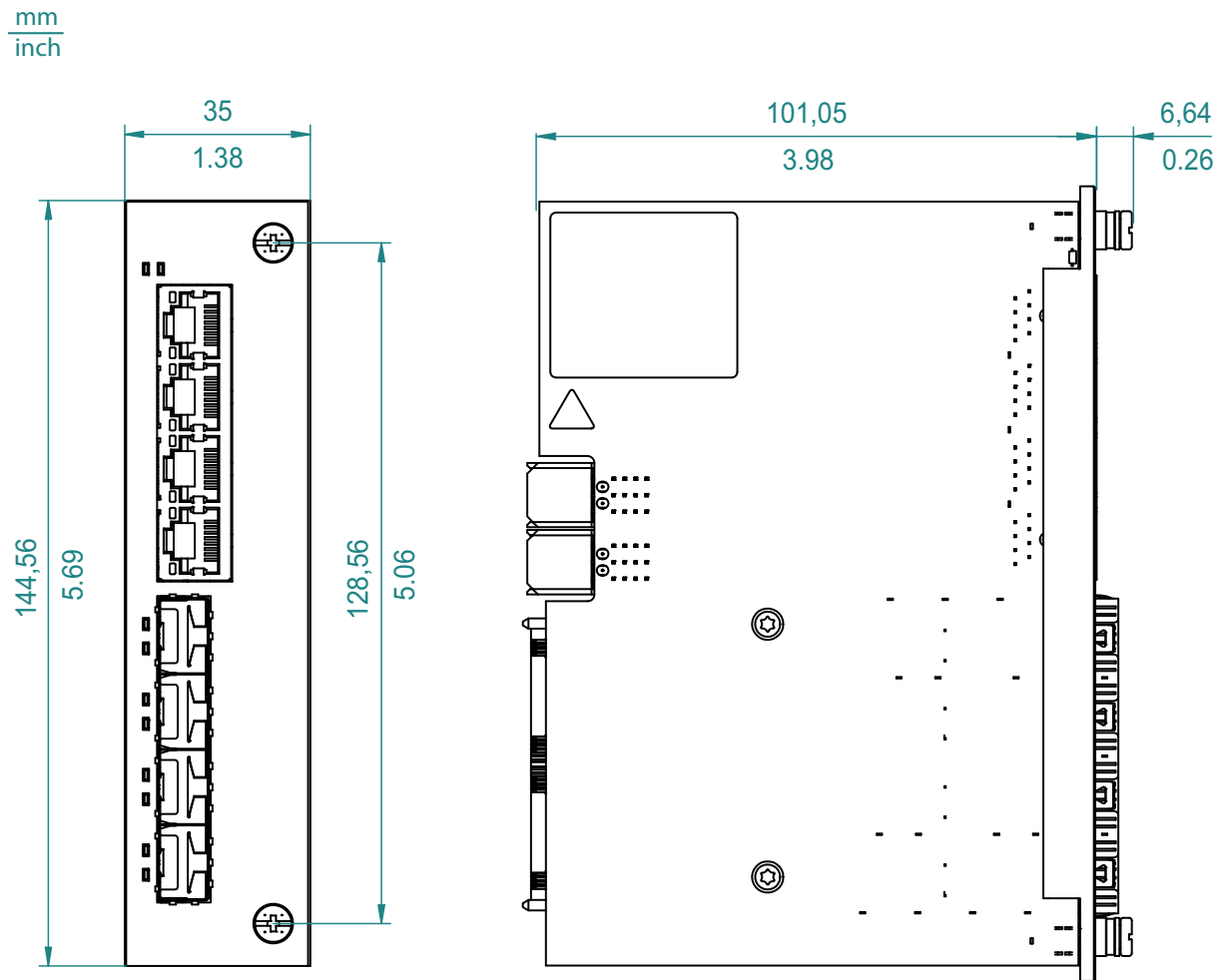


Figure 3: Dimensions of a media module

■ EMC and immunity

You will find detailed information on the certificates and declarations applying to your device in a separate overview.
[See table 2 on page 21.](#)

EMC interference emission		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Radiated emission					
EN 55032		Class A	Class A	Class A	Class A
DNV GL Guidelines		—	EMC B	—	—
FCC 47 CFR Part 15		Class A	Class A	Class A	Class A
EN 61000-6-4		Fulfilled	Fulfilled	Fulfilled	Fulfilled
Conducted emission					
EN 55032	DC supply connection	Class A	Class A	Class A	Class A
DNV GL Guidelines	DC supply connection	—	EMC B	—	—
FCC 47 CFR Part 15	DC supply connection	Class A	Class A	Class A	Class A
EN 61000-6-4	DC supply connection	Fulfilled	Fulfilled	Fulfilled	Fulfilled
EN 55032	Telecommunication connections	Class A	Class A	Class A	Class A
EN 61000-6-4	Telecommunication connections	Fulfilled	Fulfilled	Fulfilled	Fulfilled

EMC interference immunity		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Electrostatic discharge					
EN 61000-4-2	Contact discharge	±4 kV	±6 kV	±6 kV	±8 kV
IEEE C37.90.3					
EN 61000-4-2	Air discharge	±8 kV	±8 kV	±8 kV	±15 kV
IEEE C37.90.3					
Electromagnetic field					

EMC interference immunity		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
EN 61000-4-3	80 MHz ... 6000 MHz	—	10 V/m	—	—
	80 MHz ... 1000 MHz	10 V/m	—	20 V/m	10 V/m
	1000 MHz ... 2000 MHz	—	—	10 V/m	—
	1400 MHz ... 6000 MHz	3 V/m	—	—	—
	1400 MHz ... 3000 MHz	—	—	—	3 V/m
	2000 MHz ... 2700 MHz	—	—	5 V/m	—
	5100 MHz ... 6000 MHz	—	—	3 V/m	—
IEEE 1613	80 MHz ... 1000 MHz	—	—	—	max. 35 V/m
Fast transients (burst)					
EN 61000-4-4 IEEE C37.90.1	DC supply connection	±1 kV	±1 kV	±2 kV	±4 kV
EN 61000-4-4 IEEE C37.90.1	Data line	±4 kV	±1 kV	±2 kV	±4 kV
Voltage surges - DC supply connection					
EN 61000-4-5	line/ground	±2 kV	±1 kV	±2 kV	±2 kV
IEEE 1613	line/ground	—	—	—	±5 kV
EN 61000-4-5	line/line	±1 kV	±0.5 kV	±1 kV	±1 kV
Voltage surges - data line					
EN 61000-4-5	line/ground	±1 kV	±1 kV	±2 kV	±2 kV
Conducted disturbances					
EN 61000-4-6	150 kHz ... 80 MHz	10 V	10 V	10 V	10 V

EMC interference immunity		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
Damped oscillation – DC supply connection					
EN 61000-4-18 IEEE C37.90.1	line/ground	—	—	—	2.5 kV
EN 61000-4-12 IEEE C37.90.1	line/line	—	—	—	1 kV
Damped oscillation – data line					
EN 61000-4-12 IEEE C37.90.1	line/ground	—	—	—	2.5 kV
EN 61000-4-18	line/line	—	—	—	±1 kV

Stability		Standard applications	Navy applications	Railway applications (trackside)	Substation applications
IEC 60068-2-6, test Fc	Vibration	5 Hz ... 8.4 Hz with 0.14 in (3.5 mm) amplitude	2 Hz ... 13.2 Hz with 0.04 in (1 mm) amplitude	—	1 Hz ... 8.2 Hz with 3.5 mm amplitude
		8.4 Hz ... 150 Hz with 1 g	13.2 Hz ... 100 Hz with 0.7 g	—	8.2 Hz ... 150 Hz with 1 g
		—	—	—	—
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms	—	—	15 g at 11 ms

■ Network range

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

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

Table 5: Fiber port 100BASE-FX (SFP fiber optic Fast Ethernet Transceiver)

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

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

Table 6: Network range: 10/100/1000 Mbit/s twisted pair port

■ Power consumption/power output

The order numbers correspond to the product codes of the devices.
See “Device name and product code” on page 20.

Device name	Maximum power consumption ^a	Power output
RSPM20-4Z64Z6...	9 W	31 Btu (IT)/h
RSPM20-4T14T1...	2 W	7 Btu (IT)/h
RSPM20-4T14Z6...	5 W	17 Btu (IT)/h
RSPM22-4T14T1... including PoE output power	2 W	7 Btu (IT)/h
RSPM22-4T14Z6... including PoE output power	5 W	17 Btu (IT)/h

- a. You can find the total power consumption specifications for basic modules that are to be installed in the “User Manual Installation RSPE”.

6 Scope of delivery, order numbers and accessories

6.1 Scope of delivery

Amount	Article
1 ×	Safety and general information sheet
1 ×	Device

6.2 Accessories

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

Name	Order number
Protection cap for RJ45 socket (50 pieces)	943 936-001
Protection cap for SFP slot (25 pieces)	943 942-001
Cover panel for unused module slot	942-131-001

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:

- ▶ 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.
- ▶ It is currently not possible to set autocrossing manually.

M-FAST SFP-MM/LC	943 865-001
M-FAST SFP-MM/LC EEC	943 945-001
M-FAST SFP-SM/LC	943 866-001
M-FAST SFP-SM/LC EEC	943 946-001
M-FAST SFP-SM+/LC	943 867-001
M-FAST SFP-SM+/LC EEC	943 947-001
M-FAST SFP-LH/LC	943 868-001
M-FAST SFP-LH/LC EEC	943 948-001
SFP-FAST-MM/LC ^a	942 194-001

Fast Ethernet SFP transceiver	Order number
SFP-FAST-MM/LC EEC ^a	942 194-002
SFP-FAST-SM/LC ^a	942 195-001
SFP-FAST-SM/LC EEC ^a	942 195-002

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

7 Underlying technical standards

Name	
CSA C22.2 No. 142	Canadian National Standard(s) – Process Control Equipment – Industrial Products
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
EN 50121-4	Railway applications – EMC – Emission and immunity of the signaling and telecommunications apparatus (Rail Trackside)
EN 55032	Electromagnetic compatibility of multimedia equipment – Emission Requirements
IEC/EN 62368-1	Equipment for audio/video, information and communication technology - Part 1: safety requirements
IEC/EN 60079-0	Explosive atmospheres – Part 0: Equipment – General requirements
IEC/EN 60079-7	Explosive atmospheres – Part 7: Equipment protection by increased safety “e”
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
DNVGL-CG-0339	Environmental test specification for electrical, electronic and programmable equipment and systems.
IEC/EN 61850-3	Communication networks and systems for power utility automation - Part 3: General requirements.
IEEE 1613	IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations
IEEE 802.1AB	Station and Media Access Control Connectivity Discovery
IEEE 802.1D	MAC Bridges (switching function)
IEEE 802.1Q	Virtual LANs (VLANs, MRP, Spanning Tree)
IEEE 802.3	Ethernet
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment

Table 7: 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 GL, you find the approval mark printed on the device label. You will find out whether your device has other shipping approvals on the Hirschmann website at www.hirschmann.com in the product information.

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>.

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

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