



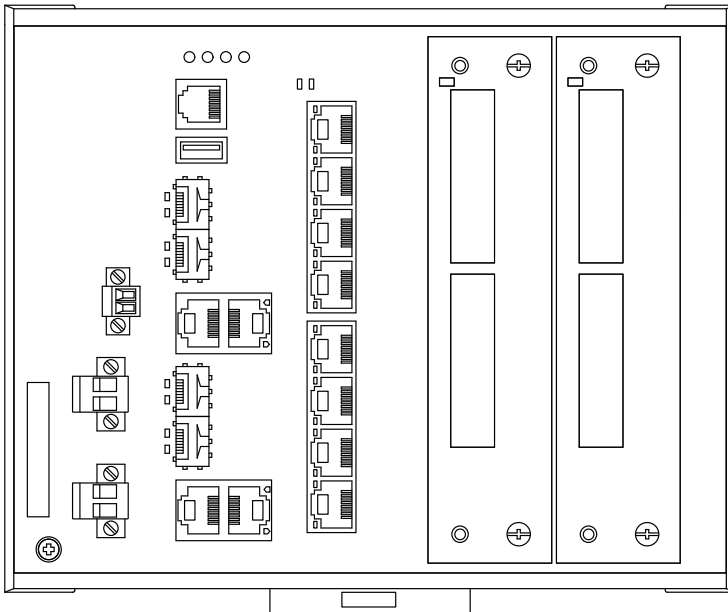
**HIRSCHMANN**

A **BELDEN** BRAND

# User Manual

## Installation

### Industrial Ethernet Rail Switch Power Enhanced RSPE30/32/35/37



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# 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 “Installation” user manual that is not supplied with your device as a printout can be found at:

[doc.hirschmann.com](http://doc.hirschmann.com)

# Important information

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.

# Warning symbols



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.

La présence de ce symbole sur une étiquette « Danger » ou « Avertissement » signale un risque d'électrocution qui provoquera des blessures physiques en cas de non-respect des consignes de sécurité.



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.

La présence de ce symbole sur une étiquette « Danger » ou « Avertissement » signale un risque d'électrocution qui provoquera des blessures physiques en cas de non-respect des consignes de sécurité.



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.

Ce symbole indique le risque de surfaces chaudes sur l'équipement. En relation avec les consignes de sécurité, le non-respect des instructions entraînera inévitablement des blessures.

## **DANGER**



**DANGER indicates a hazardous situation which, if not avoided, will result in death, serious injury, or equipment damage.**

## **DANGER**



**DANGER indique une situation dangereuse qui, si elle n'est pas évitée, entraînera la mort, des blessures graves ou des dommages matériels.**

## **WARNING**



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

## **AVERTISSEMENT**



**AVERTISSEMENT** indique une situation dangereuse qui, si elle n'est pas évitée, peut entraîner la mort, des blessures graves ou des dommages matériels.

## **CAUTION**



**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury, or equipment damage.

## **ATTENTION**



**ATTENTION** indique une situation dangereuse qui, si elle n'est pas évitée, peut entraîner des blessures légères ou des blessures modérées ou des dommages matériels.

## **NOTICE**

**NOTICE** is used to address practices not related to physical injury which could result in equipment damage.

## AVIS

**AVIS est utilisé pour indiquer des pratiques non liées à des blessures corporelles qui peuvent entraîner des dommages matériels.**

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# 1. Safety instructions

## WARNING



### **UNCONTROLLED MACHINE ACTIONS**

**Failure to follow the instructions could result in death, serious injury, or equipment damage.**

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.

## AVERTISSEMENT



### **ACTIONS INCONTRÔLÉES DE LA MACHINE**

**Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.**

Pour éviter les actions incontrôlées de la machine causées par la perte de données, configurez tous les équipements de transmission de données individuellement.

Avant de démarrer une machine commandée par transmission de données, assurez-vous de finaliser la configuration de tous les équipements de transmission de données.

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.

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

## 1.1. 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.

## 1.2. Intended use

- Use the product only for the application cases described in the Hirschmann Automation and Control GmbH product information, including this manual.
- This equipment is not suitable for use in locations where children are likely to be present.
- Operate the product only according to the technical specifications, see [General data on page 80](#).
- Connect to the product only components suitable for the requirements of the specific application case.

## 1.3. Installation site requirements

### WARNING



#### **FIRE HAZARD**

**Failure to follow the instructions could result in death, serious injury, or equipment damage.**

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

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

**⚠ AVERTISSEMENT****RISQUE D'INCENDIE**

**Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.**

Si vous connectez l'équipement à une source d'alimentation qui n'est **PAS** conforme aux exigences d'une source d'alimentation limitée, des classes 2 ou PS2 du NEC selon la norme CEI/EN 62368-1 et qui n'est **PAS** limitée à une puissance de sortie de 100 W, l'équipement doit être installé dans une armoire électrique ou dans une autre enceinte coupe-feu.

L'enceinte coupe-feu peut être en métal ou en plastique avec des propriétés de protection contre le feu d'au moins V-1 conformément à la norme CEI 60695-11-10. Les ouvertures du fond de l'enceinte coupe-feu ne doivent **PAS** dépasser 2 mm de diamètre.

- Only for device variants featuring supply voltage with characteristic value K9 or KK:

Install this device only in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.

## 1.4. 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.
- Mount the device in the vertical position.
- At ambient air temperatures  $> +60\text{ °C}$  ( $+140\text{ °F}$ ), the surfaces of the device housing may become hot. Avoid touching the device while it is operating.

## 1.5. Strain relief

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

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

## 1.6. Electrical connections

### 1.6.1. Grounding the device

Grounding the device is by means of a separate ground connection on the device.

- Ground the device before connecting any other cables.
- Disconnect the grounding only after disconnecting all other cables.
- Ground the device via the ground screw.

For more information on grounding the device, see [Grounding the device on page 60](#).

### 1.6.2. 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.

### 1.6.3. Requirements for connecting electrical wires

Before connecting the electrical wires, **ALWAYS** verify that the requirements listed are complied with. The following requirements apply without restriction:

- The electrical wires are voltage-free.
- The cables used are permitted for the temperature range of the application case.

### 1.6.4. Requirements for connecting the supply voltage

Before connecting the supply voltage, **ALWAYS** verify that the requirements listed are complied with. The following requirements apply without restrictions:

- The supply voltage corresponds to the voltage specified on the type plate of the device.
- The power supply conforms to overvoltage category I or II.
- The power supply has an easily accessible disconnecting device (for example a switch or a plug). This disconnecting device is clearly labelled and identifiable, so that in case of an emergency it is clear which power supply the disconnecting device belongs to.
- The cross-section of the ground conductor is the same size as or bigger than the cross-section of the power supply cables.
- Relevant for North America:

The power supply cables are suitable for ambient air temperatures of at least +75 °C (+167 °F). The wires of the power supply cables are made of copper.

### **1.6.5. Specific requirements for connecting the supply voltage**

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

For supply voltage connections with protective conductor connection:

- First connect the protective conductor before connecting the wires for the supply voltage.

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

NOTICE

**MATERIAL DAMAGE**

**Failure to follow the instruction could result in equipment damage.**

If you connect 2 independent power sources, verify that the minus terminal is grounded.

AVIS

**DOMMAGE MATÉRIEL**

**Le non-respect de l'instruction peut entraîner des dommages matériels.**

Si vous connectez deux sources d'alimentation indépendantes, vérifiez que la borne négative est mise à la terre.

The wire diameter of the power supply cable is at least 1 mm<sup>2</sup> (North America: AWG16) on the supply voltage input.

The following requirements apply alternatively:

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alternative 1 | The power supply complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or PS2 according to IEC/EN 62368-1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Alternative 2 | Relevant for North America:<br>The power supply complies with the requirements according to NEC Class 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Alternative 3 | <b>ALL</b> of the following requirements are complied with: <ul style="list-style-type: none"><li>• The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.</li><li>• A back-up fuse suitable for DC voltage is located in the plus conductor of the power supply.<br/>The minus conductor is on ground potential. Otherwise, a back-up fuse is also located in the minus conductor. For more information on the back-up fuse, see <a href="#">Supply voltage range 24 V DC ... 48 V DC on page 81</a>.</li></ul> |

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

### NOTICE

#### **MATERIAL DAMAGE**

**Failure to follow the instruction could result in equipment damage.**

If you connect 2 independent power sources, verify that the minus terminal is grounded.

### AVIS

#### **DOMMAGE MATÉRIEL**

**Le non-respect de l'instruction peut entraîner des dommages matériels.**

Si vous connectez deux sources d'alimentation indépendantes, vérifiez que la borne négative est mise à la terre.

The wire diameter of the power supply cable is at least 1 mm<sup>2</sup> (North America: AWG16) on the supply voltage input.

ALL of the following requirements are complied with:

- The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN62368-1.
- There are fuses suitable for DC voltage in the positive conductors of the supply lines, or the voltage sources are appropriately current-limited. Regarding the properties of this back-up fuse, see [Supply voltage range 24 V DC ... 48 V DC, 48 V DC \(PoE\) or 54 V DC \(PoE+\)](#) on page 80.
- The power sources are electrically isolated from the ground potential. According to specification IEEE 802.3, the insulation voltage must be 1500 V AC or 2250 V DC.

## Only for device variants featuring supply voltage with the characteristic value K9 or KK:

ALL of the following requirements are complied with:

---

Supply with DC voltage:

- A back-up fuse suitable for DC voltage is located in the plus conductor of the power supply.
  - The minus conductor is on ground potential. Otherwise, a back-up fuse is also located in the minus conductor. For more information on the back-up fuse, see [Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC on page 81](#).
  - The wire diameter of the power supply cable is at least 1 mm<sup>2</sup> (North America: AWG16) on the supply voltage input.
- 

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. For more information on this fuse, see [Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC on page 81](#).
- The wire diameter of the power supply cable is at least 0.75 mm<sup>2</sup> (North America: AWG18) on the supply voltage input.

### 1.6.6. Requirements for connecting the signal contact

Before connecting the signal contact, **ALWAYS** verify that the requirements listed are complied with. The following requirements apply without restriction:

- The switched voltage complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
- The connected voltage source is limited by a current limitation device or a fuse.
- The electrical threshold values for the signal contact are observed.

For more information, see [Signal contact on page 83](#).

## 1.7. 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.

**WARNING:** Explosion Hazard – Substitution of any components may impair suitability for Class I, Division 2.

**AVERTISSEMENT :** Risque d'explosion - La substitution de tout composant peut rendre ce matériel incompatible pour une utilisation en classe I, division 2.

**WARNING:** Explosion Hazard – Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

**AVERTISSEMENT :** Risque d'explosion - Ne pas débrancher l'équipement tant que le circuit est sous tension à moins que l'emplacement soit connu pour ne contenir aucune concentration de gaz inflammable.

**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 labelled  
"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 NON-  
HAZARDOUS.**

**AVERTISSEMENT - RISQUE D'EXPLOSION - NE PAS DEBRANCHER TANT QUE LE  
CIRCUIT EST SOUS TENSION A MOINS QUE L'EMPLACEMENT SOIT CONNU POUR  
NE CONTENIR AUCUNE CONCENTRATION DE GAZ INFLAMMABLE.**

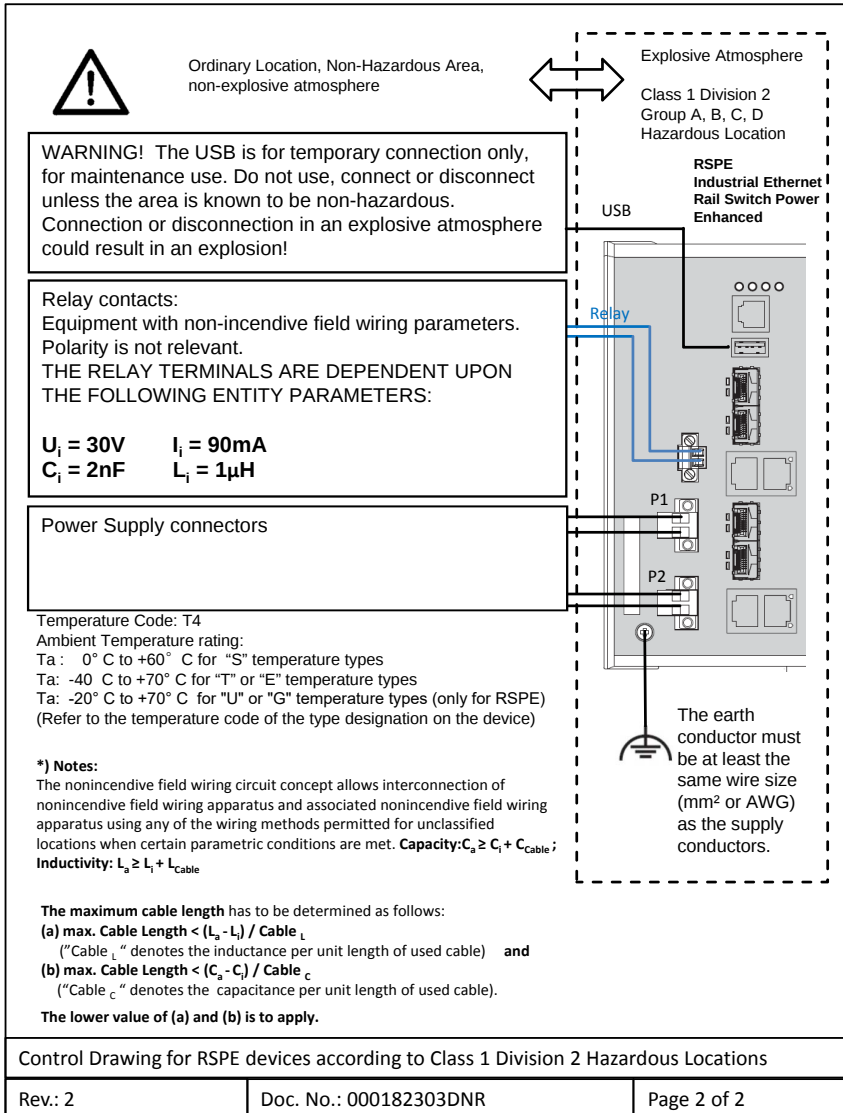
**AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DE TOUT  
COMPOSANT PEUT RENDRE CE MATERIEL INCOMPATIBLE POUR UNE  
UTILISATION EN CLASSE I, DIVISION 2.**

Control Drawing for RSPE devices according to Class 1 Division 2 Hazardous Locations

Rev.: 2

Doc. No.: 000182303DNR

Page 1 of 2



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

Relevant for RSPE devices when operating in explosive gas atmospheres according to ATEX Directive 2014/34/EU, the following applies:

- List of standards:
  - EN IEC 60079-0:2018
  - EN 60079-7:2015 + A1:2018
  - EN IEC 60079-15:2019
- Use only device variants featuring supply voltage with characteristic value CC.
- Make sure that the device has the following label:



**II 3G Ex ec nC IIC T4 Gc** for RSPE types

**DEKRA 15ATEX0016 X**

Ambient temperature range and parameter:

**T4:  $0\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$  ( $+32\text{ }^{\circ}\text{F} \leq T_a \leq +140\text{ }^{\circ}\text{F}$ ) for "S" types, or**

**T4:  $-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$  ( $-40\text{ }^{\circ}\text{F} \leq T_a \leq +158\text{ }^{\circ}\text{F}$ ) for "T" or "E" types, or**

**T4:  $-20\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$  ( $-4\text{ }^{\circ}\text{F} \leq T_a \leq +158\text{ }^{\circ}\text{F}$ ) for "U" or "G" types  
(only for RSPE)**

(item 19 of nomenclature breakdown for RSPE types)

- The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.
- The modules shall be installed in a suitable enclosure in accordance with IEC 60079-0 providing a degree of protection of at least IP54 according to IEC 60529, taking into account the environmental conditions under which the equipment will be used.

- When the temperature under rated conditions exceeds +70 °C (+158 °F) at the cable or the conduit entry point, or +80 °C (+176 °F) at the branching point of the conductors, take measures so that the temperature specification of the selected cable and cable entries is in compliance with the actual measured temperature values.
- 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.
- DIP switches shall be switched exclusively in dead-voltage state.



The USB port shall remain disconnected.

## 1.9. IECEx – Certification Scheme for Explosive Atmospheres



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

- List of standards:
  - IEC 60079-0:2017
  - IEC 60079-7:2017
  - IEC 60079-15:2017
- Make sure that the device has the following label:



**Ex ec nC IIC T4 Gc** for RSPE types

**IECEX: DEK 15.0013 X**

Ambient temperature range and parameter:

**T4:  $0\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$  ( $+32\text{ }^{\circ}\text{F} \leq T_a \leq +140\text{ }^{\circ}\text{F}$ ) for "S" types, or**

**T4:  $-40\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$  ( $-40\text{ }^{\circ}\text{F} \leq T_a \leq +158\text{ }^{\circ}\text{F}$ ) for "T" or "E" types, or**

**T4:  $-20\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$  ( $-4\text{ }^{\circ}\text{F} \leq T_a \leq +158\text{ }^{\circ}\text{F}$ ) for "U" or "G" types  
(only for RSPE)**

(item 19 of nomenclature breakdown for RSPE types)

- The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.
- The equipment shall be installed in a suitable enclosure according to IEC 60079-0 providing a degree of protection of at least IP54 according to IEC 60529, taking into account the environmental conditions under which the equipment will be used.
- When the temperature under rated conditions exceeds  $+70\text{ }^{\circ}\text{C}$  ( $+158\text{ }^{\circ}\text{F}$ ) at the cable or conduit entry point, or  $+80\text{ }^{\circ}\text{C}$  ( $+176\text{ }^{\circ}\text{F}$ ) 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.



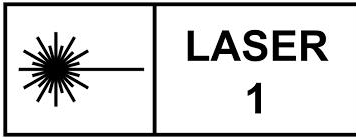
The USB port shall remain disconnected.

## 1.10. LED or laser components

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

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT



**WARNING:** Class 1 laser product according to IEC 60825-1:2014 and EN 0825-1:2014 + A11:2021.

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in "Laser Notice No. 56", dated May 8, 2019.

**AVERTISSEMENT :** Produit laser de classe 1 selon les normes CEI 60825-1:2014 et EN 0825-1:2014 + A11:2021.

Conforme aux normes 21 CFR 1040.10 et 1040.11, à l'exception de la conformité à la norme CEI 60825-1 Éd. 3., comme décrit dans le document « Laser Notice No. 56 » du 8 mai 2019.

## 1.11. Recycling note



The symbol of a crossed-out wheeled bin shown on the device indicates that the device **MUST NOT** be disposed of with household waste at the end of its service life.

After its service life, the used device must be disposed of properly as electronic waste in accordance with the locally applicable disposal regulations.

End users are responsible for deleting personal data from the used device prior to disposal.

End users are obliged to separate used batteries and accumulators that are not enclosed by the used device from the used device in a non-destructive manner before disposing of the used device. The used batteries and accumulators must be handed in for separate collection. This does not apply if the used device is handed in for reuse.

## 2. Approvals

### 2.1. CE marking

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

- **2011/65/EU and 2015/863/EU (RoHS)**

Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

- **2014/30/EU (EMC)**

Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

- **2014/34/EU (ATEX)<sup>1</sup>**

Directive of the European Parliament and the Council on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres.

The ATEX Directive applies exclusively to the device variants labeled with an ATEX certificate number:

*[ATEX directive 2014/34/EU – specific regulations for safe operation on page 25](#)*

- **2014/35/EU<sup>2</sup>**

Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

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

1. Only for device variants featuring supply voltage with characteristic value CC

2. Only for device variants featuring supply voltage with characteristic value K9 or KK

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

You can download the PDF file of the EU conformity declaration at <https://www.doc.hirschmann.com/certificates.html>.

The device can be used in industrial environments.

- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55032
- Safety: IEC/EN 62368-1

For more information on technical standards, see [Underlying technical standards on page 103](#).

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.

**AVERTISSEMENT :** Ce produit est un équipement de la classe A. Ce produit peut provoquer des interférences dans les habitations. Dans ce cas, l'exploitant peut être tenu de procéder aux mesures appropriées.

## 2.2. FCC note

### Supplier's Declaration of Conformity

#### 47 CFR § 2.1077 Compliance Information

RSPE30/32/35/37

### U.S. Contact Information

Belden Inc. – 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.

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.

## 3. Description

The device is designed for the special requirements of industrial automation. The device meets the relevant industry standards, provides very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The device works without a fan.

By using media modules, you obtain up to 16 additional Fast Ethernet ports.

For more information on the media modules, see the User Manual Installation RSPM at [doc.hirschmann.com](https://doc.hirschmann.com).

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

- Support of PoE(+)
- Temperature range
- Supply voltage range
- Certifications
- Redundancy functions

Type of the device mounting:

- Mounting on a DIN rail

You can choose various media to connect to the end devices and other network components:

- Twisted-pair cable
- Multimode F/O (Fiber Optic)
- Singlemode F/O (Fiber Optic)

The redundancy concept allows the network to be reconfigured quickly.

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

- Web browser
- SSH
- Telnet
- Network management software (for example Industrial HiVision)

The Network Management Software Industrial HiVision provides you with options for smooth configuration and monitoring. For more information, see <https://www.belden.com/products/industrial-networking-cybersecurity/software-solutions/network-management-software/industrial-hivision-network-management-software>.

- V.24 interface (locally on the device)

The device provides you with a large range of functions, which the Manual Collection (User and Reference Manuals) for the operating software informs you about. For more information, see [doc.hirschmann.com](https://doc.hirschmann.com).

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

### 3.1. 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 [catalog.belden.com](https://catalog.belden.com) on the web page of the device.

Table 1. Device name and product code

| Item      | Characteristic                       | Charac-<br>teristic<br>value | Description                           |                                                           |
|-----------|--------------------------------------|------------------------------|---------------------------------------|-----------------------------------------------------------|
| 1 ... 4   | Product                              | RSPE                         | Rail Switch Power Enhanced            |                                                           |
| 5         | Data rate                            | 3                            | 10/100 Mbit/s and 10/100/1000 Mbit/s  |                                                           |
| 6         | Hardware type                        | 0                            | Standard                              |                                                           |
|           |                                      | 2                            | Standard with PoE(+)                  |                                                           |
|           |                                      | 5                            | Extended redundancy                   |                                                           |
|           |                                      | 7                            | Extended redundancy with PoE and PoE+ |                                                           |
| 7         | (hyphen)                             | –                            |                                       |                                                           |
| 8 ... 9   | Number<br>Fast Ethernet ports        | 24                           | 24 ×                                  |                                                           |
| 10 ... 11 | Number<br>Gigabit Ethernet ports     | 04                           | 4 ×                                   |                                                           |
| 12 ... 14 | Configuration of the uplink<br>ports | 407                          | 4 ×                                   | Combo port for 10/100/1000 Mbit/s con-<br>nections        |
| 15 ... 17 | Configuration of the other<br>ports  | T                            | 8 ×                                   | RJ45 socket for 10/100 Mbit/s twisted<br>pair connections |
|           |                                      | 99                           | 2 ×                                   | free slot for media module                                |
| 18        | (hyphen)                             | –                            |                                       |                                                           |
| 19        | Temperature range <sup>3</sup>       | S                            | Standard                              | 0 °C ... +60 °C (+32 °F ... +140 °F)                      |
|           |                                      | T                            | Extended                              | -40 °C ... +70 °C (-40 °F ... +158 °F)                    |
|           |                                      | E                            | Extended with Confor-<br>mal Coating  | -40 °C ... +70 °C (-40 °F ... +158 °F)                    |
|           |                                      | U                            | No conformal coating                  | -20 °C ... +70 °C (-4 °F ... +158 °F)                     |
|           |                                      | G                            | With conformal coating                | -20 °C ... +70 °C (-4 °F ... +158 °F)                     |

3. When you install RSPM modules with temperature characteristic value T or E in an RSPE device with temperature characteristic value U or G, the temperature range of the RSPE temperature characteristic value U or G applies for the overall system.

Table 1. Device name and product code (continued)

| Item      | Characteristic                     | Charac-<br>teristic<br>value | Description                                                                       |
|-----------|------------------------------------|------------------------------|-----------------------------------------------------------------------------------|
| 20 ... 21 | Supply voltage                     | CC                           | 2 voltage inputs for redundant power supply                                       |
|           |                                    |                              | Rated voltage range DC:<br>24 V DC ... 48 V DC                                    |
|           |                                    | K9                           | 1 voltage input                                                                   |
|           |                                    |                              | Rated voltage range AC:<br>110 V AC ... 230 V AC, 50 Hz ... 60 Hz                 |
|           |                                    |                              | Rated voltage range DC:<br>60 V DC ... 250 V DC                                   |
|           |                                    | KK                           | 2 voltage inputs for redundant power supply                                       |
|           |                                    |                              | Rated voltage range AC:<br>110 V AC ... 230 V AC, 50 Hz ... 60 Hz                 |
|           |                                    |                              | Rated voltage range DC:<br>60 V DC ... 250 V DC                                   |
|           |                                    | PP                           | 2 voltage inputs for redundant power supply                                       |
|           |                                    | PoE                          | Rated voltage range DC:<br>47 V DC ... 57 V DC                                    |
| 22 ... 23 | Certificates and declara-<br>tions |                              |  |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
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|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
| 24 ... 25 | Software packages                  |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
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|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
| 26 ... 27 | Customer-specific version          |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
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|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
| 28        | Hardware configuration             |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
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|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
| 29 ... 30 | Other information                  |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
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|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |
|           |                                    |                              |                                                                                   |

Table 1. Device name and product code (continued)

| Item                                                                                                                                                                                    | Characteristic         | Charac-<br>teristic<br>value | Description                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------|-------------------------------|
| <p><b>Note:</b> You can exchange software with each other on the following device variants:</p> <ul style="list-style-type: none"><li>• M</li><li>• P</li><li>• H</li><li>• R</li></ul> |                        |                              |                               |
| 29                                                                                                                                                                                      | Software configuration | E                            | Entry (without configuration) |
|                                                                                                                                                                                         |                        | B                            | Diagnostic User (BDEW)        |
|                                                                                                                                                                                         |                        | P                            | Profinet                      |
|                                                                                                                                                                                         |                        | I                            | Ethernet/IP                   |
|                                                                                                                                                                                         |                        | D                            | DLR (pre-configuration)       |
| 30 ... 31                                                                                                                                                                               | Software level         | 2S                           | HiOS Layer 2 Standard         |
|                                                                                                                                                                                         |                        | 2A                           | HiOS Layer 2 Advanced         |
|                                                                                                                                                                                         |                        | 3S                           | HiOS Layer 3 Standard         |
| 32 ... 36                                                                                                                                                                               | Software version       | 03.1.                        | Software version 03.1         |
|                                                                                                                                                                                         |                        | XX.X.                        | Current software version      |
| 37 ... 38                                                                                                                                                                               | Maintenance            | 00                           | Bugfix version 00             |
|                                                                                                                                                                                         |                        | XX                           | Current bugfix version        |

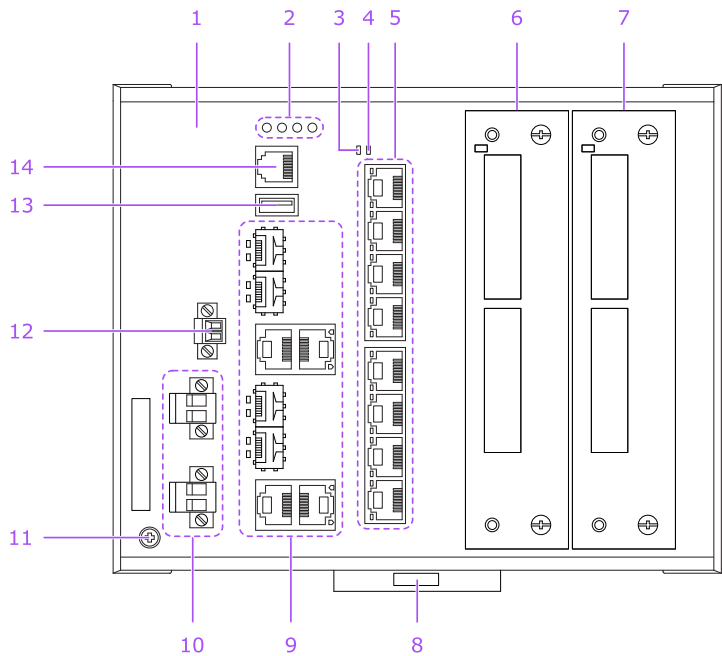
**Table 2. Assignment: application cases, certificates and declarations, characteristic values**

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

## 3.2. Device views

### 3.2.1. Front view

Figure 1. Front view (using the example RSPE30-2404407T99-SCC...)



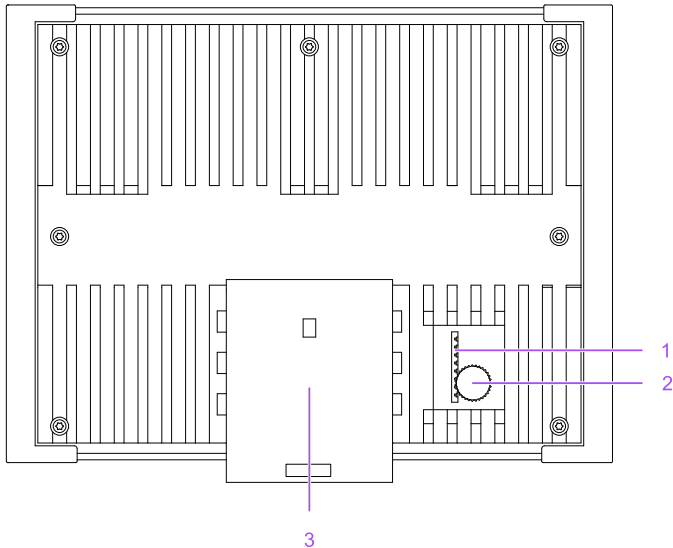
|   |                                                                                                       |
|---|-------------------------------------------------------------------------------------------------------|
| 1 | RSPE basic device (slot 1)                                                                            |
| 2 | LED display elements for device status                                                                |
| 3 | LED display element for media module status                                                           |
| 4 | only device variants RSPE32 and RSPE37:<br>LED display element for media module status and PoE status |
| 5 | Media module with 8 × RJ45 socket for 10/100 Mbit/s twisted pair connections (slot 1)                 |
| 6 | Slot 2 for media module RSPM                                                                          |
| 7 | Slot 3 for media module RSPM                                                                          |
| 8 | Rail lock slide for DIN rail mounting                                                                 |

|    |                                                                                                                                                                                  |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | 4 × Combo-Port for 10 <sup>4</sup> /100/1000 Mbit/s connections (slot 1)                                                                                                         |
| 10 | Supply voltage connection,<br>alternatively, depending on device variant                                                                                                         |
|    | Supply voltage with the characteristic value:<br>CC <ul style="list-style-type: none"><li>• 2 voltage inputs for redundant power supply</li><li>• 2-pin terminal block</li></ul> |
|    | Supply voltage with the characteristic value:<br>K9 <ul style="list-style-type: none"><li>• 1 voltage input</li><li>• 3-pin terminal block</li></ul>                             |
|    | Supply voltage with the characteristic value:<br>KK <ul style="list-style-type: none"><li>• 2 voltage inputs for redundant power supply</li><li>• 3-pin terminal block</li></ul> |
|    | Supply voltage with the characteristic value:<br>PP <ul style="list-style-type: none"><li>• 2 voltage inputs for redundant power supply</li><li>• 2-pin terminal block</li></ul> |
| 11 | Grounding screw                                                                                                                                                                  |
| 12 | Connection for the signal contact                                                                                                                                                |
| 13 | USB interface                                                                                                                                                                    |
| 14 | V.24 interface                                                                                                                                                                   |

4. Exclusively for twisted pair connections.

### 3.2.2. Rear view

Figure 2. Rear view



|   |                                       |
|---|---------------------------------------|
| 1 | Slot for the SD card                  |
| 2 | Thumb screw                           |
| 3 | Rail lock slide for DIN rail mounting |

## 3.3. Power supply

The following options for power supply are available:

### 3.3.1. Supply voltage range 24 V DC ... 48 V DC, 48 V DC (PoE) or 54 V DC (PoE+)

Corresponds in the product code with the supply voltage characteristic value PP.  
For more information, see [Device name and product code on page 34](#).

- 2 × 2-pin terminal block

For more information on connecting the supply voltage, see [Supply voltage range 24 V DC ... 48 V DC, 48 V DC \(PoE\) or 54 V DC \(PoE+\)](#) on page 64.

These device variants support PoE(+).

### 3.3.2. Supply voltage range 24 V DC ... 48 V DC

Corresponds to the supply voltage characteristic value CC. For more information, see [Device name and product code](#) on page 34.

- 2 × 2-pin terminal block

For more information on connecting the supply voltage, see [Supply voltage range 24 V DC ... 48 V DC](#) on page 65.

### 3.3.3. Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC (1 voltage input)

Corresponds to the supply voltage characteristic value K9. For more information, see [Device name and product code](#) on page 34.

- 1 × 3-pin terminal block

For more information on connecting the supply voltage, see [Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC \(1 voltage input\)](#) on page 66.

### 3.3.4. Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC (2 voltage inputs)

Corresponds to the supply voltage characteristic value KK. For more information, see [Device name and product code](#) on page 34.

- 2 × 3-pin terminal block

For more information on connecting the supply voltage, see [Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC \(2 voltage inputs\) on page 68](#).

## 3.4. Management Interfaces

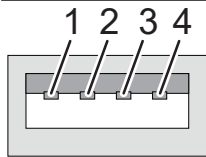
### 3.4.1. USB interface

The USB interface allows you to connect the AutoConfiguration Adapter ACA21 storage medium. This is used for saving/loading the configuration data and diagnostic information, and for loading the software. The AutoConfiguration Adapter is available as an accessory, see [Accessories on page 100](#).

The USB interface has the following properties:

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

**Table 3. Pin assignment of the USB interface**

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

For information about the position on the device, see [Front view on page 38](#).

On the front of the device there is an LED display that informs you about the status of the interface. For more information, see [Device status on page 50](#).

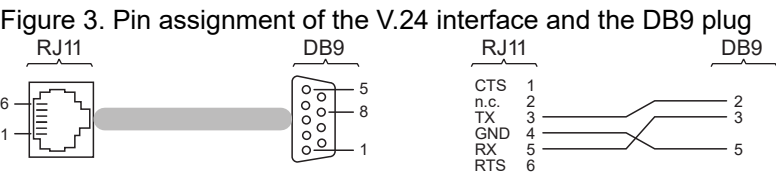
### 3.4.2. V.24 interface (external management)

A serial interface is provided on the RJ11 socket (V.24 interface) for the local connection of an external management station (VT100 terminal or PC with corresponding terminal emulation). This enables you to set up a connection to the Command Line Interface CLI and to the System Monitor.

The terminal cable is available as an accessory, see [Accessories on page 100](#).

| VT100 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.



### 3.4.3. SD card interface

**Prerequisite:**

Only use Hirschmann SD cards.

The SD card interface allows you to connect the AutoConfiguration Adapter ACA31 storage medium. This is used for saving/loading the configuration data and diagnostic information, and for loading the software.

The AutoConfiguration Adapter is available as an accessory, see [Accessories on page 100](#).

For information about the position on the device, see [Rear view on page 40](#).

On the front of the device there is an LED display that informs you about the status of the interface.

## 3.5. Ethernet ports

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

The RSPE30/32/35/37 device provides 4 combo ports for transmission speeds of up to 1000 Mbit/s. For more information, see [Table 4: Arrangement of the Ethernet ports on the device on page 45](#).

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. For more information, see [Accessories on page 100](#).

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

Figure 4. Arrangement of the Ethernet ports on the device

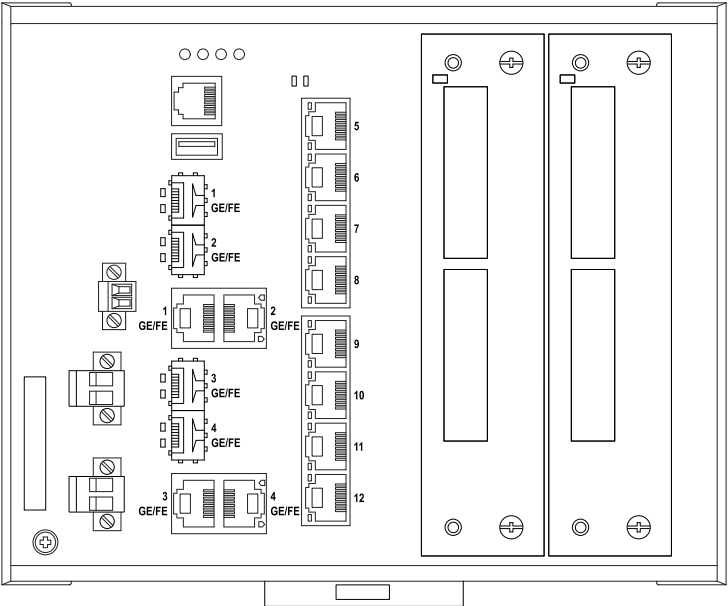


Table 4. Arrangement of the Ethernet ports on the device

|               |                                                                                              |
|---------------|----------------------------------------------------------------------------------------------|
| Port 1 GE/FE  | Combo port 1 for Gigabit Ethernet and Fast Ethernet                                          |
| Port 2 GE/FE  | Combo port 2 for Gigabit Ethernet and Fast Ethernet                                          |
| Port 3 GE/FE  | Combo port 3 for Gigabit Ethernet and Fast Ethernet                                          |
| Port 4 GE/FE  | Combo port 4 for Gigabit Ethernet and Fast Ethernet                                          |
| Ports 5 to 12 | Twisted pair port for Fast Ethernet<br>PoE-capable for the device variants RSPE32 and RSPE37 |

**Note:** By using media modules, you obtain up to 16 additional Fast Ethernet ports. For more information on the media modules, see the User Manual Installation RSPM at [doc.hirschmann.com](http://doc.hirschmann.com).

### 3.5.1. Twisted-pair port 10/100 Mbit/s

This port is an RJ45 socket.

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

This port supports:

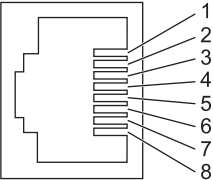
- Auto-Negotiation
- Autopolarity
- Auto-Crossover (if Auto-Negotiation is enabled)
- 100 Mbit/s half duplex mode, 100 Mbit/s full duplex mode
- 10 Mbit/s half duplex mode, 10 Mbit/s full duplex mode

Delivery state:

- Autonegotiation enabled

The port casing is electrically connected to the front panel.

**Table 5. Pin assignment 10/100 Mbit/s twisted-pair port, RJ45 socket, MDI-X mode**

| RJ45                                                                              | Pin        | 10/100 Mbit/s | Function          |
|-----------------------------------------------------------------------------------|------------|---------------|-------------------|
|  | 1          | RD+           | Receive path      |
|                                                                                   | 2          | RD-           | Receive path      |
|                                                                                   | 3          | TD+           | Transmission path |
|                                                                                   | 6          | TD-           | Transmission path |
|                                                                                   | 4, 5, 7, 8 | -             | -                 |
|                                                                                   |            |               |                   |
|                                                                                   |            |               |                   |
|                                                                                   |            |               |                   |

### 3.5.2. Twisted-pair port 10/100/1000 Mbit/s

This port is an RJ45 socket.

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

This port supports:

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

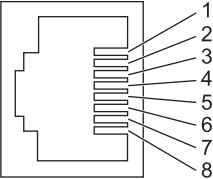
Delivery state:

- Autonegotiation activated

The port casing is electrically connected to the front panel.

The pin assignment corresponds to MDI-X mode.

**Table 6. Pin assignments of the 10/100/1000 Mbit/s twisted-pair port in 1000 Mbit/s mode, RJ45 socket, MDI-X mode**

|                                                                                   | Pin | Function |
|-----------------------------------------------------------------------------------|-----|----------|
|  | 1   | BI_DB+   |
|                                                                                   | 2   | BI_DB-   |
|                                                                                   | 3   | BI_DA+   |
|                                                                                   | 4   | BI_DD+   |
|                                                                                   | 5   | BI_DD-   |
|                                                                                   | 6   | BI_DA-   |
|                                                                                   | 7   | BI_DC+   |
|                                                                                   | 8   | BI_DC-   |

### 3.5.3. Support of PoE(+)

The RSPE32 and RSPE37 device variants support Power over Ethernet (PoE) and Power over Ethernet Plus (PoE+).

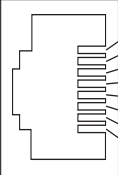
All Fast Ethernet ports are PoE-capable.

The Gigabit combo ports do not support PoE. For more information, see [Device name and product code on page 34](#).

The Fast Ethernet ports allow you to connect network components as a PoE power source according to the standard IEEE 802.3 10BASE-T/100BASETX 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.

**Table 7. Pin assignment 10/100 Mbit/s twisted-pair port, RJ45 socket, MDI-X mode**

| RJ45                                                                             | Pin        | Function |                   | PoE                |
|----------------------------------------------------------------------------------|------------|----------|-------------------|--------------------|
|  | 1          | RD+      | Receive path      | Positive $V^{PSE}$ |
|                                                                                  | 2          | RD-      | Receive path      | Positive $V^{PSE}$ |
|                                                                                  | 3          | TD+      | Transmission path | Negative $V^{PSE}$ |
|                                                                                  | 6          | TD-      | Transmission path | Negative $V^{PSE}$ |
|                                                                                  | 4, 5, 7, 8 | -        |                   |                    |

| Maximum power available to |       |
|----------------------------|-------|
| PoE end devices in total:  | 124 W |
| 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 | Classes                                   |
|--------------------|-------------|-------------------------------------------|
| IEEE 802.3af       | PoE         | max. Powered Device (PD) class 0 (15.4 W) |
| IEEE 802.3at       | PoE+        | max. Powered Device (PD) class 4 (30 W)   |

In accordance with IEEE 802.3af and IEEE 802.3at:

- Endpoint PSE
- Alternative A

### 3.5.4. F/O port 100 Mbit/s (optional)

This port is an SFP slot.

This option is available to you if you use an RSPM media module comprising F/O ports.

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 media module with 8 F/O ports exclusively in the media module slot 3. For more information on the location, see [Front view on page 38](#). For more information on the media modules, see the User Manual Installation RSPM at [doc.hirschmann.com](http://doc.hirschmann.com).

### 3.5.5. F/O port 100/1000 Mbit/s

This port is an SFP slot.

The port allows you to connect network components according to standard IEEE 802.3 100BASE-FX/1000BASE-SX/1000BASE-LX.

This port supports:

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

Delivery state:

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

### 3.6. Display elements

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

#### 3.6.1. Device status

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

Figure 5. LED display elements for device status



Table 8. Power LED: Color, activity and meaning

| Color  | Activity             | Meaning                                                                            |
|--------|----------------------|------------------------------------------------------------------------------------|
| none   | none                 | Supply voltage is too low                                                          |
| yellow | flashes 4 × a period | Software update is running. Maintain the power supply                              |
| yellow | lights up            | Device variants with redundant power supply<br>Supply voltage 1 <b>or</b> 2 is on  |
| green  | lights up            | Device variants with redundant power supply<br>Supply voltage 1 <b>and</b> 2 is on |
| green  | lights up            | Device variants with single power supply<br>Supply voltage is on                   |

Table 9. Status LED: Color, activity and meaning

| Color | Activity             | Meaning                                                                                                                     |
|-------|----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| none  | none                 | Device is starting and/or is not ready for operation                                                                        |
| red   | lights up            | Device is ready for operation<br>Device has detected at least one error in the monitoring results                           |
| red   | flashes 1 × a period | The boot parameters used when the device has been started differ from the boot parameters saved.<br>Start the device again. |
| red   | flashes 4 × a period | Device has detected a multiple IP address                                                                                   |
| green | lights up            | Device is ready for operation<br>Characteristics can be configured                                                          |

**Table 10. ACA LED: Color, activity and meaning**

ACA21, ACA31

| Color  | Activity             | Meaning                                        |
|--------|----------------------|------------------------------------------------|
| none   | none                 | ACA storage medium not connected               |
| yellow | lights up            | ACA storage medium inoperative                 |
| green  | lights up            | ACA storage medium connected                   |
| green  | flashes 3 × a period | Device writes to/reads from the storage medium |

**Table 11. Redundancy Manager (RM) LED: Color, activity and meaning**

| Color  | Activity/Status      | Meaning                                                           |
|--------|----------------------|-------------------------------------------------------------------|
| none   | none                 | No redundancy configured                                          |
| yellow | lights up            | No redundancy exists                                              |
| green  | lights up            | Redundancy exists                                                 |
| green  | flashes 1 × a period | Device is reporting an incorrect configuration of the RM function |

### 3.6.2. Media module status

#### Device variants RSPE30 and RSPE35

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.

Figure 6. Power LED for media module status



**Table 12. Power LED: Color, activity and meaning**

| Color | Activity             | Meaning                                                                                                 |
|-------|----------------------|---------------------------------------------------------------------------------------------------------|
| none  | none                 | Media module is inoperative                                                                             |
| green | lights up            | Voltage supply to the media module is on                                                                |
| green | flashes 3 × a period | Hot-swappable module <b>not</b> supported <sup>5</sup> , cold start <sup>6</sup> on the device required |

5. Applies exclusively to device software before 05.0.

6. For a cold start, disconnect the device from the power supply.

**Table 12. Power LED: Color, activity and meaning (continued)**

| Color | Activity | Meaning                                                                                                              |
|-------|----------|----------------------------------------------------------------------------------------------------------------------|
|       |          | An incompatible media module mounted in the slot or a compatible media module mounted in the wrong slot <sup>7</sup> |

Device variants RSPE32 and RSPE37

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.

Figure 7. Power LED for media module status and PoE status



**Table 13. Power LED: Color, activity and meaning**

| Color  | Activity  | Meaning                                                                          |
|--------|-----------|----------------------------------------------------------------------------------|
| none   | none      | Media module is inoperative                                                      |
| green  | lights up | Voltage supply to the media module is on<br>Voltage supply to the PoE port is on |
| yellow | lights up | PoE voltage is missing or is too low                                             |

3.6.3. Port status

These LEDs display port-related information.

The LEDs are directly located on the ports.

For more information, see [Table 4: Arrangement of the Ethernet ports on the device on page 45](#).

7. For the correct mounting, see [Mounting a media module on page 60](#).

Gigabit combo port

Figure 8. Gigabit combo port

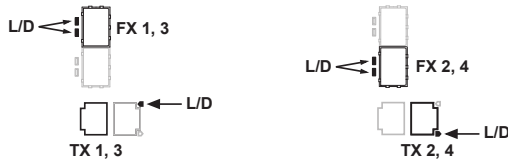


Figure 9. Fast Ethernet port



Table 14. LED L/D (link status/data): Color, activity and meaning

| Color  | Activity             | Meaning                                                                        |
|--------|----------------------|--------------------------------------------------------------------------------|
| none   | none                 | Device detects an invalid or missing link <sup>8</sup>                         |
| yellow | flashing             | Device is transmitting and/or receiving data                                   |
| yellow | flashes 1 × a period | Device detects at least one unauthorized MAC address (Port Security Violation) |
| yellow | flashes 3 × a period | The device deactivates the relevant port (auto-deactivation)                   |
| yellow | lights up            | Device detects a non-supported SFP transceiver or a non-supported data rate    |
| green  | lights up            | Device detects a valid link                                                    |
| green  | flashes 1 × a period | Port is switched to stand-by                                                   |
| green  | flashes 3 × a period | Port is switched off                                                           |

Table 15. LED PoE (PoE status): Color, activity and meaning

| Color | Activity | Meaning                                        |
|-------|----------|------------------------------------------------|
| none  | none     | RSPE30, RSPE35<br>LED is without any function  |
|       |          | RSPE32, RSPE37:<br>No powered device connected |

8. For Gigabit combo port: When an SFP transceiver is connected, the corresponding twisted pair interface is automatically inactive.

**Table 15. LED PoE (PoE status): Color, activity and meaning (continued)**

| Color  | Activity             | Meaning                                                                           |
|--------|----------------------|-----------------------------------------------------------------------------------|
| yellow | flashes 1 × a period | Output budget has been exceeded<br>Device has detected a connected powered device |
| yellow | flashes 3 × a period | PoE administrator status deactivated                                              |
| green  | lights up            | Powered device is supplied with PoE voltage.                                      |

## 3.7. Input/output interfaces

### 3.7.1. Signal contact

Figure 10. Signal contact: 2-pin terminal block with screw locking



The signal contact is a potential-free relay contact. When the device is not connected to a power supply, the signal contact is open.

The signal contact allows you to control external devices or monitor device functions.

In the configuration, you specify how the device uses the signal contact.

You will find detailed information on possible applications and the configuration of the signal contact in the Manual Collection (User and Reference Manuals) at [doc.hirschmann.com](http://doc.hirschmann.com).

## 4. 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, perform the following steps:

- *Checking the package contents* on page 55
- *Installing the SD card (optional)* on page 56
- *Mounting the device* on page 56
- *Mounting a cover panel or a media module* on page 60
- *Grounding the device* on page 60
- *Installing an SFP transceiver (optional)* on page 62
- *Connecting the signal contact* on page 63
- *Connecting the supply voltage* on page 63
- *Operating the device* on page 70
- *Connecting data cables* on page 71
- *Filling out the inscription label* on page 72

### 4.1. Checking the package contents

- Check whether the package includes all items named in *Scope of delivery on page 99*.
- Check the individual parts for transport damage.

## 4.2. Installing the SD card (optional)

**Note:** Only use the AutoConfiguration Adapter ACA31 storage medium. For more information, see [Accessories on page 100](#).

**Perform the following steps:**

- Deactivate the write protection on the SD card by pushing the write-protect lock towards the contacts of the card.
- Push the SD card into the slot with the beveled corner on the front left side.
- Tighten the thumb screw hand-tight to fix the SD card.

## 4.3. Mounting the device

|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p><b>FIRE HAZARD</b><br/><b>Failure to follow the instructions could result in death, serious injury, or equipment damage.</b></p> <p>If you connect the device to a power supply that does <b>NOT</b> meet the requirements for Limited Power Source, NEC Class 2 or PS2 according to IEC/EN 62368-1 and is <b>NOT</b> limited to 100 W output power, the device must be installed in either a switch cabinet or other fire enclosure.</p> <p>The fire enclosure can be made of metal or plastic with fire-protection properties of at least V-1 according to IEC 60695-11-10. Bottom openings of the fire enclosure must <b>NOT</b> exceed 2 mm in diameter.</p> |

 **AVERTISSEMENT****RISQUE D'INCENDIE**

**Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.**

Si vous connectez l'équipement à une source d'alimentation qui n'est **PAS** conforme aux exigences d'une source d'alimentation limitée, des classes 2 ou PS2 du NEC selon la norme CEI/EN 62368-1 et qui n'est **PAS** limitée à une puissance de sortie de 100 W, l'équipement doit être installé dans une armoire électrique ou dans une autre enceinte coupe-feu.

L'enceinte coupe-feu peut être en métal ou en plastique avec des propriétés de protection contre le feu d'au moins V-1 conformément à la norme CEI 60695-11-10. Les ouvertures du fond de l'enceinte coupe-feu ne doivent **PAS** dépasser 2 mm de diamètre.

 **WARNING****ELECTRIC SHOCK**

**Failure to follow the instructions could result in death, serious injury, or equipment damage.**

Exclusively install this device in a switch cabinet or in a restricted access location according to IEC/EN 62368-1, to which maintenance staff have exclusive access.

 **AVERTISSEMENT****CHOC ÉLECTRIQUE**

**Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.**

Installez cet équipement exclusivement dans une armoire électrique ou dans un emplacement à accès restreint conformément à la norme CEI/EN 62368-1, auquel seul le personnel de maintenance a accès.

### 4.3.1. Mounting the device onto the DIN rail

The device is designed to be mounted on a 35 mm (1.38 in) horizontally mounted DIN rail according to DIN EN 60715.

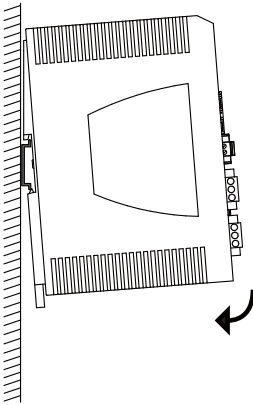
#### Prerequisites:

Verify that the device maintains the minimum clearance to meet the climatic conditions during operation:

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

Decreasing the minimum clearance reduces the specified maximum operating temperature. For more information, see [Climatic conditions during operation on page 87](#).

#### Perform the following steps:



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

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

## 4.4. Mounting a cover panel or a media module

Hirschmann supplies the RSPE30/32/35/37 device with unused, uncovered media module slots.

### Mounting a cover panel

If you do not use media modules, seal the media module slots with cover panels to keep the degree of protection.

You obtain cover panels as an accessory. For more information, see [Accessories on page 100](#).

#### Perform the following steps:

1. Place the cover panel onto the media module slot of the device.
2. Fasten the cover panel to the device by tightening the 2 screws.

### Mounting a media module

Hirschmann supplies the media modules ready for operation. 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.

#### Perform the following steps:

1. If the cover panel is mounted, then remove it from the media module slot on the device.
2. Insert the media module into the slot on the device.
3. Fasten the media module to the device by tightening the 2 screws.
4. Restart the device.

## 4.5. Grounding the device

The device is grounded via the separate ground screw on the bottom left of the front side of the device. For more information, see [Front view on page 38](#).

The device variants featuring supply voltage with characteristic value K9 and KK have a connection for protective grounding.

The device variants featuring supply voltage with characteristic value CC and PP have a connection for functional grounding.

For more information on the characteristic values, see [Device name and product code on page 34](#).

**Perform the following steps:**

1. Ground the device via the grounding screw.

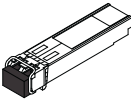
## 4.6. Installing an SFP transceiver (optional)

### Prerequisites:

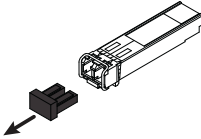
Exclusively use Hirschmann SFP transceivers. Transceivers are available as accessories, see [Accessories on page 100](#).

### Perform the following steps:

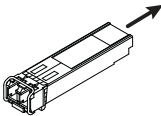
1. Take the SFP transceiver out of the transport packaging.



2. Remove the protection cap from the SFP transceiver.



3. Push the SFP transceiver with the lock closed into the slot until it latches in.



# 4.7. Connecting the signal contact

Perform the following steps:

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

For information on the prescribed tightening torque, see [Signal contact on page 83](#).

- 3. Mount the terminal block on the device using screws.

# 4.8. Connecting the supply voltage

Before connecting the electrical wires, **always** verify that the requirements listed are complied with. For more information, see [Requirements for connecting electrical wires on page 17](#).

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

 **WARNING**



**ELECTRIC SHOCK**

**Failure to follow the instruction could result in death, serious injury, or equipment damage.**

Never insert sharp or pointed objects (screwdrivers, wires, etc.) into the connection terminals for electric conductors. Do not touch the connection terminals.

**⚠ AVERTISSEMENT****CHOC ÉLECTRIQUE**

**Le non-respect de l'instruction peut entraîner la mort, des blessures graves ou des dommages matériels.**

N'insérez jamais d'objets coupants ou pointus (tournevis, fils, etc.) dans les bornes de raccordement pour les conducteurs électriques. Ne touchez pas aux bornes de raccordement.

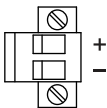
### 4.8.1. Supply voltage range 24 V DC ... 48 V DC, 48 V DC (PoE) or 54 V DC (PoE+)

Corresponds to the supply voltage characteristic value PP. For more information, see [Device name and product code on page 34](#).

You have the option of supplying the supply voltage redundantly, without load distribution. Both supply voltage inputs are uncoupled.

Ensure that the external power supply unit you use to provide the PoE voltage fulfills the insulation requirements according to IEEE 802.3 (insulation resistance 48 V DC, output to the "rest of the world" 750 V DC for 60 seconds).

Figure 11. 2-pin terminal block with screw lock



**Table 16. Type and specification of the supply voltage, pin assignment on the device**

| Type of the volt-ages that can be connected | Specification of the supply voltage                                                                             | Pin assignment |                                      |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------|
| When using PoE:<br>DC voltage               | Rated voltage<br>48 V DC<br>Voltage range including maximum tolerances<br>47 V DC ... 57 V DC                   | +              | Plus terminal of the supply voltage  |
|                                             |                                                                                                                 | -              | Minus terminal of the supply voltage |
| When using PoE+:<br>DC voltage              | Rated voltage<br>54 V DC<br>Voltage range including maximum tolerances<br>53 V DC ... 57 V DC                   | +              | Plus terminal of the supply voltage  |
|                                             |                                                                                                                 | -              | Minus terminal of the supply voltage |
| Without using PoE<br>or PoE+:<br>DC voltage | Rated voltage range<br>24 V DC ... 48 V DC<br>Voltage range including maximum tolerances<br>19 V DC ... 60 V DC | +              | Plus terminal of the supply voltage  |
|                                             |                                                                                                                 | -              | Minus terminal of the supply voltage |

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

- Remove the terminal block from the device.
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires in the terminal block by tightening the terminal screws.

For information on the prescribed tightening torque, see [Supply voltage range 24 V DC ... 48 V DC, 48 V DC \(PoE\) or 54 V DC \(PoE+\) on page 80](#).

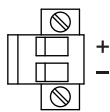
With a non-redundant supply of the supply voltage, the device reports the loss of a supply voltage. You can prevent this message by applying the supply voltage via both inputs, or by changing the configuration in the Management.

**4.8.2. Supply voltage range 24 V DC ... 48 V DC**

Corresponds to the supply voltage characteristic value CC. For more information, see [Device name and product code on page 34](#).

You have the option of supplying the supply voltage redundantly, without load distribution. Both supply voltage inputs are uncoupled.

Figure 12. 2-pin terminal block with screw lock



**Table 17. Type and specification of the supply voltage, pin assignment on the device**

| Type of the voltages that can be connected | Specification of the supply voltage                                                                             | Pin assignment                                                                  |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| DC voltage                                 | Rated voltage range<br>24 V DC ... 48 V DC<br>Voltage range including maximum tolerances<br>18 V DC ... 60 V DC | + Plus terminal of the supply voltage<br>- Minus terminal of the supply voltage |

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

- Remove the terminal block from the device.
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires in the terminal block by tightening the terminal screws.

For information on the prescribed tightening torque, see [Supply voltage range 24 V DC ... 48 V DC on page 81](#).

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

### 4.8.3. Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC (1 voltage input)

Corresponds to the supply voltage characteristic value K9. For more information, see [Device name and product code on page 34](#).

Figure 13. 3-pin terminal block with screw lock



Table 18. Type and specification of the supply voltage, pin assignment on the device

| Type of the volt-<br>ages that can be<br>connected | Specification of the supply voltage                                                                                                                  | Pin assignment                                                                    |                                         |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------|
| DC voltage                                         | Rated voltage range<br>60 V DC ... 250 V DC<br>Voltage range including maximum tolerances<br>48 V DC ... 320 V DC                                    | +/L                                                                               | Plus terminal of the<br>supply voltage  |
|                                                    |                                                                                                                                                      | -/N                                                                               | Minus terminal of the<br>supply voltage |
|                                                    |                                                                                                                                                      |  | Protective conductor                    |
| AC voltage                                         | Rated voltage range<br>110 V AC ... 230 V AC, 50 Hz ... 60 Hz<br>Voltage range including maximum tolerances<br>88 V AC ... 265 V AC, 47 Hz ... 63 Hz | +/L                                                                               | Outer conductor                         |
|                                                    |                                                                                                                                                      | -/N                                                                               | Neutral conductor                       |
|                                                    |                                                                                                                                                      |  | Protective conductor                    |

 **WARNING**



**ELECTRIC SHOCK**

**Failure to follow the instructions could result in death, serious injury, or equipment damage.**

Exclusively install this device in a switch cabinet or in a restricted access location according to IEC/EN 62368-1, to which maintenance staff have exclusive access.

**⚠ AVERTISSEMENT****CHOC ÉLECTRIQUE**

**Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.**

Installez cet équipement exclusivement dans une armoire électrique ou dans un emplacement à accès restreint conformément à la norme CEI/EN 62368-1, auquel seul le personnel de maintenance a accès.

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

- Remove the terminal block from the device.
- Connect the protective conductor with the clamp.
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires in the terminal block by tightening the terminal screws.

For information on the prescribed tightening torque, see [Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC on page 81](#).

#### **4.8.4. Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC (2 voltage inputs)**

Corresponds to the supply voltage characteristic value KK. For more information, see [Device name and product code on page 34](#).

You have the option of supplying the supply voltage redundantly, without load distribution. Both supply voltage inputs are uncoupled.

With a redundant supply, the supply voltage 1 (upper voltage input on the device) has priority.

Figure 14. 3-pin terminal block with screw lock



Table 19. Type and specification of the supply voltage, pin assignment on the device

| Type of the volt-<br>ages that can be<br>connected | Specification of the supply voltage                                                                                                                  | Pin assignment                                                                    |                                         |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------|
| DC voltage                                         | Rated voltage range<br>60 V DC ... 250 V DC<br>Voltage range including maximum tolerances<br>48 V DC ... 320 V DC                                    | +/L                                                                               | Plus terminal of the<br>supply voltage  |
|                                                    |                                                                                                                                                      | -/N                                                                               | Minus terminal of the<br>supply voltage |
|                                                    |                                                                                                                                                      |  | Protective conductor                    |
| AC voltage                                         | Rated voltage range<br>110 V AC ... 230 V AC, 50 Hz ... 60 Hz<br>Voltage range including maximum tolerances<br>88 V AC ... 265 V AC, 47 Hz ... 63 Hz | +/L                                                                               | Outer conductor                         |
|                                                    |                                                                                                                                                      | -/N                                                                               | Neutral conductor                       |
|                                                    |                                                                                                                                                      |  | Protective conductor                    |

 **WARNING**



**ELECTRIC SHOCK**  
**Failure to follow the instructions could result in death, serious injury, or equipment damage.**

Exclusively install this device in a switch cabinet or in a restricted access location according to IEC/EN 62368-1, to which maintenance staff have exclusive access.

|  <b>AVERTISSEMENT</b> |                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <p><b>CHOC ÉLECTRIQUE</b><br/><b>Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.</b></p> <p>Installez cet équipement exclusivement dans une armoire électrique ou dans un emplacement à accès restreint conformément à la norme CEI/EN 62368-1, auquel seul le personnel de maintenance a accès.</p> |

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

- Remove the terminal block from the device.
- Connect the protective conductor with the clamp.
- Connect the wires according to the pin assignment on the device with the clamps.
- Fasten the wires in the terminal block by tightening the terminal screws.

For information on the prescribed tightening torque, see [Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC on page 81](#).

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.

## 4.9. Operating the device

Before connecting the electrical wires, **always** verify that the requirements listed are complied with. For more information, see [Requirements for connecting electrical wires on page 17](#).

|  <b>WARNING</b> |                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p><b>ELECTRIC SHOCK</b><br/><b>Failure to follow the instruction could result in death, serious injury, or equipment damage.</b></p> <p>Ground the device before connecting any other cables.</p> |

|  <b>AVERTISSEMENT</b> |                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <p><b>CHOC ÉLECTRIQUE</b><br/><b>Le non-respect de l'instruction peut entraîner la mort, des blessures graves ou des dommages matériels.</b></p> <p>Mettez l'équipement à la terre avant de connecter tout autre câble.</p> |

Relevant for North America:

You find the prescribed tightening torque in [General data on page 80](#).

**Perform the following steps:**

- Use screws to secure the connectors to the device.
- Enable the supply voltage.

## 4.10. 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 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 ducts.
- Verify that power supply cables and data cables do not run parallel over longer distances. If reducing the inductive coupling is necessary, verify that the power supply cables and data cables cross at a 90° angle.
- Use shielded data cables for gigabit transmission via copper cables, 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. For more information, see [Ethernet ports on page 44](#).

## 4.11. Filling out the inscription label

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

## 5. 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:

- AutoConfiguration Adapter
- Configuration via BOOTP
- Configuration via DHCP (Option 82)
- Input via the V.24 interface
- Input via the Industrial HiVision application. You find further information about the application Industrial HiVision at:

### **Industrial HiVision**

<https://www.belden.com/products/industrial-networking-cybersecurity/software-solutions/network-management-software/industrial-hivision-network-management-software>

### 5.1. Default settings

- Ethernet ports: link status is not evaluated (signal contact)
- IP address: The device looks for its IP address parameters using DHCP
- Management password:  
Login: user, password: public (read only)  
Login: admin, password: private (read/write)
- Optical ports: Full duplex
- Twisted-pair ports: Autonegotiation
- Rapid Spanning Tree Protocol (RSTP): enabled
- V.24 data rate: 9600 Baud

## 5.2. First login (Password change)

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

### Perform the following steps:

- Open the Graphical User Interface or the Command Line Interface the first time you log on to the device.
- Log on to the device with the default password "private". On successful login, the device prompts you to type in a new password.
- Type in your new password.

To help increase security, choose a password that contains at least 8 characters which includes upper-case characters, lower-case characters, numerical digits, and special characters.

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

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

## 6. Monitoring ambient conditions

### 6.1. Monitoring the ambient air temperature

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

For more information, see [Climatic conditions during operation on page 87](#).

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

The temperature displayed in the CLI (Command Line Interface) and the GUI (Graphical User Interface) is the internal temperature of the device. It is higher than the ambient air temperature.

The maximum internal temperature of the device named in the technical data is a guideline that indicates to you that the maximum ambient air temperature has possibly been exceeded.

## 7. Maintenance and service

- When designing this device, Hirschmann largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications.
- Relays are subject to natural wear. This wear depends on the frequency of the switching operations.

Check the resistance of the closed relay contacts and the switching function depending on the frequency of the switching operations.

- 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 at:  
[www.belden.com](http://www.belden.com)
- Depending on the pollution degree in the operating environment, check regularly that the ventilation slots in the device are not obstructed.

You find information on settling complaints at:

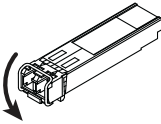
<https://my.belden.com>

## 8. Disassembly

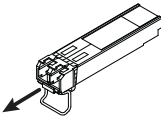
### 8.1. Removing an SFP transceiver (optional)

Perform the following steps:

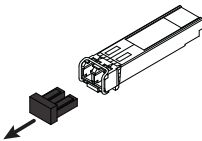
1. Open the locking mechanism of the SFP transceiver.



2. Pull the SFP transceiver out of the slot via the open locking mechanism.



3. Close the SFP transceiver with the protection cap.



# 8.2. Removing the device



**⚠ WARNING**

**ELECTRIC SHOCK**  
**Failure to follow the instructions could result in death, serious injury, or equipment damage.**

Disconnect the grounding only after disconnecting all other cables.

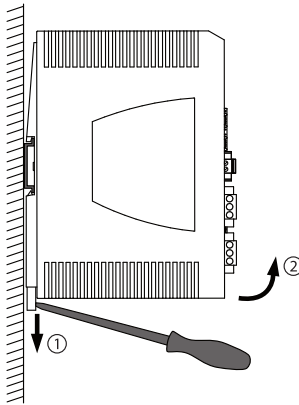


**⚠ AVERTISSEMENT**

**CHOC ÉLECTRIQUE**  
**Le non-respect des instructions peut entraîner la mort, des blessures graves ou des dommages matériels.**

Ne débranchez la mise à la terre qu'après avoir débranché tous les autres câbles.

Perform the following steps:



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

## 8.3. Removing a media module (optional)

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

### **Perform the following steps:**

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

The cover panel is available as an accessory, see [Accessories on page 100](#).

# 9. Technical data

## 9.1. General data

|                      |                                                                                      |                 |
|----------------------|--------------------------------------------------------------------------------------|-----------------|
| Dimensions           | See <a href="#">Dimension drawings on page 84</a> .                                  |                 |
| Weight               | Devices with operating temperature characteristic value S (standard):                | 2.2 kg (4.6 lb) |
|                      | Devices with operating temperature characteristic value E and T (extended), U and G: | 2.5 kg (5.5 lb) |
| Pollution degree     | 2                                                                                    |                 |
| Laser protection     | Class 1 in compliance with IEC 60825-1                                               |                 |
| Degree of protection | IP20                                                                                 |                 |

## 9.2. Supply voltage

### 9.2.1. Supply voltage range 24 V DC ... 48 V DC, 48 V DC (PoE) or 54 V DC (PoE+)

Corresponds in the product code with the supply voltage characteristic value PP. For more information, see [Device name and product code on page 34](#).

|                                            |                            |                                   |                 |
|--------------------------------------------|----------------------------|-----------------------------------|-----------------|
| Rated voltage DC:                          | When using PoE:            | 48 V DC                           |                 |
|                                            | When using PoE+:           | 54 V DC                           |                 |
|                                            | Without using PoE or PoE+: | 24 V DC ... 48 V DC <sup>9</sup>  |                 |
| Voltage range DC incl. maximum tolerances: | When using PoE:            | 47 V DC ... 57 V DC               |                 |
|                                            | When using PoE+:           | 53 V DC ... 57 V DC               |                 |
|                                            | Without using PoE or PoE+: | 19 V DC ... 60 V DC <sup>10</sup> |                 |
| Rated power                                | RSPE32                     | at 54 V DC/48 V DC                | 3.1 A ... 3.5 A |
|                                            | RSPE37                     | at 54 V DC/48 V DC                | 3.1 A ... 3.5 A |
| Connection type                            | 2-pin terminal block       |                                   |                 |
|                                            | Tightening torque          | 0.51 Nm (4.5 lb-in)               |                 |

9. Operation with power supply with characteristic value PP without using PoE or PoE+ in the range 24 V DC (19 V DC) ... 48 V D-C (60 V DC) is not covered by UL approvals.

10. Operation with power supply with characteristic value PP without using PoE or PoE+ in the range 24 V DC (19 V DC) ... 48 V D-C (60 V DC) is not covered by UL approvals.

|                                           |                                                                      |           |
|-------------------------------------------|----------------------------------------------------------------------|-----------|
| Max. PoE power                            | In total:                                                            | 124 W     |
|                                           | Per media module:                                                    | 62 W      |
| Power loss buffer                         | >10 ms at 20.4 V DC                                                  |           |
| Overload current protection on the device | Non-replaceable fuse                                                 |           |
| Back-up fuse                              | Nominal rating:                                                      | 6.3 A     |
|                                           | Characteristic:                                                      | slow blow |
| Peak inrush current                       | <5 A                                                                 |           |
| Insulation requirement                    | 2250 V DC to casing ground/functional ground for at least 60 seconds |           |

### 9.2.2. Supply voltage range 24 V DC ... 48 V DC

Corresponds to the supply voltage characteristic value CC. For more information, see [Device name and product code on page 34](#).

|                                            |                      |        |                     |
|--------------------------------------------|----------------------|--------|---------------------|
| Rated voltage range DC:                    | 24 V DC ... 48 V DC  |        |                     |
| Voltage range DC incl. maximum tolerances: | 18 V DC ... 60 V DC  |        |                     |
| Connection type                            | 2-pin terminal block |        |                     |
|                                            | Tightening torque    |        | 0.51 Nm (4.5 lb-in) |
| Rated power                                | RSPE30               | for DC | 0.6 A ... 1.3 A     |
|                                            | RSPE35               | for DC | 0.7 A ... 1.4 A     |
| Power loss buffer                          | >10 ms at 20.4 V DC  |        |                     |
| Overload current protection on the device  | Non-replaceable fuse |        |                     |
| Back-up fuse for each voltage input        | Nominal rating:      |        | 1 A                 |
|                                            | Characteristic:      |        | slow blow           |
| Peak inrush current                        | <4 A                 |        |                     |

### 9.2.3. Supply voltage range 110 V AC ... 230 V AC, 60 V DC ... 250 V DC

Corresponds to the supply voltage characteristic value K9 and KK. For more information, see [Device name and product code on page 34](#).

|                         |                       |  |  |
|-------------------------|-----------------------|--|--|
| Rated voltage range AC: | 110 V AC ... 230 V AC |  |  |
|                         | 50 Hz ... 60 Hz       |  |  |

|                                            |                                         |        |                     |
|--------------------------------------------|-----------------------------------------|--------|---------------------|
| Voltage range AC incl. maximum tolerances: | 88 V AC ... 265 V AC<br>47 Hz ... 63 Hz |        |                     |
| Rated voltage range DC:                    | 60 V DC ... 250 V DC                    |        |                     |
| Voltage range DC incl. maximum tolerances: | 48 V DC ... 320 V DC                    |        |                     |
| Rated power                                | RSPE30                                  | for AC | 0.25 A ... 0.4 A    |
|                                            |                                         | for DC | 0.2 A ... 0.5 A     |
|                                            | RSPE35                                  | for AC | 0.25 A ... 0.4 A    |
|                                            |                                         | for DC | 0.6 A ... 0.2 A     |
| Connection type                            | 3-pin terminal block                    |        |                     |
|                                            | Tightening torque                       |        | 0.51 Nm (4.5 lb-in) |
| Power loss buffer                          | >10 ms at 98 V AC                       |        |                     |
|                                            | >10 ms at 51 V DC                       |        |                     |
| Overload current protection on the device  | Non-replaceable fuse                    |        |                     |
| Back-up fuse for each voltage input        | Nominal rating:                         |        | 1 A ... 20 A        |
|                                            | Characteristic:                         |        | slow blow           |
| Peak inrush current                        | <3.5 A                                  |        |                     |

### 9.3. Power consumption/power output

The order numbers correspond to the product codes of the devices. For more information on the RSPE devices, see [Device name and product code on page 34](#).

| RSPE device name                        | Maximum power consumption | Power output  |
|-----------------------------------------|---------------------------|---------------|
| RSPE30                                  | 16 W                      | 55 Btu (IT)/h |
| RSPE32 including 124 W PoE output power | 151 W                     | 92 Btu (IT)/h |
| RSPE35                                  | 18 W                      | 61 Btu (IT)/h |
| RSPE37 including 124 W PoE output power | 153 W                     | 98 Btu (IT)/h |

| RSPM device name | Maximum power consumption <sup>11</sup> | Power output  |
|------------------|-----------------------------------------|---------------|
| RSPM20-4Z64Z6... | 9 W                                     | 31 Btu (IT)/h |
| RSPM20-4T14T1... | 2 W                                     | 7 Btu (IT)/h  |

11. You can find the total power consumption specifications for basic modules that are to be installed in the User Manual Installation RSPE at [doc.hirschmann.com](http://doc.hirschmann.com).

| RSPM device name                            | Maximum power consumption <sup>11</sup> | Power output  |
|---------------------------------------------|-----------------------------------------|---------------|
| 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 |

## 9.4. Signal contact

| Signal contact  |                                                                                  |
|-----------------|----------------------------------------------------------------------------------|
| Connection type | 2-pin terminal block with screw lock                                             |
|                 | Tightening torque 0.34 Nm (3 lb-in)                                              |
| Nominal value   | $I_{\max} = 1 \text{ A at } U_{\max} = 30 \text{ V AC (resistive load)}^{12}$    |
|                 | $I_{\max} = 1 \text{ A at } U_{\max} = 60 \text{ V DC (resistive load)}^{13}$    |
|                 | $I_{\max} = 1 \text{ A at } U_{\max} = 230 \text{ V AC (resistive load)}^{14}$   |
|                 | $I_{\max} = 1 \text{ A at } U_{\max} = 60 \text{ V DC (resistive load)}^{15}$    |
|                 | $I_{\max} = 0.2 \text{ A at } U_{\max} = 125 \text{ V DC (resistive load)}^{16}$ |
|                 | $I_{\max} = 0.1 \text{ A at } U_{\max} = 250 \text{ V DC (resistive load)}^{17}$ |
|                 | <b>according to the UL Standards:</b>                                            |
|                 | $I_{\max} = 1 \text{ A at } U_{\max} = 30 \text{ V AC (resistive load)}$         |
|                 | $I_{\max} = 1 \text{ A at } U_{\max} = 30 \text{ V DC (resistive load)}$         |
|                 | <b>as per ANSI/UL 121201:</b>                                                    |

See control drawing in [Relevant for use in explosion hazard areas \(Hazardous Locations, Class I, Division 2\)](#) on page 22.

11. You can find the total power consumption specifications for basic modules that are to be installed in the User Manual Installation RSPE at [doc.hirschmann.com](http://doc.hirschmann.com).

12. Only for device variants featuring supply voltage with characteristic value CC or PP

13. Only for device variants featuring supply voltage with characteristic value CC or PP

14. Only for device variants featuring supply voltage with characteristic value K9 or KK

15. Only for device variants featuring supply voltage with characteristic value K9 or KK

16. Only for device variants featuring supply voltage with characteristic value K9 or KK

17. Only for device variants featuring supply voltage with characteristic value K9 or KK

# 9.5. Dimension drawings

## 9.5.1. Dimension drawings

**Dimensions of the device variants with operating temperature characteristic value S.**

For more information, see [Device name and product code on page 34](#).

Figure 15. Dimensions of the device variants with operating temperature characteristic value S – Front view

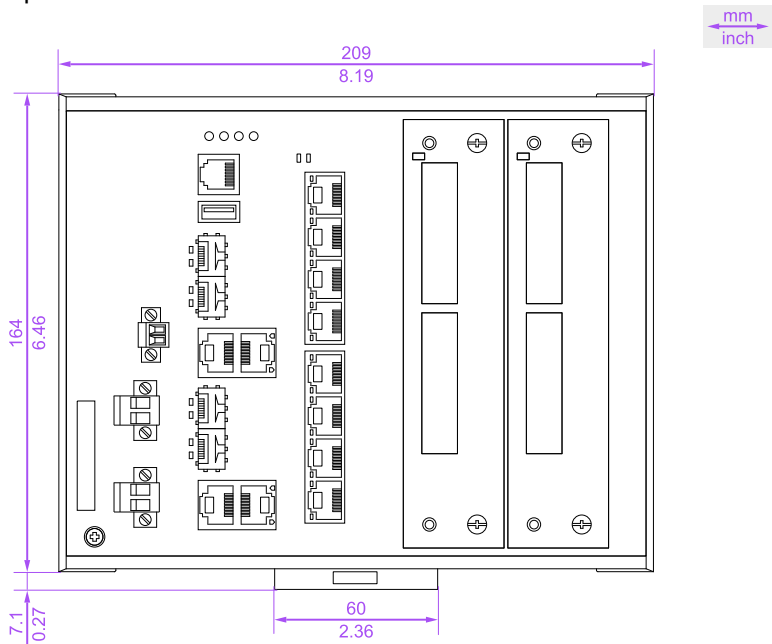
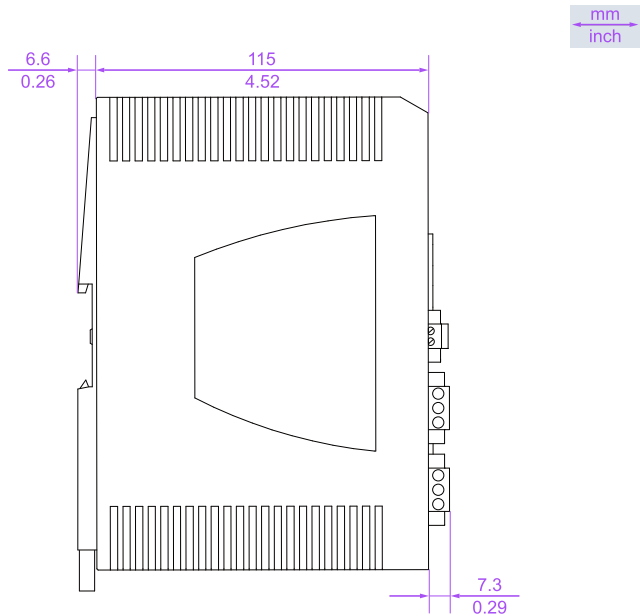


Figure 16. Dimensions of device variants with operating temperature characteristic value S. – Side view



**Dimensions of the device variants with operating temperature characteristic value T, E, U, and G.**

For more information, see [Device name and product code on page 34](#).

Figure 17. Dimensions of the device variants with operating temperature characteristic value T, E, U, and G – Front view

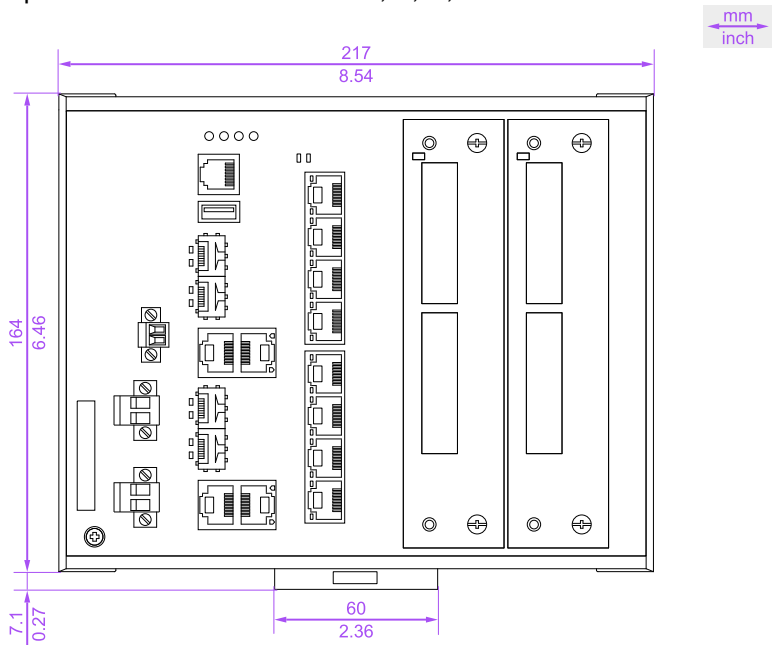
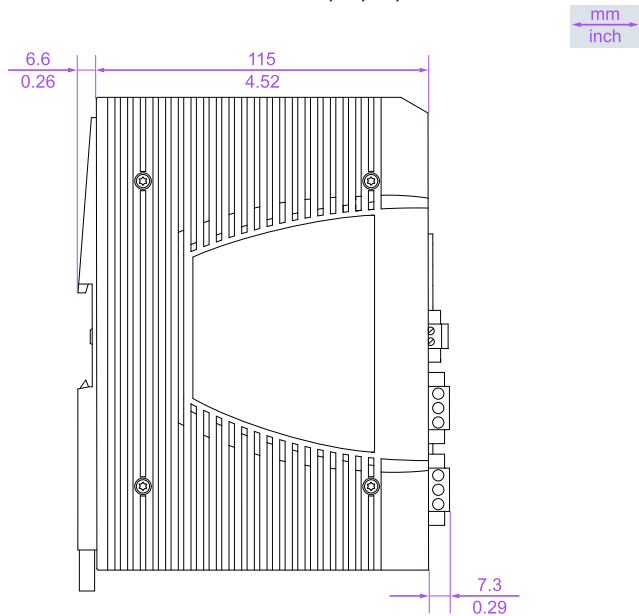


Figure 18. Dimensions of device variants with operating temperature characteristic value T, E, U, and G – Side view



9.6. Climatic conditions during operation

Table 20. Climatic conditions during operation

|                                       |                                                                                                                                                                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minimum clearance around the device   | Top and bottom device side: 10 cm (3.94 in)<br>Left and right device side: 2 cm (0.79 in)                                                                                                                                         |
|                                       | Derating <sup>18</sup> :<br>3 K at the following clearance:<br>Top and bottom device side: 2 cm (0.79 in)<br>Left and right device side: 0 cm (0 in)                                                                              |
| Ambient air temperature <sup>19</sup> | Devices with operating temperature characteristic value S (standard):<br>0 °C ... +60 °C (+32 °F ... +140 °F) <sup>20</sup><br><br>Devices with operating temperature characteristic value T and E (extended):<br>RSPE32, RSPE37: |

18. Reduction of the maximum permitted ambient air temperature under specific conditions

19. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

20. Hirschmann recommends to use SFP transceivers with EEC extension.

**Table 20. Climatic conditions during operation (continued)**

|                                                 |                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | -40 °C ... +70 °C (-40 °F ... +158 °F) <sup>21 22</sup><br>-40 °C ... +85 °C (-40 °F ... +185 °F) for 16 hours (tested in accordance with IEC 60068-2-2) <sup>23 24</sup><br>RSPE30, RSPE35:<br>-40 °C ... +70 °C (-40 °F ... +158 °F) <sup>25</sup><br>-40 °C ... +85 °C (-40 °F ... +185 °F) for 16 hours (tested in accordance with IEC 60068-2-2) <sup>26</sup> |
|                                                 | Devices with operating temperature characteristic value U and G:<br>RSPE32, RSPE37:<br>-20 °C ... +70 °C (-4 °F ... +158 °F) <sup>27 28</sup><br>RSPE30, RSPE35:<br>-20 °C ... +70 °C (-4 °F ... +158 °F) <sup>29</sup>                                                                                                                                             |
| Maximum inner temperature of device (guideline) | Devices with operating temperature characteristic value S (standard):<br>+88 °C (+190 °F)<br><br>Devices with operating temperature characteristic value T and E (extended):<br>+98 °C (+208 °F)<br><br>Devices with operating temperature characteristic value U and G:<br>+98 °C (+208 °F)                                                                        |
| Humidity                                        | 5 % ... 95 % (non-condensing)                                                                                                                                                                                                                                                                                                                                       |
| Air pressure                                    | min. 700 hPa (+3000 m ASL; +9842 ft ASL)<br>max. 1060 hPa (-400 m ASL; -1312 ft ASL)                                                                                                                                                                                                                                                                                |

21. Exclusively use SFP transceivers with extension EEC. If you use SFP transceivers without extension EEC, the standard temperature range applies.
22. When equipped with max. 8 SFP transceivers; if a higher number is connected, the following maximum values apply for the ambient air temperature:  
9 to 12 transceivers: +65 °C (+149 °F);  
more than 12 transceivers: +60 °C (+140 °F)
23. Exclusively use SFP transceivers with extension EEC. If you use SFP transceivers without extension EEC, the standard temperature range applies.
24. When equipped with max. 8 SFP transceivers; if a higher number is connected, the following maximum values apply for the ambient air temperature:  
9 to 12 transceivers: +80 °C (+176 °F);  
more than 12 transceivers: +75 °C (+167 °F)
25. Exclusively use SFP transceivers with extension EEC. If you use SFP transceivers without extension EEC, the standard temperature range applies.
26. Exclusively use SFP transceivers with extension EEC. If you use SFP transceivers without extension EEC, the standard temperature range applies.
27. Exclusively use SFP transceivers with extension EEC. If you use SFP transceivers without extension EEC, the standard temperature range applies.
28. When equipped with max. 8 SFP transceivers; if a higher number is connected, the following maximum values apply for the ambient air temperature:  
9 to 12 transceivers: +65 °C (+149 °F);  
more than 12 transceivers: +60 °C (+140 °F)
29. Exclusively use SFP transceivers with extension EEC. If you use SFP transceivers without extension EEC, the standard temperature range applies.

## 9.7. Climatic conditions during storage

**Table 21. Climatic conditions during storage**

|                                       |                                                                                      |
|---------------------------------------|--------------------------------------------------------------------------------------|
| Ambient air temperature <sup>30</sup> | -40 °C ... +85 °C<br>(-40 °F ... +185 °F)                                            |
| Humidity                              | 5 % ... 95 % (non-condensing)                                                        |
| Air pressure                          | min. 700 hPa (+3000 m ASL; +9842 ft ASL)<br>max. 1060 hPa (-400 m ASL; -1312 ft ASL) |

## 9.8. Immunity

**Table 22. Immunity: Standard applications**

| Applicable standard     | Behavior  | Frequency                                       |
|-------------------------|-----------|-------------------------------------------------|
| IEC 60068-2-6, test Fc  | Vibration | 5 Hz ... 8.4 Hz with 3.5 mm (0.14 in) amplitude |
| IEC 60068-2-6, test Fc  | Vibration | 8.4 Hz ... 150 Hz with 1 g                      |
| IEC 60068-2-27, test Ea | Shock     | 15 g at 11 ms                                   |

**Table 23. Immunity: Marine applications**

| Applicable standard    | Behavior  | Frequency                                      |
|------------------------|-----------|------------------------------------------------|
| IEC 60068-2-6, test Fc | Vibration | 2 Hz ... 13.2 Hz with 1 mm (0.04 in) amplitude |
| IEC 60068-2-6, test Fc | Vibration | 13.2 Hz ... 100 Hz with 0.7 g                  |

**Table 24. Immunity: Substation applications**

| Applicable standard     | Behavior  | Frequency                                   |
|-------------------------|-----------|---------------------------------------------|
| IEC 60068-2-6, test Fc  | Vibration | 2 Hz ... 9 Hz with 3 mm (0.11 in) amplitude |
| IEC 60068-2-6, test Fc  | Vibration | 8.2 Hz ... 150 Hz with 1 g                  |
| IEC 60068-2-27, test Ea | Shock     | 15 g at 11 ms                               |

30. Reduction of the maximum permitted ambient air temperature under specific conditions

# 9.9. Electromagnetic compatibility (EMC)

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

## 9.9.1. EMC interference emission

**Table 25. EMC interference emission: Standard applications**

| Applicable standard       |                               |           |
|---------------------------|-------------------------------|-----------|
| <b>Radiated emission</b>  |                               |           |
| FCC 47 CFR Part 15        |                               | Class A   |
| EN 55032                  |                               | Class A   |
| EN 61000-6-4              |                               | Fulfilled |
| <b>Conducted emission</b> |                               |           |
| FCC 47 CFR Part 15        | Supply connection             | Class A   |
| EN 55032                  | Supply connection             | Class A   |
| EN 55032                  | Telecommunication connections | Class A   |
| EN 61000-6-4              | Supply connection             | Fulfilled |
| EN 61000-6-4              | Telecommunication connections | Fulfilled |

**Table 26. EMC interference emission: Marine applications**

| Applicable standard       |                               |           |
|---------------------------|-------------------------------|-----------|
| <b>Radiated emission</b>  |                               |           |
| FCC 47 CFR Part 15        |                               | Class A   |
| EN 55032                  |                               | Class A   |
| EN 61000-6-4              |                               | Fulfilled |
| DNV Guidelines            |                               | EMC B     |
| <b>Conducted emission</b> |                               |           |
| FCC 47 CFR Part 15        | Supply connection             | Class A   |
| EN 55032                  | Supply connection             | Class A   |
| EN 55032                  | Telecommunication connections | Class A   |
| EN 61000-6-4              | Supply connection             | Fulfilled |

**Table 26. EMC interference emission: Marine applications (continued)**

| Applicable standard |                               |           |
|---------------------|-------------------------------|-----------|
| EN 61000-6-4        | Telecommunication connections | Fulfilled |
| DNV Guidelines      |                               | EMC B     |

**Table 27. EMC interference emission: Railway applications (trackside)**

| Applicable standard       |                               |           |
|---------------------------|-------------------------------|-----------|
| <b>Radiated emission</b>  |                               |           |
| FCC 47 CFR Part 15        |                               | Class A   |
| EN 55032                  |                               | Class A   |
| EN 61000-6-4              |                               | Fulfilled |
| <b>Conducted emission</b> |                               |           |
| FCC 47 CFR Part 15        | Supply connection             | Class A   |
| EN 55032                  | Supply connection             | Class A   |
| EN 55032                  | Telecommunication connections | Class A   |
| EN 61000-6-4              | Supply connection             | Fulfilled |
| EN 61000-6-4              | Telecommunication connections | Fulfilled |

**Table 28. EMC interference emission: Substation applications**

| Applicable standard       |                               |           |
|---------------------------|-------------------------------|-----------|
| <b>Radiated emission</b>  |                               |           |
| FCC 47 CFR Part 15        |                               | Class A   |
| EN 55032                  |                               | Class A   |
| EN 61000-6-4              |                               | Fulfilled |
| <b>Conducted emission</b> |                               |           |
| FCC 47 CFR Part 15        | Supply connection             | Class A   |
| EN 55032                  | Supply connection             | Class A   |
| EN 55032                  | Telecommunication connections | Class A   |
| EN 61000-6-4              | Supply connection             | Fulfilled |
| EN 61000-6-4              | Telecommunication connections | Fulfilled |

### 9.9.2. EMC interference immunity

**Table 29. EMC interference immunity: Standard applications**

| Applicable standard                          |                      |        |
|----------------------------------------------|----------------------|--------|
| <b>Electrostatic discharge</b>               |                      |        |
| EN 61000-4-2<br>IEEE C37.90.3                | Contact discharge    | ±4 kV  |
| EN 61000-4-2<br>IEEE C37.90.3                | Air discharge        | ±8 kV  |
| <b>Electromagnetic field</b>                 |                      |        |
| EN 61000-4-3                                 | 80 MHz ... 1000 MHz  | 10 V/m |
| EN 61000-4-3                                 | 1.4 GHz ... 6.0 GHz  | 3 V/m  |
| <b>Fast transients (burst)</b>               |                      |        |
| EN 61000-4-4<br>IEEE C37.90.1                | DC supply connection | ±1 kV  |
| EN 61000-4-4<br>IEEE C37.90.1                | Data line            | ±4 kV  |
| <b>Voltage surges - DC supply connection</b> |                      |        |
| EN 61000-4-5                                 | line/ground          | ±2 kV  |
| EN 61000-4-5                                 | line/line            | ±1 kV  |
| <b>Voltage surges - data line</b>            |                      |        |
| EN 61000-4-5                                 | line/ground          | ±1 kV  |
| <b>Conducted disturbances</b>                |                      |        |
| EN 61000-4-6                                 | 150 kHz ... 80 MHz   | 10 V   |

**Table 30. EMC interference immunity: Marine applications applications**

| Applicable standard            |                     |        |
|--------------------------------|---------------------|--------|
| <b>Electrostatic discharge</b> |                     |        |
| EN 61000-4-2<br>IEEE C37.90.3  | Contact discharge   | ±6 kV  |
| EN 61000-4-2<br>IEEE C37.90.3  | Air discharge       | ±8 kV  |
| <b>Electromagnetic field</b>   |                     |        |
| EN 61000-4-3                   | 80 MHz ... 6000 MHz | 10 V/m |

**Table 30. EMC interference immunity: Marine applications applications  
(continued)**

| Applicable standard                          |                      |         |
|----------------------------------------------|----------------------|---------|
| <b>Fast transients (burst)</b>               |                      |         |
| EN 61000-4-4<br>IEEE C37.90.1                | DC supply connection | ±1 kV   |
| EN 61000-4-4<br>IEEE C37.90.1                | Data line            | ±1 kV   |
| <b>Voltage surges - DC supply connection</b> |                      |         |
| EN 61000-4-5                                 | line/ground          | ±1 kV   |
| EN 61000-4-5                                 | line/line            | ±0.5 kV |
| <b>Voltage surges - data line</b>            |                      |         |
| EN 61000-4-5                                 | line/ground          | ±1 kV   |
| <b>Conducted disturbances</b>                |                      |         |
| EN 61000-4-6                                 | 150 kHz ... 80 MHz   | 10 V    |

**Table 31. EMC interference immunity: Railway applications (trackside)**

| Applicable standard                          |                      |        |
|----------------------------------------------|----------------------|--------|
| <b>Electrostatic discharge</b>               |                      |        |
| EN 61000-4-2<br>IEEE C37.90.3                | Contact discharge    | ±6 kV  |
| EN 61000-4-2<br>IEEE C37.90.3                | Air discharge        | ±8 kV  |
| <b>Electromagnetic field</b>                 |                      |        |
| EN 61000-4-3                                 | 80 MHz ... 1000 MHz  | 20 V/m |
| EN 61000-4-3                                 | 1.0 GHz ... 2.0 GHz  | 10 V/m |
| EN 61000-4-3                                 | 2.0 GHz ... 2.7 GHz  | 5 V/m  |
| EN 61000-4-3                                 | 5.1 GHz ... 6.0 GHz  | 3 V/m  |
| <b>Fast transients (burst)</b>               |                      |        |
| EN 61000-4-4<br>IEEE C37.90.1                | DC supply connection | ±2 kV  |
| EN 61000-4-4<br>IEEE C37.90.1                | Data line            | ±2 kV  |
| <b>Voltage surges - DC supply connection</b> |                      |        |
| EN 61000-4-5                                 | line/ground          | ±2 kV  |

**Table 31. EMC interference immunity: Railway applications (trackside)  
(continued)**

| Applicable standard               |                    |         |
|-----------------------------------|--------------------|---------|
| EN 61000-4-5                      | line/line          | ±1 kV   |
| <b>Voltage surges - data line</b> |                    |         |
| EN 61000-4-5                      | line/ground        | ±2 kV   |
| <b>Conducted disturbances</b>     |                    |         |
| EN 61000-4-6                      | 150 kHz ... 80 MHz | 10 V    |
| <b>Pulse magnetic field</b>       |                    |         |
| EN 61000-4-9                      |                    | 300 A/m |

**Table 32. EMC interference immunity: Substation applications**

| Applicable standard                          |                       |             |
|----------------------------------------------|-----------------------|-------------|
| <b>Electrostatic discharge</b>               |                       |             |
| EN 61000-4-2<br>IEEE C37.90.3                | Contact discharge     | ±8 kV       |
| EN 61000-4-2<br>IEEE C37.90.3                | Air discharge         | ±15 kV      |
| <b>Electromagnetic field</b>                 |                       |             |
| EN 61000-4-3                                 | 80 MHz ... 1000 MHz   | 10 V/m      |
| EN 61000-4-3                                 | 1400 MHz ... 3000 MHz | 3 V/m       |
| IEEE 1613                                    | 80 MHz ... 1000 MHz   | max. 35 V/m |
| <b>Fast transients (burst)</b>               |                       |             |
| EN 61000-4-4<br>IEEE C37.90.1                | DC supply connection  | ±4 kV       |
| EN 61000-4-4<br>IEEE C37.90.1                | Data line             | ±4 kV       |
| <b>Voltage surges - DC supply connection</b> |                       |             |
| EN 61000-4-5                                 | line/ground           | ±2 kV       |
| IEEE 1613                                    | line/ground           | ±5 kV       |
| EN 61000-4-5                                 | line/line             | ±1 kV       |
| <b>Voltage surges - data line</b>            |                       |             |
| EN 61000-4-5                                 | line/ground           | ±2 kV       |
| <b>Conducted disturbances</b>                |                       |             |
| EN 61000-4-6                                 | 150 kHz ... 80 MHz    | 10 V        |

**Table 32. EMC interference immunity: Substation applications (continued)**

| Applicable standard                       |             |         |
|-------------------------------------------|-------------|---------|
| Damped oscillation – DC supply connection |             |         |
| EN 61000-4-12<br>IEEE C37.90.1            | line/ground | ±2.5 kV |
| EN 61000-4-12<br>IEEE C37.90.1            | line/line   | ±1 kV   |
| Damped oscillation – data line            |             |         |
| EN 61000-4-12<br>IEEE C37.90.1            | line/ground | ±2.5 kV |
| EN 61000-4-12                             | line/line   | ±1 kV   |

## 9.10. Network range

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

### 9.10.1. Twisted-pair port 10/100/1000 Mbit/s

**Table 33. Network range: 10/100/1000 Mbit/s twisted-pair port**

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

## 9.10.2. Gigabit Ethernet SFP transceiver

**Table 34. F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver)**

| Product code    | Mode <sup>31</sup> | Wave length           | Fiber       | System attenuation | Example for F/O cable length <sup>32</sup>       | Fiber attenuation | BLP <sup>33</sup> /Dispersion |
|-----------------|--------------------|-----------------------|-------------|--------------------|--------------------------------------------------|-------------------|-------------------------------|
| M-SFP-SX/LC...  | MM                 | 850 nm                | 50/125 µm   | 0 dB ... 7.5 dB    | 0 km ... 0.55 km (0 mi ... 0.34 mi)              | 3.0 dB/km         | 400 MHz×km                    |
| M-SFP-SX/LC...  | MM                 | 850 nm                | 62.5/125 µm | 0 dB ... 7.5 dB    | 0 km ... 0.275 km (0 mi ... 0.17 mi)             | 3.2 dB/km         | 200 MHz×km                    |
| M-SFP-MX/LC EEC | MM                 | 1310 nm               | 50/125 µm   | 0 dB ... 12 dB     | 0 km ... 1.5 km (0 mi ... 0.93 mi)               | 1.0 dB/km         | 800 MHz×km                    |
| M-SFP-MX/LC EEC | MM                 | 1310 nm               | 62.5/125 µm | 0 dB ... 12 dB     | 0 km ... 0.55 km (0 mi ... 0.34 mi)              | 1.00 dB/km        | 5000 MHz×km                   |
| M-SFP-LX/LC...  | MM                 | 1310 nm <sup>34</sup> | 50/125 µm   | 0 dB ... 10.5 dB   | 0 km ... 0.55 km (0 mi ... 0.34 mi)              | 1.0 dB/km         | 800 MHz×km                    |
| M-SFP-LX/LC...  | MM                 | 1310 nm <sup>35</sup> | 62.5/125 µm | 0 dB ... 10.5 dB   | 0 km ... 0.55 km (0 mi ... 0.34 mi)              | 1.0 dB/km         | 500 MHz×km                    |
| M-SFP-LX/LC...  | SM                 | 1310 nm               | 9/125 µm    | 0 dB ... 10.5 dB   | 0 km ... 20 km (0 mi ... 12.43 mi) <sup>36</sup> | 0.4 dB/km         | 3.5 ps/(nm×km)                |
| M-SFP-LX+/LC... | SM                 | 1310 nm               | 9/125 µm    | 5 dB ... 20 dB     | 14 km ... 42 km (8.70 mi ... 26.10 mi)           | 0.4 dB/km         | 3.5 ps/(nm×km)                |
| M-SFP-LH/LC...  | LH                 | 1550 nm               | 9/125 µm    | 5 dB ... 22 dB     | 23 km ... 80 km (14.29 mi ... 49.71 mi)          | 0.25 dB/km        | 19 ps/(nm×km)                 |
| M-SFP-LH+/LC    | LH                 | 1550 nm               | 9/125 µm    | 15 dB ... 30 dB    | 71 km ... 108 km (44.12 mi ... 67.11 mi)         | 0.25 dB/km        | 19 ps/(nm×km)                 |

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

32. Including 3 dB system reserve when compliance with the fiber data is observed.

33. Using the bandwidth-length product is inappropriate for expansion calculations.

34. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).

35. With F/O adapter compliant with IEEE 802.3-2002 Clause 38 (single-mode fiber offset-launch mode conditioning patch cord).

36. Including 2.5 dB system reserve when compliance with the fiber data is observed.

**Table 34. F/O port 1000BASE-FX (SFP fiber optic Gigabit Ethernet Transceiver) (continued)**

| Product code | Mode <sup>31</sup> | Wave length | Fiber    | System attenuation | Example for F/O cable length <sup>32</sup>  | Fiber attenuation      | BLP <sup>33</sup> /Dispersion |
|--------------|--------------------|-------------|----------|--------------------|---------------------------------------------|------------------------|-------------------------------|
| M-SFP-LH+/LC | LH                 | 1550 nm     | 9/125 µm | 15 dB ... 30 dB    | 71 km ... 128 km<br>(44.12 mi ... 79.54 mi) | 0.21 dB/km (typically) | 19 ps/(nm×km)                 |

### 9.10.3. Fast Ethernet SFP transceiver

**Table 35. F/O port 100BASE-FX (SFP Fiber Optic Fast Ethernet Transceiver)**

| Product code         | Mode <sup>37</sup> | Wave length | Fiber       | System attenuation | Example for F/O cable length <sup>38</sup> | Fiber attenuation | BLP/Dispersion |
|----------------------|--------------------|-------------|-------------|--------------------|--------------------------------------------|-------------------|----------------|
| M-FAST-SFP-MM/L-C... | MM                 | 1310 nm     | 50/125 µm   | 0 dB ... 8 dB      | 0 km ... 5 km (0 mi ... 3.11 mi)           | 1.0 dB/km         | 800 MHz×km     |
| M-FAST-SFP-MM/L-C... | MM                 | 1310 nm     | 62.5/125 µm | 0 dB ... 11 dB     | 0 km ... 4 km (0 mi ... 2.49 mi)           | 1.0 dB/km         | 500 MHz×km     |
| M-FAST-SFP-SM/L-C... | SM                 | 1310 nm     | 9/125 µm    | 0 dB ... 13 dB     | 0 km ... 25 km (0 mi ... 15.53 mi)         | 0.4 dB/km         | 3.5 ps/(nm×km) |
| M-FAST-SFP-SM+/LC... | SM                 | 1310 nm     | 9/125 µm    | 10 dB ... 29 dB    | 25 km ... 65 km (15.53 mi ... 40.39 mi)    | 0.4 dB/km         | 3.5 ps/(nm×km) |
| M-FAST-SFP-LH/L-C... | SM                 | 1550 nm     | 9/125 µm    | 10 dB ... 29 dB    | 47 km ... 104 km (29.20 mi ... 64.62 mi)   | 0.25 dB/km        | 19 ps/(nm×km)  |

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

32. Including 3 dB system reserve when compliance with the fiber data is observed.

33. Using the bandwidth-length product is inappropriate for expansion calculations.

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

38. Including 3 dB system reserve when compliance with the fiber data is observed.

**Table 35. F/O port 100BASE-FX (SFP Fiber Optic Fast Ethernet Transceiver) (continued)**

| Product code         | Mode <sup>37</sup> | Wave length | Fiber    | System attenuation | Example for F/O cable length <sup>38</sup> | Fiber attenuation        | BLP/Dispersion |
|----------------------|--------------------|-------------|----------|--------------------|--------------------------------------------|--------------------------|----------------|
| M-FAST-SFP-LH/L-C... | SM                 | 1550 nm     | 9/125 µm | 10 dB ... 29 dB    | 55 km ... 140 km (14.29 mi ... 86.99 mi)   | 0.18 dB/km <sup>39</sup> | 18 ps/(nm×km)  |

## 9.10.4. Bidirectional Gigabit Ethernet SFP transceiver

**Table 36. F/O port (bidirectional Gigabit Ethernet SFP transceiver)**

| Product code                | Mode <sup>40</sup> | Wave length TX | Wave length RX | Fiber    | System attenuation | Example for F/O cable length <sup>41</sup> | Fiber attenuation | BLP/Dispersion |
|-----------------------------|--------------------|----------------|----------------|----------|--------------------|--------------------------------------------|-------------------|----------------|
| M-SFP-BIDI Type A LX/LC EEC | SM                 | 1310 nm        | 1550 nm        | 9/125 µm | 0 dB ... 11 dB     | 0 km ... 20 km (0 mi ... 12.43 mi)         | 0.4 dB/km         | 3.5 ps/(nm×km) |
| M-SFP-BIDI Type B LX/LC EEC | SM                 | 1550 nm        | 1310 nm        | 9/125 µm | 0 dB ... 11 dB     | 0 km ... 20 km (0 mi ... 12.43 mi)         | 0.25 dB/km        | 19 ps/(nm×km)  |
| M-SFP-BIDI Type A LH/LC EEC | LH                 | 1490 nm        | 1590 nm        | 9/125 µm | 5 dB ... 24 dB     | 23 km ... 80 km (14.29 mi ... 49.71 mi)    | 0.25 dB/km        | 19 ps/(nm×km)  |
| M-SFP-BIDI Type B LH/LC EEC | LH                 | 1590 nm        | 1490 nm        | 9/125 µm | 5 dB ... 24 dB     | 23 km ... 80 km (14.29 mi ... 49.71 mi)    | 0.25 dB/km        | 19 ps/(nm×km)  |

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

38. Including 3 dB system reserve when compliance with the fiber data is observed.

39. With ultra-low-loss optical fiber.

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

41. Including 3 dB system reserve when compliance with the fiber data is observed.

# 10. Scope of delivery

**Table 37. Scope of delivery**

| Amount | Article                                                                                                                                |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1 ×    | Device                                                                                                                                 |
| 1 ×    | Safety and general information sheet                                                                                                   |
| 1 ×    | Information sheet for use in explosive atmospheres (depending on device variant)                                                       |
| 1 ×    | 2-pin terminal block for signal contact                                                                                                |
| 1 ×    | 3-pin terminal block for the supply voltage<br>(only for device variants featuring supply voltage with characteristic value K9)        |
| 2 ×    | 3-pin terminal block for the supply voltage<br>(exclusively for device variants featuring supply voltage with characteristic value KK) |
| 2 ×    | 2-pin terminal block for the supply voltage<br>(only for device variants featuring supply voltage with characteristic value CC or PP)  |

# 11. Order numbers

## 11.1. Accessories

You find more information on available accessories in the Belden Online Catalog at [catalog.belden.com](https://catalog.belden.com).

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.

**Table 38. General accessories**

| Article                                                           | Order number |
|-------------------------------------------------------------------|--------------|
| 2-pin terminal block for signal contact (50 pieces)               | 943845010    |
| 3-pin terminal block for supply voltage (50 pieces) <sup>42</sup> | 943845008    |
| 2-pin terminal block for supply voltage (50 pieces) <sup>43</sup> | 943845009    |
| AutoConfiguration Adapter ACA22-USB (EEC)                         | 942124001    |
| AutoConfiguration Adapter ACA31                                   | 942074001    |
| Network management software Industrial HiVision                   | 943156xxx    |
| Terminal cable                                                    | 943301001    |
| Power Cord                                                        | 942000001    |
| Protection cap for RJ45 socket (50 pieces)                        | 943936001    |
| Protection cap for SFP slot (25 pieces)                           | 943942001    |
| Cover panel for unused module slot                                | 942131001    |

### 11.1.1. Fast Ethernet SFP transceiver

| Fast Ethernet SFP transceiver | Order number |
|-------------------------------|--------------|
| M-FAST SFP-TX/RJ45            | 942098001    |
| M-FAST SFP-TX/RJ45 EEC        | 942098002    |

The following operating conditions apply to twisted pair transceivers:

42. Only for device variants featuring supply voltage with characteristic value K9 or KK  
43. Only for device variants featuring supply voltage with characteristic value CC or PP

| Fast Ethernet SFP transceiver                                                                                                                                                                                                                                                                                                                                           | Order number |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <ul style="list-style-type: none"> <li>• Longer RSTP switching times and link loss detection times compared to twisted pair ports provided by the device directly.</li> <li>• Not applicable for combo ports.</li> <li>• Not applicable for ports which support only Gigabit Ethernet.</li> <li>• It is currently not possible to set autocrossing manually.</li> </ul> |              |
| M-FAST SFP-MM/LC                                                                                                                                                                                                                                                                                                                                                        | 943865001    |
| M-FAST SFP-MM/LC EEC                                                                                                                                                                                                                                                                                                                                                    | 943945001    |
| M-FAST SFP-SM/LC                                                                                                                                                                                                                                                                                                                                                        | 943866001    |
| M-FAST SFP-SM/LC EEC                                                                                                                                                                                                                                                                                                                                                    | 943946001    |
| M-FAST SFP-SM+/LC                                                                                                                                                                                                                                                                                                                                                       | 943867001    |
| M-FAST SFP-SM+/LC EEC                                                                                                                                                                                                                                                                                                                                                   | 943947001    |
| M-FAST SFP-LH/LC                                                                                                                                                                                                                                                                                                                                                        | 943868001    |
| M-FAST SFP-LH/LC EEC                                                                                                                                                                                                                                                                                                                                                    | 943948001    |
| SFP-FAST-MM/LC <sup>44</sup>                                                                                                                                                                                                                                                                                                                                            | 942194001    |
| SFP-FAST-MM/LC EEC <sup>45</sup>                                                                                                                                                                                                                                                                                                                                        | 942194002    |
| SFP-FAST-SM/LC <sup>46</sup>                                                                                                                                                                                                                                                                                                                                            | 942195001    |
| SFP-FAST-SM/LC EEC <sup>47</sup>                                                                                                                                                                                                                                                                                                                                        | 942195002    |

## 11.1.2. Gigabit Ethernet SFP transceiver

| Gigabit Ethernet SFP transceiver | Order number |
|----------------------------------|--------------|
| M-SFP-TX/RJ45                    | 943977001    |
| M-SFP-TX/RJ45 EEC                | 942161001    |

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 and Fast Ethernet ports.
- Exclusively supports the autonegotiation mode including autocrossing.

|                 |           |
|-----------------|-----------|
| M-SFP-SX/LC     | 943014001 |
| M-SFP-SX/LC EEC | 943896001 |

44. You will find further information on certifications at [catalog.belden.com](https://catalog.belden.com).

45. You will find further information on certifications at [catalog.belden.com](https://catalog.belden.com).

46. You will find further information on certifications at [catalog.belden.com](https://catalog.belden.com).

47. You will find further information on certifications at [catalog.belden.com](https://catalog.belden.com).

| Gigabit Ethernet SFP transceiver | Order number |
|----------------------------------|--------------|
| M-SFP-MX/LC EEC                  | 942108001    |
| M-SFP-LX/LC                      | 943015001    |
| M-SFP-LX/LC EEC                  | 943897001    |
| M-SFP-LX+/LC                     | 942023001    |
| M-SFP-LX+/ LC EEC                | 942024001    |
| M-SFP-LH/LC                      | 943042001    |
| M-SFP-LH/LC EEC                  | 943898001    |
| M-SFP-LH+/LC                     | 943049001    |
| M-SFP-LH+/LC EEC                 | 943119001    |
| SFP-GIG-LX/LC <sup>48</sup>      | 942196001    |
| SFP-GIG-LX/LC EEC <sup>49</sup>  | 942196002    |

### 11.1.3. Bidirectional Gigabit Ethernet SFP transceiver

**Table 39. Accessory: Bidirectional Gigabit Ethernet SFP transceiver**

| Bidirectional Gigabit Ethernet SFP transceiver | Order number |
|------------------------------------------------|--------------|
| M-SFP-BIDI Type A LX/LC EEC                    | 943974001    |
| M-SFP-BIDI Type B LX/LC EEC                    | 943974002    |
| M-SFP-BIDI Type A LH/LC EEC                    | 943975001    |
| M-SFP-BIDI Type B LH/LC EEC                    | 943975002    |
| M-SFP-BIDI Bundle LX/LC EEC (Type A + B)       | 943974101    |
| M-SFP-BIDI Bundle LH/LC EEC (Type A + B)       | 943975101    |

48. You will find further information on certifications at [catalog.belden.com](https://catalog.belden.com).

49. You will find further information on certifications at [catalog.belden.com](https://catalog.belden.com).

# 12. Underlying technical standards

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

The device generally fulfills the technical standards named in their current versions.

If your device has a shipping approval according to DNV, you find the approval mark printed on the device label. You will find out whether your device has other shipping approvals at [www.belden.com](http://www.belden.com) in the product information.

**Table 40. List of technical standards**

|                    |                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| CSA C22.2 No. 142  | Canadian National Standard(s) – Process Control Equipment – Industrial Products                                                           |
| DNV-CG-0339        | Environmental test specification for electrical, electronic and programmable equipment and systems.                                       |
| 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                                                             |
| 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                                                                       |
| EN 62368-1         | Information technology equipment – Safety – Part 1: General requirements                                                                  |
| FCC 47 CFR Part 15 | Code of Federal Regulations                                                                                                               |
| 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"                                                              |
| IEC/EN 60079-15    | Explosive atmospheres – Part 15: Equipment protection by type of protection "n"                                                           |
| IEC/EN 61850-3     | Communication networks and systems for power utility automation - Part 3: General requirements.                                           |
| IEEE 802.1AB       | Station and Media Access Control Connectivity Discovery                                                                                   |
| IEEE 802.1D        | Media Access Control Bridges                                                                                                              |
| IEEE 802.1Q        | Virtual LANs (VLANs, MRP, Spanning Tree)                                                                                                  |
| IEEE 802.3         | Ethernet                                                                                                                                  |
| IEEE 1613          | IEEE Standard Environmental and Testing Requirements for Communication Networking Devices in Electric Power Substations                   |

**Table 40. List of technical standards (continued)**

|                   |                                         |
|-------------------|-----------------------------------------|
| UL 61010-1/-2-201 | Safety for Industrial Control Equipment |
|-------------------|-----------------------------------------|

# Further support

## Technical questions

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

You find the addresses of our partners on the Internet at [www.belden.com](http://www.belden.com).

For technical support, visit [my.belden.com](http://my.belden.com). This site also includes a free of charge knowledge base and a software download section.

## Technical Documents

The current manuals and operating instructions for Belden products are available at [doc.hirschmann.com](http://doc.hirschmann.com).

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