

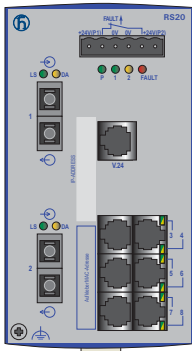


**HIRSCHMANN**

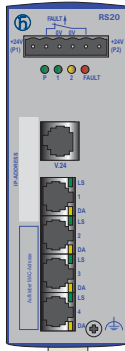
A **BELDEN** BRAND

# User Manual

## Installation Industrial Ethernet Rail Switch RS20 Basic Family



RS20-0800...B



RS20-0400...B



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

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# Safety instructions

## Important Information

**Notice:** Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



## **DANGER**

**DANGER** indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.



## **WARNING**

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



## **CAUTION**

**CAUTION** indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

**Note:** A note contains important information on the product, on how to manage the product, or on the respective section of the documentation to which your special attention is being drawn.

## ■ **Certified usage**

Please observe the following: The device may only be employed for the purposes described in the catalog and technical description, and only in conjunction with external devices and components recommended or approved by the manufacturer. The product can only be operated correctly and safely if it is transported, stored, installed and assembled properly and correctly. Furthermore, it must be operated and serviced carefully.

## ■ **Supply voltage**

For safety reasons the devices have been designed to operate at low voltages. Thus, they may only be connected to the supply voltage connections and to the signal contact with SELV circuits with the voltage restrictions in accordance with IEC/EN 60950-1.

The supply voltage is electrically isolated from the housing.

Use undamaged parts.

Relevant for North America:

The device may only be connected to a supply voltage of class 2 that fulfills the requirements of the National Electrical Code, Table 11(b). If the voltage is being supplied redundantly (two different voltage sources), the combined supply voltages must fulfill the requirements of the National Electrical Code, Table 11(b).

Relevant for North America: For use in class 2 circuits.

Use 60/75 °C or 75 °C copper (Cu) wire only.

The device does not contain any service components. Internal fuses are only triggered if there is a fault in the device. If the device is not functioning correctly, or if it is damaged, switch off the supply voltage and return the device to the plant for inspection.

Only switch on the supply voltage to the device if

▶ the housing is closed,

▶ the terminal blocks are wired up correctly and

▶ the terminal blocks are connected.

## ■ Shielding ground

**Note:** The shield ground wire of the twisted pair lines is connected to the front panel as a conductor.

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

## ■ Hazardous Locations

Relevant for North America for devices certified for Hazardous Locations: Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods [Article 501-4(b) of the National Electrical Code, NFPA 70] and in accordance with the authority having jurisdiction.

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

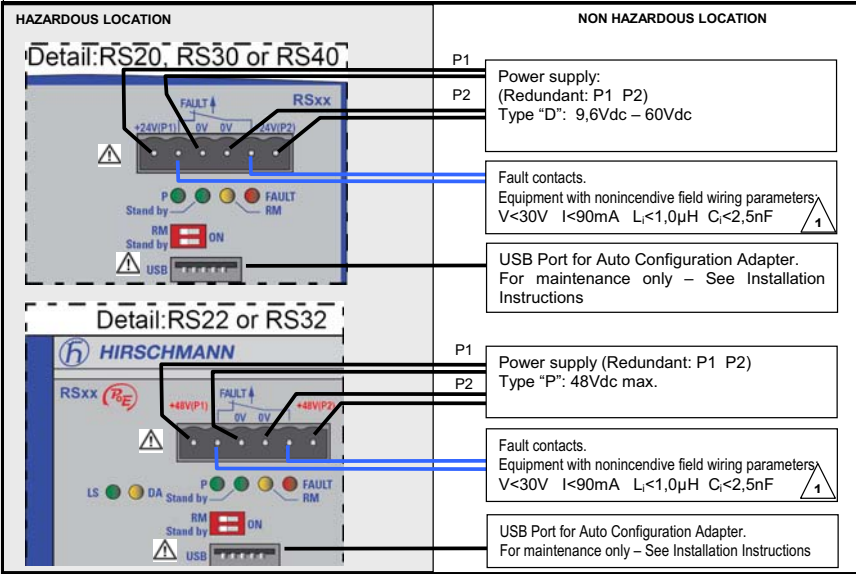
WARNING – EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABLE FOR CLASS I, DIVISION 2.

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS.

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

Peripheral equipment must be suitable for the location it is used in. Use 60/75 °C or 75 °C copper (Cu) wire only.

**CONTROL DRAWING: Hazardous Locations Class I Division 2 Groups A, B, C, D**



**Notes:**



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

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

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

**Nonincendive Field Wiring Parameters:**

| Entity Parameters                            | $V_{max}$<br>[V] | $I_{max}$<br>[mA] | $C_i$<br>[nF] | $L_i$<br>[μH] |
|--|------------------|-------------------|---------------|---------------|
| ... for Class I Division 2 Groups A,B,C,D => |                  |                   |               |               |
| <b>Fault contacts</b>                        | 30               | 90                | 2,5           | 1,0           |



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

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

**DO NOT OPEN WHEN ENERGIZED.**



**CONTROL DRAWING for RS20, RS22, RS30, RS32 and RS40 Family**

|                  |                            |        |
|------------------|----------------------------|--------|
| Size A4          | Document No.: 000157671DNR | Rev. 0 |
| Date: 2011-09-21 | Sheet 1 of 1               |        |

## ■ ATEX Directive 94/9 EC – Special conditions for safe use

Relevant for RS20 Basic family devices when operating in explosive gas atmospheres according to ATEX Directive 94/9 EC, the following applies:

- List of Standards:

EN 60079-0:2009

EN 60079-15:2010

Certificate No.: DEKRA 11ATEX0139 X.

- Make sure that the device has the following label:

 **II 3G**      **Ex nA IIC T4 Gc**      **Dekra 11ATEX0139 X**

Ambient rating and temperature code:

**T4: 0 °C ≤ Ta ≤ +60 °C for “B” types** (item 17 of nomenclature breakdown).

- The modules shall be installed in a suitable enclosure in accordance with EN 60079-15 providing a degree of protection of at least IP54 according to EN 60529, taking into account the environmental conditions under which the equipment will be used.
- When the temperature under rated conditions exceeds 70 °C at the cable or conduit entry point, or 80 °C at the branching point of the conductors, the temperature specification of the selected cable and cable entries shall be in compliance with the actual measured temperature values.
- Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40 %.
- Connectors shall be connected or disconnected exclusively in dead-voltage state.
- DIP switches shall be switched exclusively in dead-voltage state.



The USB port (not available to RS 20 Basic devices) shall remain disconnected.



## ■ Housing



### **WARNING**

#### **ELECTRIC SHOCK**

Never insert any pointed objects (small screwdrivers, wires, etc.) into the product!

Never insert sharp objects (small screwdrivers, wires, etc.) into the connection terminals for the supply voltage or the signal contact, and do not touch the terminals!

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



### **CAUTION**

#### **EQUIPMENT OVERHEATING**

When installing the device, make sure any ventilation slots remain free. Maintain a clearance of at least 10 cm (3.94 in).

**Failure to follow these instructions can result in injury or equipment damage.**

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

The housing is grounded via the separate ground screw on the bottom left of the front panel.

For the ground conductor, use a cable with a cross section of at least 1.0 mm<sup>2</sup>.

- The clearance between the ventilation slots of the housing and other objects must be at least 10 cm (3.94 in).
- The device must be installed in the vertical position.
- If installed in a living area or office environment, the device must be operated exclusively in switch cabinets with fire protection characteristics in accordance with EN 60950-1.

## ■ **Environment**

The device may only be operated at the specified surrounding air temperature (temperature of the surrounding air at a distance of up to 5 cm (1.97 in) from the device) and relative air humidity specified in the technical data.

- Install the device in a location where the climatic threshold values specified in the technical data will be observed.
- Use the device only in an environment within the pollution degree specified in the technical data.

## ■ **Qualification requirements for personnel**

Qualified personnel as understood in this manual and the warning signs, are persons who are familiar with the setup, assembly, startup, and operation of this product and are appropriately qualified for their job. This includes, for example, those persons who have been:

- ▶ trained or directed or authorized to switch on and off, to ground and to label power circuits and devices or systems in accordance with current safety engineering standards;
- ▶ trained or directed in the care and use of appropriate safety equipment in accordance with the current standards of safety engineering;
- ▶ trained in providing first aid.

## ■ **General safety instructions**

Electricity is used to operate this equipment. Comply with every detail of the safety requirements specified in the operating instructions regarding the voltages to apply.

[See "Supply voltage" on page 5.](#)

Non-observance of these safety instructions can therefore cause material damage and/or injuries.

- Only appropriately qualified personnel should work on this device or in its vicinity. Qualified personnel must be thoroughly familiar with the warnings and maintenance procedures in accordance with this operating manual.
- The proper and safe operation of this device depends on proper handling during transport, proper storage and assembly, and conscientious operation and maintenance procedures.
- Never start operating the device with damaged components.
- Only use the devices in accordance with this manual. In particular, observe the warnings and safety-related information.
- Any work that may be required on the electrical installation may only be carried out by personnel trained for this purpose.

**Note:** LED or LASER components in compliance with IEC 60825-1 (2007):

CLASS 1 LASER PRODUCT

CLASS 1 LED PRODUCT

#### ■ **National and international safety regulations**

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

#### ■ **CE marking**

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

2011/65/EU (RoHS)

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

2004/108/EC

Directive of the European Parliament and the council for standardizing the regulations of member states with regard to electromagnetic compatibility.

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

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

The product can be used in the industrial sector.

- ▶ Interference immunity: EN 61000-6-2:2005
- ▶ Emitted interference: EN 55022:2010

**Warning!** This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.

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

■ **FCC note:**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions : (1) This device may not cause harmful interference; (2) this device must accept any interference received, including interference that may cause undesired operation.

Appropriate testing has established that this device fulfills the requirements of a class A digital device in line with part 15 of the FCC regulations.

These requirements are designed to provide sufficient protection against interference when the device is being used in a business environment.

The device creates and uses high frequencies and can also radiate high frequencies, and if it is not installed and used in accordance with this operating manual, it can cause radio transmission interference. The use of this device in a living area can also cause interference, and in this case the user is obliged to cover the costs of removing the interference.

■ **Recycling note**

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

# About this Manual

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

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

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

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

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

## Key

The symbols used in this manual have the following meanings:

|   |            |
|---|------------|
| ▶ | Listing    |
| □ | Work step  |
| ■ | Subheading |

# 1 Device description

The RS20 Basic devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and also provide long-term reliability and flexibility.

The devices allow you to set up switched industrial Ethernet networks that conform to the IEEE 802.3 standard using copper wires or optical fibers in a line or ring structure.

The devices work without a fan.

The voltage is supplied redundantly.

The devices are mounted very quickly by snapping them onto the DIN rail.

Depending on the device variant, you can choose various media to connect terminal devices and other infrastructure components:

- ▶ twisted pair cable
- ▶ multimode F/O
- ▶ singlemode F/O

The twisted pair ports support:

- ▶ Autocrossing
- ▶ Autonegotiation
- ▶ Autopolarity

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

- ▶ a Web browser
- ▶ HiDiscovery (software for setting up operation of the device)
- ▶ management software (e.g. Industrial HiVision)
- ▶ a V.24 interface (locally on the device)

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

Product configuration data can be provided by:

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

The devices provide you with a large range of functions. Information pertaining to these functions is found in the relevant operating software manuals. These manuals are available as PDF files on the CD ROM provided, or you can download them from the Internet on the Hirschmann product pages ([www.hirschmann.com](http://www.hirschmann.com)).

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

## 1.1 Description of the device variants

The devices differ with regard to the number of interfaces and the media type for connecting segments.

There is a variant of the device with 4 ports available, and a variant with 8 ports. The table below shows the number and type of the ports you can choose. In the column for the port type, the abbreviations F/O (optical fiber) and TP (twisted pair) indicate the media type, while the abbreviations DSC and RJ45 indicate the socket type.

| Variant   | Uplink ports |  | Other ports |                         |
|-----------|--------------|--|-------------|-------------------------|
|           | Number       | Type                                       | Number      | Type                    |
| RS20-...B | 2            | 10/100 Mbit/s, media selectable, DSC, RJ45 | 2,6         | 10/100 Mbit/s, TP, RJ45 |

Table 1: Number and type of ports

### 1.1.1 Combination options for RS20-...B

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

| Item      | Characteristic                     | Ident. | Property                              |
|-----------|------------------------------------|--------|---------------------------------------|
| 1 to 4    | Product                            | RS20   | Rail Switch without gigabit ports     |
| 5         | - (hyphen)                         | -      |                                       |
| 6 to 7    | Number of 10/100 Mbit/s ports      | 04     | 4 * 10/100 Mbit/s Ethernet            |
|           |                                    | 08     | 8 * 10/100 Mbit/s Ethernet            |
| 8 and 9   | Number of 1000 Mbit/s ports        | 00     | 0 * 1000 Mbit/s Ethernet              |
| 10 and 11 | Uplink port 1                      | T1     | Twisted pair T(X), RJ45               |
|           |                                    | M2     | Multimode FX, DSC, 100 Mbit/s         |
| 12 and 13 | Uplink port 2, see items 10 and 11 |        |                                       |
| 14        | Temperature range                  | S      | Standard 0 °C to +60 °C               |
| 15        | Voltage range                      | D      | 9.6 VDC to 60 VDC or 18 VAC to 30 VAC |
| 16        | Certification                      | A      | CE, UL 508, ISA 12.12.01 (UL 1604)    |
| 17        | Software variant                   | B      | Basic                                 |

Table 2: Combination options for the device variants of the RS20-...B

## ■ Examples for product name

|                |  |
|----------------|--|
| RS20-0800M2SDB | Rail Switch without gigabit ports                        |
| 08             | 8 * 100 Mbit/s Ethernet ports                            |
| 00             | 0 * 1000 Mbit/s Ethernet ports                           |
| M2             | Port 1 = Multimode FX, DSC, 100 Mbit/s                   |
| M2             | Port 2 = Multimode FX, DSC, 100 Mbit/s                   |
| S              | Temperature range standard: 0 °C to +60 °C               |
| D              | Voltage range: 9.6 V DC to 60 V DC or 18 V AC to 30 V AC |
| A              | Certifications: CE, UL 508, ISA 12.12.01 (UL 1604)       |
| B              | Software variant: Basic                                  |

Table 3: Example of RS20-...B with 2 uplink ports: RS20-0800M2M2SDAB

### 1.1.2 Number of ports and media for RS20-...B

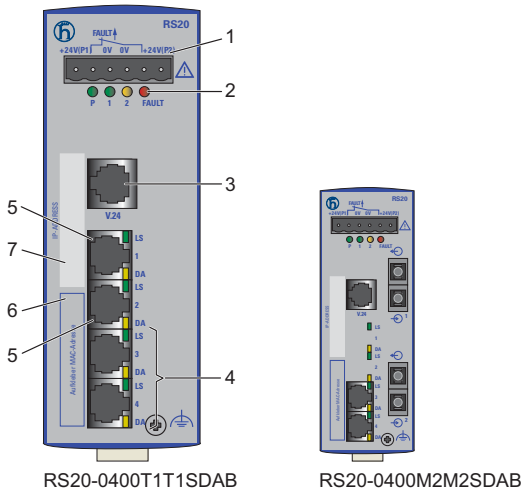


Figure 1: Device variants with 4 \* 10/100 Mbit/s ports (RS20-0400...B)

- 1 – plug-in terminal block, 6-pin
- 2 – LED display elements
- 3 – V.24 connection for external management
- 4 – ports in compliance with 10/100BASE-T(X) (RJ45 connections)
- 5 – port 1 + port 2, free choice of connections:  
T1: Twisted-pair T(X), RJ45, 10/100 Mbit/s  
M2: Multimode FX, DSC, 100 Mbit/s
- 6 – MAC address field
- 7 – IP address field



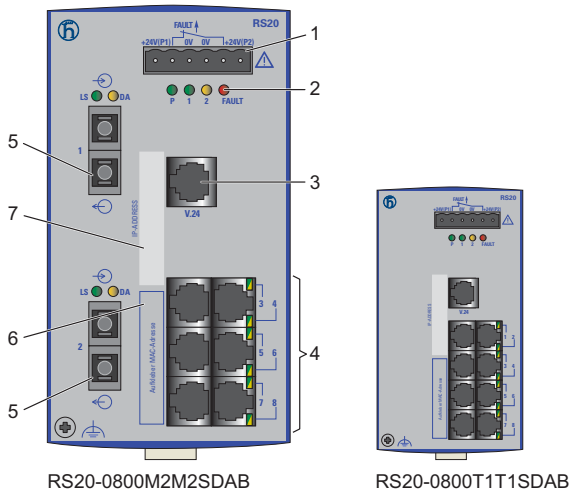


Figure 2: Device variants with 8 \* 10/100 Mbit/s ports (RS20-0800...B)  
1 to 7 – see [fig. 1](#)

## 2 Assembly and start-up

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

On delivery, the device is ready for operation.

The following steps should be performed to install and configure a switch:

- ▶ Unpacking and checking
- ▶ Insert data in label area
- ▶ Connect the terminal block for voltage supply and signal contact and connect the supply voltage
- ▶ Install the device on the DIN rail, grounding
- ▶ Install the terminal block, start-up procedure
- ▶ Connecting the data lines

### 2.1 Installing the device

#### 2.1.1 Unpacking and checking

- Check that the contents of the package are complete ([see page 30 "Scope of delivery"](#)).
- Check the individual parts for transport damage.

#### 2.1.2 Insert data in label area

The information field for the IP address on the front of the device helps you to structure your network installation clearly.

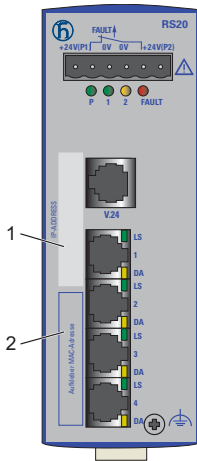


Figure 3: Label area for IP address of device  
 1 – IP address of device (label area)  
 2 – MAC address of device (label)

### 2.1.3 Connecting the terminal blocks for supply voltage and signal contact

The supply voltage and the signal contact are connected via a 6-pin terminal block with a snap lock.



#### Caution!

Note the safety instructions (see page 4 “Safety instructions”) and only connect a supply voltage that corresponds to the type plate of your device. Make sure that the contact load capability of the signal contact is not exceeded (see page 28 “General technical data”).

#### ■ Supply voltage

Redundant power supplies can be used. Both inputs are uncoupled. There is no distributed load. With redundant supply, the power supply unit supplies the device only with the higher output voltage. The supply voltage is electrically isolated from the housing.

You can choose between DC or AC voltage when connecting the supply voltage. You use the +24V and 0V pins to connect the AC voltage (see fig. 4).

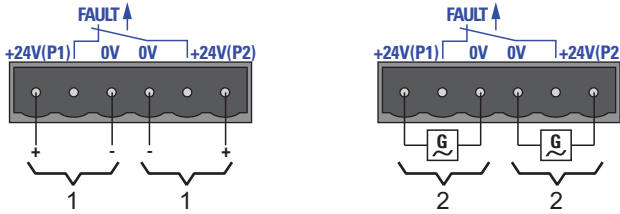


Figure 4: Connecting the supply voltage at the 6-pin terminal block  
 1 – DC voltage, voltage range: 9.6 V DC to 60 V DC  
 2 – AC voltage, voltage range: 18 V AC to 30 V AC

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

### ■ “FAULT” signal contact

- ▶ The signal contact (“FAULT”, for pin assignment of terminal block, see [fig. 4](#)) monitors the functioning of the device, thus enabling remote diagnostics. You can specify the type of function monitoring in the Management.
- ▶ You can also use the switch Web page to switch the signal contact manually and thus control external devices.

A break in contact is used to report the following conditions via the potential-free signal contact (relay contact, closed circuit):

- ▶ The detected inoperability of at least one of the two voltage supplies (voltage supply 1 or 2 is below the threshold value).
  - ▶ The device is not operational.
  - ▶ The loss of connection at at least one port. The report of the link status can be masked by the Management for each port. In the delivery state, link status monitoring is deactivated.
  - ▶ The loss of ring redundancy reserve.
  - ▶ A detected error during the self-test.
- Pull the terminal block off the device and connect the power supply and signal lines.

## 2.1.4 Installing the device on the DIN rail, grounding

### ■ Mounting on the DIN rail

- Mount the device on a 35 mm DIN rail in accordance with DIN EN 60175.
- Attach the upper snap-in guide of the device into the DIN rail and press it down against the DIN rail until it snaps into place.

**Note:** The shield ground wire of the twisted pair lines is connected to the front panel as a conductor.

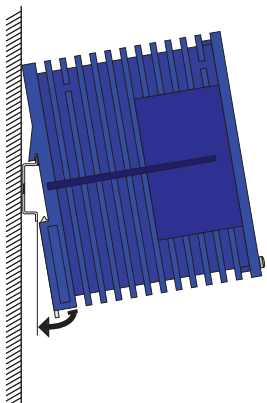


Figure 5: Mounting on the DIN rail

## ■ Grounding

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

### 2.1.5 Dimension drawings

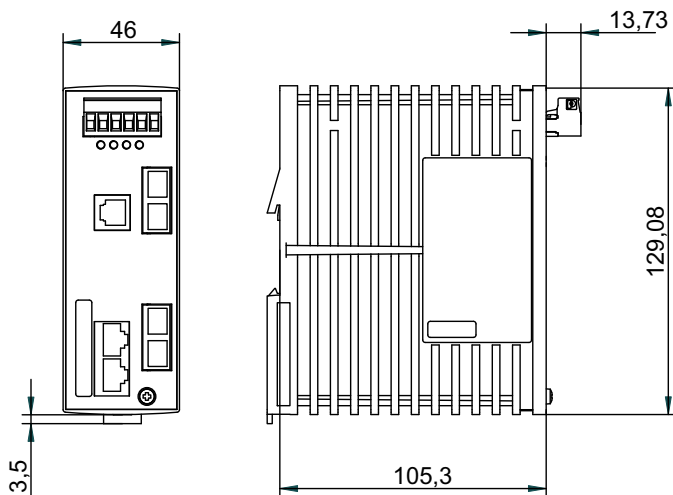


Figure 6: Dimensions of device variants RS20-04...B

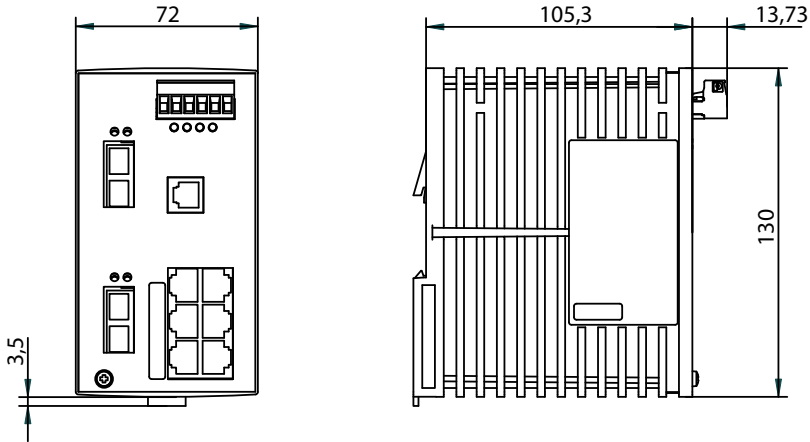


Figure 7: Dimensions of device variants RS20-08...B

## 2.1.6 Installing the terminal block, start-up procedure

- Mount the terminal block for the voltage supply and signal contact on the front of the device by snapping the lock into place.

Connecting the voltage supply via the terminal block starts the operation of the device.

## 2.1.7 Connecting the data lines

You can connect terminal devices and other segments on the ports of the device via twisted pair cables or F/O cables.

- Install the data lines according to your requirements.

### ■ 10/100 Mbit/s twisted pair connection

These connections are RJ45 sockets.

10/100 Mbit/s TP ports enable the connection of terminal devices or independent network segments according to the IEEE 802.3 10BASE-T/100BASE-TX standard.

These ports support:

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

Delivery state: autonegotiation activated

The socket housing is electrically connected to the front panel.

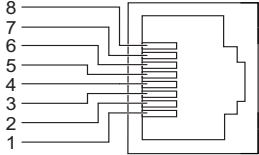
| Figure  | Pin     | Function            |
|---|---------|---------------------|
|  | 1       | RD+ Receive Data +  |
|   | 2       | RD- Receive Data -  |
|   | 3       | TD+ Transmit Data + |
|   | 6       | TD- Transmit Data - |
|   | 4,5,7,8 | Not used            |

Table 4: Pin assignment of a TP/TX interface in MDI-X mode, RJ45 socket

### ■ 100 Mbit/s F/O connection

These connections are DSC connectors.

100 MBit/s F/O ports enable the connection of terminal devices or independent network segments in compliance with the IEEE 802.3 100BASE-FX standard.

These ports support:

- ▶ Full or half duplex mode

State on delivery: full duplex FDX

**Note:** Make sure that the LH ports are only connected with LH ports, SM ports are only connected with SM ports, and MM ports only with MM ports.

## 2.2 Display elements

After the operating voltage is set up, the software starts and initializes itself. Afterwards, the device performs a self-test. During this process, various LEDs light up. The process takes around 60 seconds.

### ■ Device state

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



Figure 8: Device status LEDs

| <b>P - Power (green/yellow LED)</b>                                  |  |
|--|--|
| Glowing green  | Both supply voltages are on  |
| Glowing yellow   | There is only one supply voltage (P1 or P2) on                           |
| Not glowing  | Supply voltages P1 and P2 are too low                                    |
| <b>FAULT - detected error, signal contact (red LED) <sup>a</sup></b> |  |
| Glowing red  | The signal contact is open, i.e. it is reporting a detected error.       |
| Not glowing  | The signal contact is closed, i.e. it is not reporting a detected error. |

- a. If the manual adjustment is active on the “FAULT” signal contact, then the detected error display is independent of the setting of the signal contact.

### ■ Port state

The green and yellow LEDs at the individual port display port-related information. During the boot phase, these LEDs are used to display the status of the boot procedure.





Figure 9: Port status LEDs  
 1 – Port status LEDs for RJ45  
 2 – Port status LEDs for DSC

| LS - link status (green LED)      |   |
|-----------------------------------|---|
| Not glowing                       | No valid connection.                    |
| Glowing green                     | Valid connection.                       |
| Flashing green (1 time a period)  | Port is switched to stand-by.           |
| Flashing green (3 times a period) | Port is switched off.                   |
| DA - data (yellow LED)            |   |
| Not glowing                       | No data reception at corresponding port |
| Flashing yellow                   | Data reception at corresponding port    |

## 2.3 Basic set-up

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

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

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

### ■ Default settings

- ▶ IP address: The device looks for the IP address using DHCP
- ▶ Password for management:
  - Login: user; password: public (read only)
  - Login: admin; password: private (read and write)
- ▶ V.24 data rate: 9,600 Baud
- ▶ Ethernet ports: link status is not evaluated (signal contact)
- ▶ Optical 100 Mbit/s ports: 100 Mbit/s, full duplex
- ▶ All other ports: autonegotiation

## ■ V.24 interface (external management)

The V.24 interface is an RJ11 socket.

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

### VT 100 terminal settings

|           |            |
|-----------|------------|
| Speed     | 9,600 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 not electrically isolated from the supply voltage.

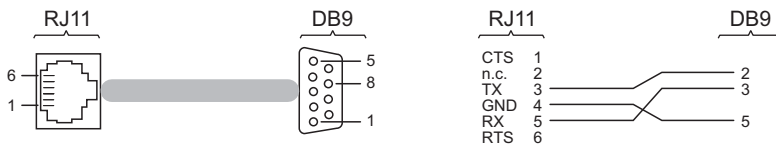


Figure 10: Pin assignment of the V.24 interface and the DB9 connector

**Note:** You will find the order number for the terminal cable, which is supplied separately, in the Technical Data chapter ([see page 30](#)).

You will find a description of the V.24 interface in the “Basic Configuration User Manual” on the CD-ROM.

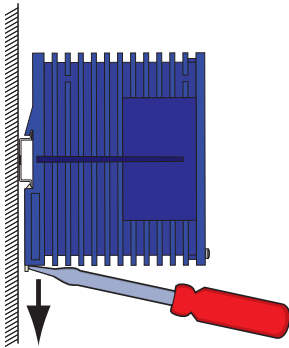
## 2.4 Maintenance

- When designing this device, Hirschmann was largely able to forego using parts that are subject to wear and tear. The parts subject to wear are designed to last longer than the lifetime of the product when it is operated properly. Operate this device according to the specifications (see “[Technical data](#)”).
- 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 to improve and develop our software. You should regularly check whether there is a new version of the software that provides you with additional benefits. You will find software information and downloads on the product pages of the Hirschmann website.
- Check that the ventilation slots are not obstructed at regular intervals, depending on the degree of pollution in the operating environment.

## 2.5 Disassembling the device

- To take the device off the DIN rail, insert a screwdriver horizontally under the housing into the locking slide, pull it (without tipping the screwdriver) downwards and lift the device upwards.



## 3 Technical data

### ■ General technical data

|   |   |   |
|---|---|---|
| Dimensions<br>W x D x H   | RS20-0400...  | 47 mm x 131 mm x 111 mm   |
|   | RS20-0800...  | 74 mm x 131 mm x 111 mm   |
| Weight  | RS20-0400...  | 400 g   |
|   | RS20-0800...  | 410 g   |
| Power supply  | Operating voltage   |   |
|   | Rated voltage range DC  | 12 to 48 V DC   |
|   | Rated voltage range AC  | 24 V AC<br>Safety extra-low voltage (SELV),<br>redundant inputs disconnected.<br>Relevant for North America: NEC<br>Class 2 power source max. 5A. |
|   | Max. voltage range DC   | min. 9.6 to max. 60 V DC  |
|   | Max. voltage range AC   | min. 18 to max. 30 V AC<br>(Not applicable under UL<br>regulations)   |
| Overload current<br>protection at input                                       | Non-replaceable fuse  |   |
| Insulation voltage<br>between operating<br>voltage connections<br>and housing | 800 V DC<br>Protective elements limit the<br>insulation voltage to 90 V DC (1 mA) |   |
| "FAULT"<br>signal contact   | Switching current   | max. 1 A, SELV  |
|   | Switching voltage   | max. 60 V DC or max. 30 V AC,<br>SELV   |
| Environment   | Storage temperature<br>(ambient air)  | Standard: -40 °C to +70 °C<br>(-40 °F to +158 °F)<br>Extended: -40 °C to +85 °C   |
|   | Humidity  | 10% to 95%<br>(non-condensing)  |
|   | Air pressure  | Up to 2000 m (795 hPa), higher<br>altitudes on request  |
| Operating<br>temperature  | Standard  | 0 °C to +60 °C (+32 °F to +140 °F)  |
| Pollution degree  | 2   |   |
| Protection classes  | Laser protection  | Class 1 according to IEC 60825-1<br>(2007)  |
|   | Degree of protection  | IP 20   |

### ■ EMC and immunity

#### EMC compliance – IEC/EN 61000-6-2:2005 EMI TYPE tests, test acc. to:

|                  |                         |        |
|------------------|-------------------------|--------|
| IEC/EN 61000-4-2 | Electrostatic discharge |        |
|                  | Contact discharge       | 4 kV   |
|                  | Air discharge           | 8 kV   |
| IEC/EN 61000-4-3 | Electromagnetic field   |        |
|                  | 80 - 3,000 MHz          | 10 V/m |

| <b>EMC compliance – IEC/EN 61000-6-2:2005 EMI TYPE tests, test acc. to:</b> |  |        |
|---|--|--------|
| IEC/EN 61000-4-4  | Fast transients (burst)                                    |        |
|   | Power line   | 2 kV   |
|   | Data line  | 1 kV   |
| IEC/EN 61000-4-5  | Voltage surges   |        |
|   | Power line, line / line                                    | 0.5 kV |
|   | Power line, line / earth                                   | 1 kV   |
|   | Data line  | 1 kV   |
| IEC/EN 61000-4-6  | Line-conducted interference voltages                       |        |
|   | 10 kHz - 150 kHz   | 3 V    |
|   | 150 kHz - 80 MHz   | 10 V   |
| EN 61000-4-9  | Impulse-shaped magnetic fields                             | —      |
| <b>EMC emitted interference</b>   |  |        |
| EN 55022  | Class A  | Yes    |
| FCC 47 CFR Part 15  | Class A  | Yes    |
| <b>Stability</b>  |  |        |
| Vibration   | IEC 60068-2-6 Test FC test level according to IEC 61131-2  | Yes    |
| Shock   | IEC 60068-2-27 Test Ea test level according to IEC 61131-2 | Yes    |

## ■ Network range

| <b>TP port</b>                   |                              |
|----------------------------------|------------------------------|
| Length of a twisted pair segment | max. 100 m (for cat5e cable) |

Table 5: TP port 10BASE-T / 100BASE-TX / 1000BASE-T

| Product code | Wave length | Fiber       | System attenuation | Expansion | Fiber data            |
|--------------|-------------|-------------|--------------------|-----------|-----------------------|
| -M2          | MM 1300 nm  | 50/125 µm   | 0-8 dB             | 0-5 km    | 1.0 dB/km, 800 MHz*km |
| -M2          | MM 1300 nm  | 62.5/125 µm | 0-11 dB            | 0-4 km    | 1.0 dB/km, 500 MHz*km |

Table 6: F/O port 100BASE-FX

MM = Multimode

## ■ Power consumption/power output

| Device name       | Device model | Maximum power consumption | Power output    |
|-------------------|--------------|---------------------------|-----------------|
| RS20-0400T1T1SDAB | 2xTX port    | 5.3 W                     | 18.1 Btu (IT)/h |
| RS20-0400M2M2SDAB | 2xFX port    | 7.7 W                     | 26.3 Btu (IT)/h |
| RS20-0800T1T1SDAB | 2xTX port    | 5.3 W                     | 18.1 Btu (IT)/h |
| RS20-0800M2M2SDAB | 2xFX port    | 7.3 W                     | 26.3 Btu (IT)/h |

Table 7: Power consumption/power output RS20-...B

## ■ Scope of delivery

| Device       | Scope of delivery                                    |
|--------------|--|
| RS20-...SDAB | Device   |
|              | Terminal block for supply voltage and signal contact |
|              | Installation user manual and CD-ROM                  |

## ■ Order numbers/product description

See table on [page 15](#) “Combination options for the device variants of the RS20-...B”.

## ■ Accessories

| Name  | Order number |
|---|--------------|
| AutoConfiguration Adapter ACA 11                | 943 751-001  |
| Terminal cable                                  | 943 301-001  |
| 6-pin terminal block (50 pcs.)                  | 943 845-006  |
| Rail Power Supply RPS 30                        | 943 662-003  |
| Rail Power Supply RPS 80 EEC                    | 943 662-080  |
| Rail Power Supply RPS 120 EEC                   | 943 662-120  |
| Industrial HiVision Network Management Software | 943 156-xxx  |
| OPC server software HiOPC                       | 943 055-001  |

## ■ Underlying norms and standards

| Name                                       |  |
|--|--|
| cUL 508                                    | Safety for Industrial Control Equipment  |
| EN 50121-4                                 | Railway applications - EMC - emitted interference and interference immunity for signal and telecommunication systems                         |
| EN 55022                                   | IT equipment – radio interference characteristics  |
| EN 60079-15                                | Electrical equipment for explosive gas atmospheres – part 15: Construction, testing and marking of protection type "n" electrical apparatus. |
| EN 61000-6-2                               | Generic norm – immunity in industrial environments   |
| EN 61131-2                                 | Programmable logic controllers   |
| FCC 47 CFR Part 15                         | Code of Federal Regulations  |
| Germanischer Lloyd                         | Ship Applications - Classification and Construction Guidelines VI-7-3 Part 1 Ed.2003   |
| EN 60950-1                                 | Safety for the installation of IT equipment  |
| IEC/EN 61850-3                             | Communications networks and systems in substations   |
| IEEE 802.1 D                               | Switching, GARP, GMRP, Spanning Tree   |
| IEEE 802.1 D-1998                          | Media access control (MAC) bridges (includes IEEE 802.1p Priority and Dynamic Multicast Filtering, GARP, GMRP)                               |
| IEEE 802.1 Q                               | Tagging  |
| IEEE 802.3-2002                            | Ethernet   |
| IEEE 1613                                  | Standard Environment and Testing Requirements for Communication Networking Devices in Electric Power Substations                             |
| ISA 12.12.01 (cUL 1604), CSA C22.2 No. 213 | Electrical Equipment for Use in Class I and Class II, Div.2 and Class III Hazardous (Classified) Locations                                   |

*Table 8: List of norms and standards*

The device has a certification based on a specific standard only if the certification indicator appears on the housing.

However, with the exception of Germanischer Lloyd, ship certifications are only included in the product information under [www.hirschmann.com](http://www.hirschmann.com).





# A Further Support

## ■ Technical Questions

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

You will find the addresses of our partners on the Internet at <http://www.hirschmann.com>

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

You can contact us

in the EMEA region at

- ▶ Tel.: +49 (0)1805 14-1538
- ▶ E-mail: [hac.support@belden.com](mailto:hac.support@belden.com)

in the America region at

- ▶ Tel.: +1 (717) 217-2270
- ▶ E-mail: [inet-support.us@belden.com](mailto:inet-support.us@belden.com)

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- ▶ Tel.: +65 6854 9860
- ▶ E-mail: [inet-ap@belden.com](mailto:inet-ap@belden.com)

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