

User Manual

Installation Redundancy Switch RED25







Installation RED25 Release 02 07/2015 The naming of copyrighted trademarks in this manual, even when not specially indicated, should not be taken to mean that these names may be considered as free in the sense of the trademark and tradename protection law and hence that they may be freely used by anyone.

© 2015 Hirschmann Automation and Control GmbH

Manuals and software are protected by copyright. All rights reserved. The copying, reproduction, translation, conversion into any electronic medium or machine scannable form is not permitted, either in whole or in part. An exception is the preparation of a backup copy of the software for your own use. For devices with embedded software, the end-user license agreement on the enclosed CD/DVD applies.

The performance features described here are binding only if they have been expressly agreed when the contract was made. This document was produced by Hirschmann Automation and Control GmbH according to the best of the company's knowledge. Hirschmann reserves the right to change the contents of this document without prior notice. Hirschmann can give no guarantee in respect of the correctness or accuracy of the information in this document.

Hirschmann can accept no responsibility for damages, resulting from the use of the network components or the associated operating software. In addition, we refer to the conditions of use specified in the license contract.

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

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

Contents

	Safety instructions	5
	About this manual	11
	Кеу	11
1	Description	12
1.1	General description	12
1.2	Device name and product code	13
1.3	Device views	16
1.4	Power supply	17
1.5	Ethernet ports 1.5.1 10/100 Mbit/s twisted pair port 1.5.2 100 Mbit/s F/O port (optional)	17 17 18
1.6	Display elements 1.6.1 Device state 1.6.2 Port state	18 18 19
1.7	Management interfaces 1.7.1 V.24 interface (external management) 1.7.2 USB interface	19 19 20
1.8	Signal contact	21
2	Installation	22
2.1	Checking the package contents	22
2.2	Installing and grounding the device 2.2.1 Installing the device onto the DIN rail 2.2.2 Grounding the device	22 23 23
2.3	Installing an SFP transceiver (optional)	23
2.4	Connecting the power supply and signal lines	24
2.5	Operating the device	26
2.6	Connecting data cables	26
2.7	Filling out the inscription label	26
3	Making basic settings	27
4	Monitoring the ambient air temperature	28

5	Maintenance and service	29	
6	Disassembly	30	
6.1	Removing the device	30	
6.2	Removing an SFP transceiver (optional)	31	
7	Technical data	32	
A	Further Support	39	

Safety instructions

WARNING

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.

Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

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

General safety instructions

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

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

Qualification requirements for personnel

 $\hfill\square$ 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.

Intended usage

- □ Use the product only for the application cases described in the Hirschmann product information, including this manual.
- Operate the product only according to the technical specifications.
 See "Technical data" on page 32.
- □ Connect to the product only components suitable for the requirements of the specific application case.

National and international safety regulations

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

Grounding the device

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

- \Box Ground the device before connecting any other cables.
- □ Disconnect the grounding only after disconnecting all other cables.

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

Requirements for connecting electrical conductors

- □ RED25 is a Class III device according to IEC 61010-2-201.
- □ Before connecting the electrical conductors, **always** verify that all of the requirements listed are fulfilled:

All of the following requirements are fulfilled:

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



Relevant for North America:

The power supply cables are suitable for ambient air temperatures of at least 176 °F (80 °C). The power supply cable wires are made of copper.

 Table 1:
 General requirements for connecting electrical conductors

All of the following requirements are fulfilled:

- The voltage connected meets the requirements for a safety extra-low voltage (SELV) as per IEC/EN 60950-1.
- The connected voltage is limited by a current limitation device or a fuse. Observe the electrical threshold values for the signal contact. See "General technical data" on page 32.

Table 2: Requirements for connecting the signal contact

Relevance	Requirements				
Absolutely relevant	 All of the following requirements are fulfilled: The supply voltage corresponds to the voltage specified on type plate of the device. The power supply conforms to overvoltage category I or II. The power supply has an easily accessible disconnecting de (e.g., a switch or a plug). This disconnecting device is clearly tified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable. The wire diameter of the power supply cable is at least 0.75 (North America: AWG18) on the supply voltage input. The cross-section of the ground conductor is the same size bigger than the cross-section of the power supply cables. 				
Relevant when the		rements are alternatively fulfilled:			
device is supplied via 1 voltage input	Alternative 1	The voltage supply meets the requirements for a limited power source (LPS) as per EN 60950-1.			
	Alternative 2	Relevant for North America: The voltage supply meets the requirements as per NEC Class 2			
	Alternative 3	 All of the following requirements are fulfilled: The voltage supply meets the requirements for a safety extra-low voltage (SELV) as per IEC/EN 60950-1. Supply with DC voltage: A fuse suitable for DC voltage is located in the plus conductor of the power supply. The minus conductor is on ground potential. Otherwise, a fuse is also located in the minus conductor. Regarding the properties of this fuse: See "General technical data" on page 32. Supply with AC voltage: A fuse is located in the outer conductor of the power supply. The neutral conductor is on ground potential. Otherwise, a fuse is also located in the neutral conductor. Regarding the properties of this fuse: See "General technical data" on page 32. Supply with AC voltage: A fuse is located in the outer conductor of the power supply. The neutral conductor is on ground potential. Otherwise, a fuse is also located in the neutral conductor. Regarding the properties of this fuse: See "General technical data" on page 32. 			

 Table 3:
 Requirements for connecting the supply voltage

Relevance	Requirements					
Relevant when the	The following requirements are alternatively fulfilled:					
device is supplied via 2 voltage inputs	Alternative 1	The total voltage supply meets the requirements for a limited power source (LPS) as per EN 60950-1.				
	Alternative 2	Relevant for North America: The total voltage supply meets the requirements as per NEC Class 2.				
	Alternative 3	 All of the following requirements are fulfilled: The voltage supply meets the requirements for a safety extra-low voltage (SELV) as per IEC/EN 60950-1. Supply with DC voltage: A fuse suitable for DC voltage is located at both voltage inputs in the plus conductor of the power supply. The minus conductor is on ground potential at both voltage inputs. Otherwise, a fuse is also located in the minus conductor. Regarding the properties of this fuse: See "General technical data" on page 32. Supply with AC voltage: A fuse is located at both voltage inputs in the outer conductor of the power supply. The neutral conductor is on ground potential at both voltage inputs of this fuse: See "General technical data" on page 32. Supply with AC voltage: A fuse is located at both voltage inputs in the outer conductor of the power supply. The neutral conductor is on ground potential at both voltage inputs. Otherwise, a fuse is also located in the neutral conductor. Regarding the properties of this fuse: See "General technical conductor. 				

Table 3: Requirements for connecting the supply voltage

Supply voltage

The supply voltage is only connected with the chassis via protective elements.

Installation site requirements

- □ Verify that there is at least 4 in (10 cm) of space above and below the device.
- □ Verify that there is at least 0.8 in (2 cm) of space on the right and left sides of the device.
- □ Install the device in a fire protected enclosure according to EN 60950-1.

Housing

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

- 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.
- $\hfill\square$ Keep the ventilation slits free to ensure good air circulation.
- $\hfill\square$ Install the device in the vertical position.

CE marking

The labeled 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 (EMC)

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 Germany Tel.: +49 1805 141538

The device can be used in the industrial sector.

- Interference immunity: EN 61000-6-2
- Emitted interference: EN 55022

You find more information on technical and industry standards here: "Technical data" on page 32

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.

LED or laser components

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

FCC note:

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

ments 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 these frequencies. If it is not installed and used in accordance with this operating manual, it can cause radio transmission interference. The use of this device in a residential area can also cause interference, and in this case the user is obliged to cover the costs of removing the interference.

Recycling note

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

About this manual

The "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/DVD supplied:

- Installation user manual
- Basic Configuration user manual
- Redundancy Configuration user manual
- Reference manual for the graphical user interface
- Command Line Interface reference manual
- User Manual Industry Protocols

The Industrial HiVision network management software provides you with additional options for smooth configuration and monitoring:

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

Key

The symbols used in this manual have the following meanings:

Listing
Work step
Subheading

1 Description

1.1 General description

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

- Types of connectors
- Temperature range
- Certifications
- Redundancy functions

The RED25 devices are designed for the special requirements of industrial automation. They meet the relevant industry standards, provide very high operational reliability, even under extreme conditions, and also long-term reliability and flexibility.

The devices work without a fan.

The device is mounted by latching in place on a DIN rail.

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

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

The redundancy concept allows the network to be reconfigured quickly.

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

- a Web browser
- SSH
- Telnet
- ► HiDiscovery (Software for putting the device into operation)
- network management software (e.g. Industrial HiVision)
- a V.24 interface (locally on the device)

The devices provide you with a large range of functions, which the manuals for the operating software inform you about. You will find these manuals as PDF files on the enclosed CD/DVD, or you can download them from the Internet on the Hirschmann product pages (www.hirschmann.com).

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

1.2 Device name and product code

The device name corresponds to the product code. The product code is made up of characteristics with defined positions. The characteristic values stand for specific product properties.

ltem	Characteristic	Charac- teristic value	Description				
1 3	Product	RED					
4	Data rate	2	Fast Ethernet switch				
5	Hardware type	5	Extended redundancy				
6		_					
7 8	Number Fast Ethernet ports	04	4 × Fast Ethernet ports				
9 10	Number Gigabit Ethernet ports	00	0 × Gigabit Ethernet ports				
11 13	Configuration of the uplink ports	2T1	2 ×	RJ45 socket for 10/100 Mbit/s twisted pair connections			
		2Z6	2 ×	SFP slot for 100 Mbit/s F/O connections			
14 15	Configuration of the other ports	TT	2 ×	RJ45 socket for 10/100 Mbit/s twisted pair connections			
16		_					
17	Temperature range	S	Stand	lard 0 °C +60 °C (+32 °F +140 °F)			
		Т	Extended -40 °C +60 °C				
		E	Extended with -40 °C +60 °C conformal coating				
18 19	Supply voltage	DD	2 volt	age inputs for redundant power supply			
				l voltage range DC 48 V			
			Nominal voltage AC 24 V				
20 21	Certificates and decla- rations	cla- Note: You will find detailed information on the certificates a declarations applying to your device in a separate overvie See table 5 on page 14.					
22 23	Customer-specific	HM	Hirsc	nmann Fast MRP			
	version	HP	Hirsc	nmann PRP			
		HH	Hirscl	nmann HSR			
		HD	From	software version 05.0 onward:			
			Hirschmann DLR				
		Note: The able with e HM HP HH		ng redundancy functions are interchange- her:			
24	Software configura- tion	E	Entry	(without configuration)			

Table 4:Device name and product code

ltem	Characteristic	Charac- teristic value	Description
25 26	Software level	2S	HiOS Layer 2 Standard
27 31	Software version	04.1.	Software-Version 04.1
		XX.X.	Current software version
32 33	Bug fix	00	Bugfix version 00
		XX	Current bugfix version

 Table 4:
 Device name and product code

Application case	Certificates and declarations	Characteristic value		
		Y9	Z 9	
Standard applications	CE	Х	Х	
	EN 60950-1	Х	Х	
	EN 61131-2	Х	Х	
	FCC	Х	Х	
	UL 61010-1, UL 61010-2-210	Х		

 Table 5:
 Assignment: application cases, certificates and declarations, characteristic values

	ltem	Characteristic	Desc	ription		
RED	1 3	Product				
N	4	Data rate	Fast I	Ethernet switch		
J	5	Hardware type	Exten	ded redundancy		
	6					
04	7 8	Number Fast Ethernet ports	4 ×	Fast Ethernet ports		
00	9 10	Number Gigabit Ethernet ports	0 ×	Gigabit Ethernet ports		
2T1	11 13	Configuration of the uplink ports	2 ×	RJ45 socket for 10/100 Mbit/s twisted pair connections		
Ŧ	14 15	Configuration of the other ports	2 ×	RJ45 socket for 10/100 Mbit/s twisted pair connections		
Т	16					
S	17	Temperature range	Stand	lard 0 °C +60 °C (+32 °F +140 °F)		
D	18 19	Supply voltage	2 volt	age inputs for redundant power supply		
			Rated voltage range DC 12 V 48 V			
			Nomi 24 V	nal voltage AC		
6人	20 21	Certificates and declara-	Stand	lard applications		
		tions	► C			
				N 60950-1 N 61131-2		
				CC		
				L 61010-1, UL 61010-2-210		
MH		Customer-specific version	Hirsc	nmann Fast MRP		
Ш	24	Software configuration	Entry	(without configuration)		
2S	25 26	Software level	HiOS	Layer 2 Standard		
04.1.	27 31	Software version	Softw	are-Version 04.1		
00	32 33	Bug fix	Bugfi	x version 00		

 Table 6:
 Sample product code (left column):



1a 6 pin, screwable terminal block for redundant supply voltage and signal contact
--

- 1b Terminal block connection
- 2 On top of the device:
- Reset button

(no function in the existing device version)

- 3 LED display elements for device status
- 4 USB interface
- 5 V.24 interface
- 6 Other ports

2 ×	RJ45	socket	for	10/	100	Mbit/s	twisted	pair	connections

7	Uplink ports		
	alternatively, depending on device variant	Characteristic value 2Z6	2 × SFP slot for 100 Mbit/s F/O connections
		Characteristic value 2T1	2 × RJ45 socket for 10/100 Mbit/s twisted pair connections
8	Grounding scre	W	

Table 7: Front view:

on the left: Device variants RED25-04002T1TT-.DD....E2S...... on the right: Device variants RED25-04002Z6TT-.DD....E2S......

10 MAC address of device (label)

11 Label area for IP address of device

 Table 7:
 Front view:

 on the left: Device variants RED25-04002T1TT-.DD....E2S......

 on the right: Device variants RED25-04002Z6TT-.DD....E2S......

1.4 Power supply

A 6-pin, screwable terminal block is available for the redundant supply to the device.

For further information see "Supply voltage" on page 25.

1.5 Ethernet ports

1.5.1 10/100 Mbit/s twisted pair port

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

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

Delivery state: autonegotiation active

The socket housing is electrically connected with the front panel.

The pin assignment corresponds to MDI-X.

	Pin	Funct	ion
1	1	RD+	Receive path
	2	RD-	Receive path
	3	TD+	Transmission path
5	6	TD-	Transmission path
	4,5,7,8	—	



1.5.2 100 Mbit/s F/O port (optional)

This port is an SFP slot.
The 100 Mbit/s F/O port offers you the ability to connect network components according to the IEEE 802.3 100BASE-FX standard.
This port supports:
▶ Full or half duplex mode
Default setting: Full duplex

1.6 Display elements

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

1.6.1 Device state

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

ACA _____ RM Power O O O O Status

LED	Display	Color	Activity	Meaning
Power	Supply voltage	_	None	Supply voltage is too low
		Yellow	Lights up	Device variants with redundant power supply: Supply voltage 1 or 2 is on
			flashes 4 times a period	Software update is running. Maintain the power supply.
		Green	Lights up	Device variants with redundant power supply: Supply voltages 1 and 2 are on
				Device variants with single power supply: Supply voltage is on
Status	Device Status	_	None	Device is starting and/or is not ready for operation
		Green	Lights up	Device is ready for operation. Characteristics can be configured
		Red	Lights up	Device is ready for operation. Device has detected at least one error in the monitoring results
			Flashes 1 time a period	The boot parameters used when the device has been started differ from the boot parameters saved. Start the device again.
			flashes 4 times a period	Device has detected a multiple IP address

LED	Display	Color	Activity	Meaning
RM	RM Ring Manager — None No redund		No redundancy configured	
		Green	Lights up	Redundancy exists
			Flashes 1 time a period	Device is reporting an incorrect configura- tion of the RM function
		Yellow	Lights up	No redundancy exists
ACA	Storage medium	_	None	ACA storage medium not connected
	ACA21-	Green	Lights up	ACA storage medium connected
	USB/ACA22-USB		Flashes 3 times a period	Device writes to/reads from the storage medium
		Yellow	Lights up	ACA storage medium inoperative

1.6.2 Port state

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

Display	Color	Activity	Meaning
Link status	_	None	Device detects an invalid or missing link
	Green	Lights up	Device detects a valid link
		Flashes 1 time a period	Port is switched to stand-by
		Flashes 3 times a period	Port is switched off
Yellow Lights up		Lights up	Device detects a non- supported SFP trans- ceiver or a non- supported data rate
		Flashing	Device is transmitting and/or receiving data
		Flashes 1 time a period	Device detects at least one unauthorized MAC address (Port Security Violation)

1.7 Management interfaces

1.7.1 V.24 interface (external management)

The V.24 interface is a serial interface for the local connection of an external management station (VT100 terminal or PC with terminal emulation). The interface allows you to set up a data connection to the Command Line Interface (CLI) and to the system monitor.

The V.24 interface is an RJ11 socket.

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

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



Figure 1: Pin assignment of the V.24 interface and the DB9 connector

Note: You find the order number for the terminal cable, which is available as accessory, under "Accessories" on page 37.

1.7.2 USB interface

This interface offers you the ability to connect the storage medium AutoConfiguration AdapterACA21-USB/ACA22-USB. This storage medium is used for saving/loading the configuration and diagnostic functions, and for loading the software.

The USB interface has the following properties:

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

Figure	Pin	Operation
1234	1	VCC (VBus)
	2	- Data
	3	+ Data
	4	Ground (GND)



1.8 Signal contact

The signal contact is a potential-free relay contact.

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

For further information see "Connecting the power supply and signal lines" on page 24.

2 Installation

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

On delivery, the device is ready for operation.

Perform the following steps to install and configure the device:

- Checking the package contents
- Installing and grounding the device
- Installing an SFP transceiver (optional)
- Connecting the power supply and signal lines
- Operating the device
- Connecting data cables
- Filling out the inscription label
- Making basic settings

2.1 Checking the package contents

Proceed as follows:

- □ Check whether the package includes all items named in the section "Scope of delivery" on page 37.
- \Box Check the individual parts for transport damage.

2.2 Installing and grounding the device

WARNING

FIRE HAZARD

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

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

2.2.1 Installing the device onto the DIN rail

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

- □ Verify that there is at least 4 in (10 cm) of space above and below the device.
- □ Verify that there is at least 0.8 in (2 cm) of space on the right and left sides of the device.

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

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



2.2.2 Grounding the device

The device has a functional ground connection. \Box Ground the device via the ground screw.

2.3 Installing an SFP transceiver (optional)

For this device, only use suitable SFP modules from Hirschmann. See "Accessories" on page 37.

Proceed as follows:

- \Box Remove the protective cap from the SFP transceiver.
- □ Push the SFP transceiver with the lock closed into the socket until you hear it latch in.



2.4 Connecting the power supply and signal lines

ELECTRIC SHOCK

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.

Before connecting the electrical conductors, **always** verify that all of the requirements listed are fulfilled:

See "Requirements for connecting electrical conductors" on page 6.

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



	1	Pow	er supply	connection 1
_		1a	24 V	
0		1b	0 V	
	2	Con	nection fo	r the signal contact
h	3	Power supply connection 2		
0		3a	0 V	
		3b	24 V	

Table 10: Pin assignment: 6 pin, screwable terminal block (on the top), connectionto the device (at the bottom)

Supply voltage

The supply voltage is only connected with the chassis via protective elements.

You have the option of supplying the supply voltage redundantly, without load distribution.

Both inputs are coupled with the supply connections via bridge rectifiers. With redundant power supply, the power supply unit with the higher output voltage supplies the device on its own.

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.

Type of the voltages that can be connected	Specification of the supply voltage	Pin assignment on the device	
DC voltage	Rated voltage range DC 12 V 48 V Voltage range DC incl. maximum tolerances 9.6 V 60 V	24 V Plus terminal of the supply voltage0 V Minus terminal of the supply voltage	
AC voltage	Nominal voltage AC 24 V Voltage range AC incl. maximum tolerances 18 V 30 V	24 V Outer conductor 0 V Neutral conductor	

Table 11: Type and specification of the supply voltage, pin assignment on the
device

- \Box Remove the power connector from the device.
- □ Connect the wires according to the pin assignment on the device with the clamps.
- \Box Fasten the wires connected by tightening the terminal screws.

Signal contact (optional)

- □ Connect the wires according to the pin assignment on the device with the clamps.
- \Box Fasten the wires connected by tightening the terminal screws.

2.5 **Operating the device**

WARNING

ELECTRIC SHOCK

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

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

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

- □ Mount the terminal block for the supply voltage and the signal contact using screws.
- \Box Enable the supply voltage.

2.6 Connecting data cables

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

- Keep the length of the data cables as short as possible.
- Use optical data cables for the data transmission between the buildings.
- When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- ▶ Use shielded cables (SF/UTP cables as per ISO/IEC 11801:2002).
- \Box Connect the data cables according to your requirements.

For further information see "Ethernet ports" on page 17.

2.7 Filling out the inscription label

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

3 Making basic settings

Note: Two or more devices configured with the same IP address can cause unpredictable operation of your network.

Install and maintain a process that assigns a unique IP address to every device in the network.

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

- Entry via V.24 connection
- Entry with the aid of the HiDiscovery logs on the applications HiDiscovery or Industrial HiVision
- Configuration via BOOTP
- Configuration via DHCP (Option 82)
- ACA21-USB/ACA22-USB

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

Default settings

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

4 Monitoring the ambient air temperature

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

See "General technical data" on page 32.

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

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

5 Maintenance and service

- When designing this device, Hirschmann largely avoided using 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 are continually working on improving and developing their software. Check regularly whether there is an updated version of the software that provides you with additional benefits. You find information and software downloads on the Hirschmann product pages on the Internet (www.hirschmann.com).
- Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed.

Note: You will find information about the complaints and returns procedures on the Internet under

http://www.beldensolutions.com/en/Service/Repairs/index.phtml .

6 Disassembly

6.1 Removing the device

- \Box Disconnect the data cables.
- \Box Disable the supply voltage.
- \Box Disconnect the terminal blocks.
- \Box Disconnect the grounding.

To remove the device from the DIN rail, you proceed as follows:

- \Box Insert a screwdriver horizontally below the housing into the locking gate.
- □ Pull the locking gate down without tilting the screwdriver.
- □ Lift the bottom of the device away from the DIN rail.



6.2 Removing an SFP transceiver (optional)

Proceed as follows:

 \Box Pull the SFP transceiver out of the socket by means of the opened lock.



 $\hfill\square$ Close the SFP transceiver with the protective cap.

7 Technical data

General technical data

Dimensions W × H × D	See "Dimension drawings" on p	age 34.
Weight	RED25-04002T1TT	300 g
-	RED25-04002Z6TT	320 g
Power supply	See "Requirements for connecti	ing electrical conductors" on page 6.
	2 voltage inputs for redundant p	ower supply
	Nominal voltage AC	24 V
	Voltage range AC incl. maximum tolerances	18 V 30 V
	Rated voltage range DC	12 V 48 V
	Voltage range DC incl. maximum tolerances	9,6 V 60 V
	Connection type	6 pin, screwable terminal block for redundant supply voltage and signal contact
	Power failure bypass	> 10 ms at 20.4 V DC or AC > 2 ms at 10.2 V DC
	Overload current protection at input	Non-replaceable fuse
	Back-up fuse for each voltage	Nominal value at 48 V 1 A
	input when supply is via 2 inputs	Nominal value at 24 V 1 A 2 A
		Nominal value at 12 V 1 A 2.5 A
		Characteristic: slow blow
	Back-up fuse when 1 voltage input used	Nominal value at 48 V 1 A 2 A
		Nominal value at 24 V 1 A 4 A
		Nominal value at 12 V 1 A 5 A
		Characteristic: slow blow
	Peak inrush current	< 14 A
	Permitted peak values for the in to the ground potential of the ho	put voltage with respect ± 60 V busing
Climatic condi- tions during		Top and bottom device side: 3.94 in (10 cm) Left and right device side: 0.79 in (2 cm)
operation		Derating ^a : siehe Hirschmann-Produkt-Webseite unter http://www.hirschmann.com
	Ambient air temperature ^b Indoor use only.	Devices with operating temperature charac- teristic value S (standard): +32 °F +140 °F (0 °C +60 °C)
		Devices with operating temperature charac- teristic value E and T (extended): -40 °F +140 °F (-40 °C +60 °C) ^c
	Maximum inner temperature of device (guideline)	194 °F (90 °C)
	Humidity	10 % 95 % (non-condensing)
	Air pressure (altitude)	minimum 700 hPa (+9842 ft; +3000 m) maximum 1060 hPa (−1312 ft; −400 m)

Climatic condi-	Ambient air temperature ^d	−40 °F +185 °F (−40 °C +85 °C)	
tions during	Humidity	10 % 95 %	
storage		(non-condensing)	
	Air pressure (altitude)	minimum 700 hPa (+9842 ft; +3000 m) maximum 1060 hPa (−1312 ft; −400 m)	
Signal contact	See "Requirements for conne	ing electrical conductors" on page 6.	
FAULT	Switching current	max. 1 A	
	Switching voltage	max. 60 V DC	
		Relevant for North America: max. 30 V DC, resistive load	
Pollution degree		2	
Protection	Laser protection	Class 1 in compliance with IEC 60825-1	
classes	Degree of protection	IP20	

а.

b.

Reduction of the maximum permitted ambient air temperature under specific conditions Temperature of the ambient air at a distance of 2 inches (5 cm) from the device Use SFP transceivers with the "EEC" extension only, otherwise the temperature range +32 °F ... +140 °F (0 °C ... +60 °C) applies. Temperature of the ambient air at a distance of 2 inches (5 cm) from the device C.

d.

Dimension drawings



Figure 2: Dimensions

EMC and immunity

Stability		
IEC 60068-2-6, test Fc	Vibration	5 Hz 8.4 Hz with 0.14 in. (3.5 mm) ampli- tude
		8.4 Hz 150 Hz with 1 g
IEC 60068-2-27, test Ea	Shock	15 g at 11 ms
EMC interference emis- sion		
Radiated emission		
EN 55022		Class A
FCC 47 CFR Part 15		Class A
EN 61000-6-4		Fulfilled
Conducted emission		
EN 55022	AC and DC supply connections	Class A
FCC 47 CFR Part 15	AC and DC supply connections	Class A
EN 61000-6-4	AC and DC supply connections	Fulfilled
EN 55022	Telecommunication connections	Class A
EN 61000-6-4	Telecommunication connections	Fulfilled
EMC interference immu- nity		
Electrostatic discharge		
EN 61000-4-2 IEEE C37.90.3	Contact discharge	± 4 kV
EN 61000-4-2 IEEE C37.90.3	Air discharge	± 8 kV
Electromagnetic field		
EN 61000-4-3	80 MHz 3000 MHz	10 V/m
Fast transients (burst)		
EN 61000-4-4 IEEE C37.90.1	AC/DC supply connection	± 2 kV
EN 61000-4-4 IEEE C37.90.1	Data line	± 1 kV
Voltage surges - DC sup	ply connection	
EN 61000-4-5	line/ground	± 2 kV
EN 61000-4-5	line/line	± 1 kV
Voltage surges - AC sup	ply connection	
EN 61000-4-5	line/ground	± 2 kV
EN 61000-4-5	line/line	± 1 kV
Voltage surges - data lin	e	
EN 61000-4-5	line/ground	± 1 kV
Conducted disturbances		
EN 61000-4-6	150 kHz 80 MHz	10 V

Network range

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

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

Table 12: Fiber port 100BASE-FX (SFP fiber optic Fast Ethernet Transceiver)

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

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

10/100/1000 Mbit/s twisted pair port	
Length of a twisted pair segment	max. 100 m (for cat5e cable)

Power consumption/power output, order numbers

The order numbers correspond to the product codes of the devices. See "Device name and product code" on page 13.

Device name	Maximum power consumption	Power output
RED25-04002T1TT	7 W	24 BTU (IT)/h
RED25-04002Z6TT	9 W	31 BTU (IT)/h

Scope of delivery

Number	Article
1 ×	Device
1 ×	6 pin, screwable terminal block for redundant supply voltage and signal contact
1 ×	Installation user manual
1 ×	CD/DVD with manual

Accessories

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

Name	Order number
Terminal cable	943 301-001
AutoConfiguration Adapter ACA 22-USB (EEC)	942 124-001
6-pin, screwable terminal block (50 pcs.)	943 845-013
Network management software Industrial HiVision	943 156-xxx
Dust protection cap (50 pieces) for RJ 45 sockets	943 936-001
Dust protection cap (25 pieces) for SFP slot	943 942-001
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
Fast Ethernet SFP transceiver	Order number
M-FAST SFP-TX/RJ45	942 098-001
M-FAST SFP-TX/RJ45 EEC	942 098-002

Note the following for the M-FAST SFP-TX... transceiver:

Can be used with:

- HiOS from software version 03.0.00
- On the PRP ports of the RSP devices starting with software version 02.0.01
- On the PRP ports of the EES devices starting with software version 02.0.02
- Classic Switch Software from software version 08.0.00
- HiSecOS ab Software-Version 01.2.00
- Twisted-pair ports realized through this transceiver have longer link failure detection times compared with twisted-pair ports provided by the device directly.
- When using these SFP transceivers, assume a higher switching time for RSTP.
- Not applicable for combo ports.

M-FAST SFP-MM/LC	943 865-001
M-FAST SFP-MM/LC EEC	943 945-001

Fast Ethernet SFP transceiver	Order number
M-FAST SFP-SM/LC	943 866-001
M-FAST SFP-SM/LC EEC	943 946-001
M-FAST SFP-SM+/LC	943 867-001
M-FAST SFP-SM+/LC EEC	943 947-001
M-FAST SFP-LH/LC	943 868-001
M-FAST SFP-LH/LC EEC	943 948-001

Underlying technical standards

Name	
EN 55022	Information technology equipment – Radio disturbance character- istics – Limits and methods of measurement
EN 60950-1	Information technology equipment – Safety – Part 1: General requirements
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic stan- dards – Immunity for industrial environments
EN 61131-2	Programmable controllers – Part 2: Equipment requirements and tests
FCC 47 CFR Part 15	Code of Federal Regulations
IEEE 802.1AB	Station and Media Access Control Connectivity Discovery
IEEE 802.1D	MAC Bridges (switching function)
IEEE 802.1Q	Virtual LANs (VLANs, MRP, Spanning Tree)
IEEE 802.3	Ethernet
UL/IEC 61010-1, UL/IEC 61010-2-201	Safety for Control Equipment

Table 13: List of technical and industry standards

The device has an approval based on a specific standard or de facto standard only if the approval indicator appears on the housing.

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

A Further Support

Technical Questions

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

You 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

in the America region at

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

in the Asia-Pacific region at

- ▶ Tel.: +65 6854 9860
- E-mail: inet-ap@belden.com

Hirschmann Competence Center

The Hirschmann Competence Center is ahead of its competitors:

- Consulting incorporates comprehensive technical advice, from system evaluation through network planning to project planning.
- Training offers you an introduction to the basics, product briefing and user training with certification. The current technology and product training courses can be found at http://www.hicomcenter.com
- Support ranges from the first installation through the standby service to maintenance concepts.

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

http://www.hicomcenter.com

