SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XCH-100/XCM-100

Equipment Manual

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Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

1

Purpose of the Operating Instructions

These operating instructions will help you to install and connect devices of the SCALANCE XCH-100/XCM-100 product group.

Validity of the Operating Instructions

These operating instructions apply to the following devices:

- SCALANCE XCH108PoE
- SCALANCE XCM108PoE

Unless mentioned otherwise, the descriptions in these operating instructions refer to all devices of the SCALANCE XCH-100/XCM-100 product group specified in the scope of validity.

Designations used

Classification	Description	Terms used
Product line	The product line includes all devices and variants of all product groups. If information applies to all product groups within the product line, the term SCALANCE X-100 is used.	SCALANCE X-100
Product group	If information applies to all devices and versions of a product group, the term SCALANCE XCM-100 is used.	SCALANCE XCH-100/ XCM-100
Device	If information relates to a specific device, the device name is used.	e.g. SCALANCE XCM108PoE

Further documentation

In the system manuals "Industrial Ethernet / PROFINET Industrial Ethernet" and "Industrial Ethernet / PROFINET passive network components", you will find information on other SIMATIC NET products that you can operate along with the devices of this product line in an Industrial Ethernet network.

There, you will find among other things optical performance data of the communications partner that you require for the installation.

You will find the system manuals here:

- On the data medium that ships with some products:
  - Product CD / product DVD
  - SIMATIC NET Manual Collection
- On the Internet pages of Siemens Industry Online Support:
  - Industrial Ethernet / PROFINET Industrial Ethernet System Manual (https://support.industry.siemens.com/cs/ww/en/view/27069465)
  - Industrial Ethernet / PROFINET Passive Network Components System Manual (https://support.industry.siemens.com/cs/ww/en/view/84922825)

SIMATIC NET manuals

You will find the SIMATIC NET manuals here:

- On the Internet pages of Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/15247).

SIMATIC NET glossary

Explanations of many of the specialist terms used in this documentation can be found in the SIMATIC NET glossary.

You will find the SIMATIC NET glossary here:

- SIMATIC NET Manual Collection or product DVD
  The DVD ships with certain SIMATIC NET products.
- On the Internet under the following address:
  50305045 (https://support.industry.siemens.com/cs/ww/en/view/50305045)

Cybersecurity notes

1.1 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit
https://www.siemens.com/cybersecurity-industry (https://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

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https://new.siemens.com/cert (https://www.siemens.com/cert).

Catalogs

You will find the article numbers for the Siemens products of relevance here in the following catalogs:

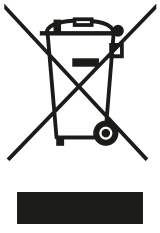
- SIMATIC NET Industrial Communication / Industrial Identification, catalog IK PI
- SIMATIC Products for Totally Integrated Automation and Micro Automation, catalog ST 70
- Industry Mall - catalog and ordering system for automation and drive technology, Online catalog (https://mall.industry.siemens.com/goos/WelcomePage.aspx?regionUrl=/en&language=en)

You can request the catalogs and additional information from your Siemens representative.

Device defective

If a fault develops, send the device to your SIEMENS representative for repair. Repairs on-site are not possible.

Recycling and disposal



The products are low in pollutants, can be recycled and meet the requirements of the WEEE directive 2012/19/EU for the disposal of electrical and electronic equipment.

Do not dispose of the products at public disposal sites.

For environmentally friendly recycling and the disposal of your old device contact a certified disposal company for electronic scrap or your Siemens contact (Product return (https://support.industry.siemens.com/cs/ww/en/view/109479891)).

Note the different national regulations.

Trademarks

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SCALANCE, C-PLUG, OLM

Industry Online Support

In addition to the product documentation, you are supported by the comprehensive online information platform of Siemens Industry Online Support at the following Internet address:
Link: (https://support.industry.siemens.com/cs/de/en/)

Apart from news, there you will also find:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option submitting a support query:
  Link: (https://support.industry.siemens.com/cs/my?lc=en-WW)
- Our service offer:
  Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

You will find contact data on the Internet at the following address:
Link: (https://www.automation.siemens.com/aspa_app/?ci=yes&lang=en)

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The training offer includes more than 300 courses on basic topics, extended knowledge and special knowledge as well as advanced training for individual sectors - available at more than 130 locations. Courses can also be organized individually and held locally at your location.

You will find detailed information on the training curriculum and how to contact our customer consultants at the following Internet address:

Link: (https://new.siemens.com/global/en/products/services/industry/sitrain/personal.html)

Industrial Networks Education

Training and certification for Industrial Networks

In our Industrial Networks Education courses you'll learn to design and implement wired and wireless data networks and connect them to a corporate network. You will also receive instruction on how to secure, diagnose and optimize communication networks. Certification can also be offered to supplement almost all training courses.

Link: (https://www.siemens.com/industrial-networks-education)

Electrostatic discharge



NOTICE

Electrostatic sensitive devices (ESD)

Electronic modules contain electrostatic sensitive components

These components can easily be destroyed if handled incorrectly.

Note the following instructions to avoid damage.

- Touch electronic modules only when you absolutely need to work on them.
- If electronic modules need to be touched, the body of the person involved must first be electrostatically discharged and grounded.
- Do not bring electronic modules in contact with electrically isolating materials such as plastic film, isolating table top pads or clothing made of synthetic fibers.
- Place the modules only on conductive surfaces.
- Pack, store and transport electronic modules and components only in their product packaging or in a conductive packaging such as metalized plastic or metal containers, conductive foam or household aluminum foil.

Safety notices

2

Read the safety notices

Note the following safety notices. These relate to the entire working life of the device.

You should also read the safety notices relating to handling in the individual sections, particularly in the sections "Installation" and "Connecting up".

⚠ CAUTION
To prevent injury and damage, read the manual before using the device.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

⚠ WARNING
EXPLOSION HAZARD
Do not open the device when the supply voltage is turned on.

Safety instructions for use in hazardous locations according to UL/FM HazLoc

If you use the device under UL or FM HazLoc conditions, you must also adhere to the following safety instructions in addition to the general safety instructions for protection against explosion:

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

This equipment is suitable for use in Class I, Zone 2, Group IIC or non-hazardous locations only.

Description of the device

3

3.1 Product overview

Article numbers

Device	Description	Article number
SCALANCE XCH108PoE	6 x 10/100/1000 Mbps RJ45 ports, 2 x SFP transceiver slots with 1000/10000 Mbps, coated printed circuit boards	6GK5108-2RS00-2FC2
SCALANCE XCM108PoE	6 x 10/100/1000 Mbps RJ45 ports, 2 x SFP transceiver slots with 1000/10000 Mbps	6GK5108-2RS00-2AC2
	8 x 10/100 Mbps RJ-45 ports	6GK5108-0PA00-2AC2
	8 x 10/100/1000 Mbps RJ45 ports	6GK5108-0RA00-2AC2

Unpacking and checking

⚠ WARNING

Do not use any parts that show evidence of damage

If you use damaged parts, there is no guarantee that the device will function according to the specification.

If you use damaged parts, this can lead to the following problems:

- Injury to persons
- Loss of the approvals
- Violation of the EMC regulations
- Damage to the device and other components

Use only undamaged parts.

1. Make sure that the package is complete.
2. Check all the parts for transport damage.

Components of the product

The following components are supplied with the device:

- One IE switch
- A 4-pin terminal block for the power supply (spring-loaded terminal)
- A 2-pin terminal block for the signaling contact (spring-loaded terminal)

Spare parts

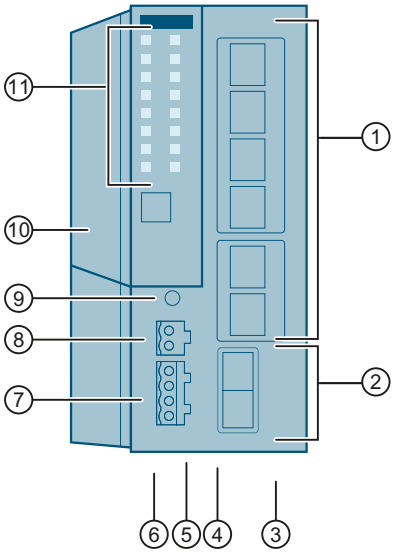
The following spare parts are available for the device:

Component	Description	Article number
Spring-loaded terminal block, 4 terminals	4-pole spring-loaded terminal block to connect the power supply, for SCALANCE X/W/S/M, pack of 5	6GK5 980-1DB10-0AA5
Spring-loaded terminal block, 2 terminals	2-pole spring-loaded terminal block to connect the signaling contact, for SCALANCE X/W/S/M, pack of 5	6GK5 980-0BB10-0AA5

3.2 Device views

3.2.1 Device view of a SCALANCE XCH-100/XCM-100 with SFP transceiver slots

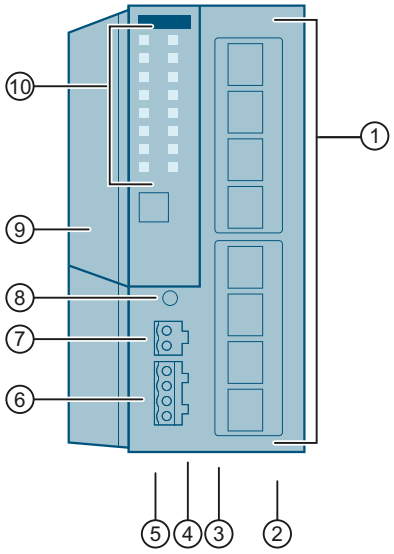
The following figure shows an overview of the components of the SCALANCE XCH-100/XCM-100 with 6 RJ45 ports and 2 SFP slots.



① Electrical ports
② SFP transceiver slots
③ Grounding screw
④ Knurled screw
⑤ Securing bar
⑥ Levering aid for moving the securing bar with a screwdriver
⑦ Power supply
⑧ Signaling contact
⑨ "SET" button
⑩ Cooling element (cooling fin)
⑪ LED display

3.2.2 Device view of a SCALANCE XCM-100 with 8 RJ45 ports

The following figure shows an overview of the components of the SCALANCE XCM-100 with 8 RJ45 ports.



① Electrical ports
② Grounding screw
③ Knurled screw
④ Securing bar
⑤ Levering aid for moving the securing bar with a screwdriver
⑥ Power supply
⑦ Signaling contact
⑧ "SET" button
⑨ Cooling element (cooling fin)
⑩ LED display

3.3 Accessories

The following accessories are available for the devices mentioned in the scope of validity:

Pluggable transceiver SFP (1000 Mbps)

Type	Property	Article number
SFP992-1	1 x 1000 Mbps, LC port optical for glass FO cable (multimode), up to max. 750 m	6GK5 992-1AL00-8AA0
	10 packing unit (VPE 10)	6GK5 992-1AL00-8AC0
SFP992-1 (C)	1 x 1000 Mbps, LC port optical, for glass FO cable (multimode), up to max. 750 m, varnished	6GK5 992-1AL00-8FA0

Type	Property	Article number
SFP992-1+	1 x 1000 Mbps, LC port optical for glass FO cable (multimode), up to max. 2 km	6GK5 992-1AG00-8AA0
SFP992-1LD	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 10 km	6GK5 992-1AM00-8AA0
	10 packing unit (VPE 10)	6GK5 992-1AM00-8AC0
SFP992-1LD (C)	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 10 km, varnished	6GK5 992-1AM00-8FA0
SFP992-1LD+	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 30 km	6GK5 992-1AM30-8AA0
SFP992-1LH	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 40 km	6GK5 992-1AN00-8AA0
SFP992-1LH+	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 70 km	6GK5 992-1AP00-8AA0
SFP992-1ELH	1 x 1000 Mbps LC port optical for glass FO cable (single mode) up to max. 120 km	6GK5 992-1AQ00-8AA0

Pluggable transceivers with the supplement (C) in the type name have varnished printed circuit boards (conformal coating).

Note

Restriction for pluggable transceivers

The maximum ambient temperature changes if you use pluggable transceivers.

You can find the corresponding values for the ambient temperature in the section "Technical specifications (Page 49)".

Bidirectional plug-in transceiver SFP

Bidirectional plug-in transceivers feature only one fiber connection. They transmit and receive on two different wavelengths. To establish a connection, you need two matching bidirectional SFPs. The connected SFPs must respectively transmit on the wavelength at which the connection partner receives.

Type	Properties	Article number
SFP992-1BXMT	1 x 1000 Mbps LC port optical for glass FO (multimode) with max. 500 m, transmits at 1550 nm, receives at 1310 nm	6GK5 992-1AL00-8TA0
SFP992-1BXMR	1 x 1000 Mbps LC port optical for glass FO (multimode) with max. 500 m, transmits at 1310 nm, receives at 1550 nm	6GK5 992-1AL00-8RA0
SFP992-1BX10T	1 x 1000 Mbps LC port optical for glass FO (single mode) with max. 10 km, transmits at 1550 nm, receives at 1310 nm	6GK5 992-1AM00-8TA0
SFP992-1BX10R	1 x 1000 Mbps LC port optical for glass FO (single mode) with max. 10 km, transmits at 1310 nm, receives at 1550 nm	6GK5 992-1AM00-8RA0

Note

Restriction for pluggable transceivers

The maximum ambient temperature changes if you use pluggable transceivers.

You can find the corresponding values for the ambient temperature in the section "Technical specifications (Page 49)".

SFP+ transceiver

Type	Properties	Article number
SFP993-1	1 x 10 Gbps, LC port optical for glass FO cable (multimode), up to max. 550 m	6GK5 993-1AT00-8AA0
SFP993-1LD	1 x 10 Gbps, LC port optical for glass FO cable (single mode), up to max. 10 km	6GK5 993-1AU00-8AA0
SFP993-1LH	1 x 10 Gbps, LC port optical for glass FO cable (single mode), up to max. 40 km	6GK5 993-1AV00-8AA0

Can only be operated in SFP+ slots.

Note

Restriction for pluggable transceivers

The maximum ambient temperature changes if you use pluggable transceivers.

You can find the corresponding values for the ambient temperature in the section "Technical specifications (Page 49)".

3.4 LED display

"A" alarm LED (red LED)

The alarm LED indicates the incorrect functioning of the device.

LED color	LED status	Meaning
Red	Lit	The IE switch detects an error. At the same time, the signaling contact opens. The following faults/errors are detected: 1. Link down event on a monitored port. 2. Failure of one of the two monitored redundant power supplies.
-	Off	No error detected.

Power LEDs "L1" and "L2" (green LEDs)

The power LEDs show the status of the power supply at connectors L1 and L2.

L1/L2 LEDs		L1/L2 connector
LED color	**LED status**	
Green	Lit	Power supply L1 or L2 is connected.
-	Off	Power supply L1 and L2 are not connected or L1 and L2 < 18 V.

Note

If the green LED is not lit, no other signal LED lights up either.

Port LEDs "P" (green/yellow LEDs)

The port LEDs indicate the status of the ports.

LED color	LED status	Meaning
Green	Lit	Link exists, no data reception at port
Green	Flash	Setting or display of the fault mask
Yellow	Flash	Link exists, data reception at port

3.5 SET button

Position

The "SET" button is located on the front of the device.

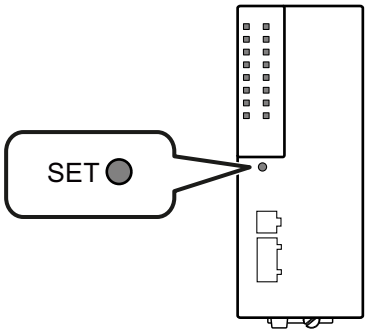


Figure 3-1 Position of the "SET" button

Function

With the SET button, you can display and change the set fault mask.

Setting the fault mask

Factory setting

In its delivery condition (factory default), the following settings are monitored via the message screen:

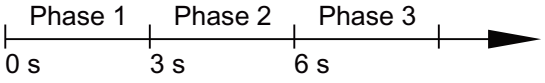
- Link up to all ports
- Redundant power supply (L1+/M1 und L2+/M2) connected

When you turn the device on and at least one of the settings is not fulfilled, the device registers a fault. Switch the device to the required operating mode and save these settings in the message screen.

Changing the setting

The changed settings remain after cycling power to the device.

Different settings are made depending on how long you hold down the SET button, as described in the following table:



Time the button is pressed in seconds

Phase	Description	
1	LEDs flash at 5 Hz	The currently set fault mask is displayed. The LEDs of the monitored ports flash. If no fault mask is set, all port LEDs flash one after the other.
	If you release the button in phase 1, this has no effect.	
2	LEDs flash at 2.5 Hz	The current status is displayed. • The LEDs of the ports at which there is currently a link flash.
	If you release the button in phase 2, this has no effect.	
3	This new status is adopted and stored as the new fault mask in phase 3.	
	LEDs flashing	If you release the SET button while the LEDs are still flashing, storing is aborted.
	LEDs lit	If you release the SET button as soon as the LEDs light up, the current settings will be stored. The stored status is displayed. • The monitored ports are indicated by statically lit LEDs. • The monitored power supply is indicated by statically lit LEDs.

Error/fault

If the link is lost (link down) at a monitored port or a monitored power supply is lost, this is signaled as follows:

- The red alarm LED lights up.
- The signaling contact is opened.

3.6 Power over Ethernet (PoE)

Function

The "Power over Ethernet" function supplies connected devices with power via the Ethernet cable. Devices supplied with power via an Ethernet cable do not require a separate voltage source.

PoE-compliant devices can be divided into the following groups:

- Power source (PSE - Power Sourcing Equipment)
  These inject power onto the Ethernet cable.
- Power consumer (PD - Powered Device)
  These are supplied with power via the Ethernet cable.

3.6.1 Power and voltage range according to the standard

Note the values specified for the power of the power source, so that the power supply is ensured at the power consumers according to the standard.

PoE class	Power supplied by the power source	Available power at the power source	Type	Standard	Designation
0	15.4 W	12.95 W	1	IEEE802.3af	PoE
1	4	3.84 W			
2	7	6.49 W			
3	15.4 W	12.95 W			
4	30	25.5 W	2	IEEE802.3at	PoE+
5	45	40 W	3	IEEE802.3bt	4-pair PoE
6	60	51 W			
7	75	62 W	4		
8	90	73 W			

3.6.2 PoE properties of the devices

Note

Turn off the power source before you disconnect the PoE cable of a power consumer.

Power source

- The device can supply energy consumers of the standards IEEE802.af Type 1 and IEEE802.at Type 2.
- In total, a power source can make PoE power of 120 W available (including line losses). The power can be distributed to the ports as desired.

PoE ports

- All RJ45 ports are PoE ports.
- The PoE ports are not isolated from each other. This means that they meet the conditions named in Environment A (IEEE 802.3): Power supply over Ethernet within a power supply system.
- The electrical isolation of the ports against functional grounding is designed for 1500 Vrms (1 minute). If you operate the device with plug-in transceivers, the test voltage is reduced to 500 Vrms.
- The PoE ports support PoE classes 0 to 4. The ports supply connected devices with up to 30 W per port (according to IEEE802.3af and IEEE802.3at).

3.6.3 Power transfer and pin assignment (30 W)

The table below shows the power transfer and pin assignment of the PoE ports:

Pin number	Assignment
Pin 1	Positive power supply
Pin 2	Positive power supply
Pin 3	Negative power supply
Pin 4	-
Pin 5	-
Pin 6	Negative power supply
Pin 7	-
Pin 8	-

Installation and disassembly

4

4.1 Safety notices for installation

Safety notices

When installing the device, keep to the safety notices listed below.

WARNING

If a device is operated at an ambient temperature of 60 °C, the temperature of the device housing may be higher than 70 °C. The device must therefore be installed so that it is only accessible to service personnel or users that are aware of the reason for restricted access and the required safety measures at an ambient temperature higher than 60 °C.

WARNING

If the device is installed in a cabinet, the inner temperature of the cabinet corresponds to the ambient temperature of the device.

WARNING

If the cable or conduit entry point exceeds 70 °C or the branching point of conductors exceeds 80 °C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 60 °C, only use cables with admitted maximum operating temperature of at least 80 °C.

NOTICE

Improper mounting

Improper mounting may damage the device or impair its operation.

- Before mounting the device, always ensure that there is no visible damage to the device.
- Mount the device using suitable tools. Observe the information in the respective section about mounting.

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

⚠ WARNING
EXPLOSION HAZARD Replacing components may impair suitability for Class 1, Division 2 or Zone 2.

⚠ WARNING
The device is intended for indoor use only.

⚠ WARNING
The device shall only be used in an area with pollution degree 1 or 2 (according to EN/IEC 60664-1, GB/T 16935.1).

⚠ WARNING
When used in hazardous environments corresponding to Class I, Division 2 or Class I, Zone 2, the device must be installed in a cabinet or a suitable enclosure.

Notes for use in hazardous locations according to ATEX, IECEx, UKEX and CCC Ex

If you use the device under ATEX, IECEx, UKEX or CCC Ex conditions you must also keep to the following safety instructions in addition to the general safety instructions for protection against explosion:

⚠ WARNING
To comply with EU Directive 2014/34 EU (ATEX 114), UK Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB/T 3836.3.

⚠ WARNING
If the temperature of the cable or housing socket exceeds 60 °C or the temperature at the branching point of the cables exceeds 80 °C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 60 °C, only use cables with admitted maximum operating temperature of at least 80 °C.

Safety notices when using according to FM

If you use the device under FM conditions you must also keep to the following safety notices in addition to the general safety notices for protection against explosion:

Note

You must not install the device on a wall in hazardous areas.

WARNING

Wall mounting outside of the control cabinet or housing does not fulfill the requirements of the FM approval.

WARNING

Wall mounting is only permitted if the requirements for the housing, the installation regulations, the clearance and separating regulations for the control cabinets or housings are adhered to. The control cabinet cover or housing must be secured so that it can only be opened with a tool. An appropriate strain-relief assembly for the cable must be used.

WARNING

EXPLOSION HAZARD

For operation the device is intended to be installed within an enclosure/control cabinet. The inner temperature of the enclosure/control cabinet corresponds to the ambient temperature of the device. Use installation wiring connections with admitted maximum operating temperature of at least 30 °C higher than maximum ambient temperature.

WARNING

The IP rating marking is not associated with the FM approvals certification.

Safety notices when using the device as industrial control equipment according to UL 61010-2-201

If you use the device under UL 61010-2-201 conditions you must also keep to the following safety notices in addition to the general safety notices for protection against explosion:

WARNING

Open equipment

The devices are "open equipment" according to the standard IEC 61010-2-201 or UL 61010-2-201 / CSA C22.2 No. 61010-2-201. To fulfill requirements for safe operation with regard to mechanical stability, flame retardation, stability, and protection against contact, the following alternative types of installation are specified:

- Installation in a suitable cabinet.
- Installation in a suitable enclosure.
- Installation in a suitably equipped, enclosed control room.

⚠ WARNING

If the temperature at the cable or housing socket or at the branching points of the cables exceeds 60 °C, special precautions must be taken. If the equipment is operated at ambient temperatures in excess of 40 °C, only use cables with permitted operating temperature of at least 80 °C.

Further notes

NOTICE

Warming and premature aging of the network component due to direct sunlight

Direct sunlight can heat up the device and can lead to premature aging of the network component and its cabling.

Provide suitable shade to protect the network component against direct sunlight.

4.2 Types of installation

The device can be installed in the following ways:

- DIN rail
- S7-300 mounting rail
- S7-1500 mounting rail
- Wall mounting

4.3 Installation clearance

Keep to the following minimum clearances so that the convection ventilation of the device is not blocked:

- Below at least 10 cm
- Above at least 10 cm

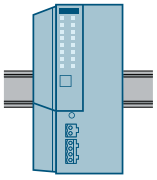
If you install the device with installation distances < 10 cm, you must observe the following:

- The minimum distance must not be less than 30 mm.
- The maximum permissible ambient temperature in the direct vicinity of the device must be observed.
- Sufficient convection ventilation of the device must be ensured.

4.4 Installation position

The following installation position is recommended:

- **Horizontal**
  Horizontal installation of the rack (DIN rail)



Note that different values for temperature and PoE power may apply to installation positions other than horizontal; see section "Technical specifications (Page 49)".

4.5 Mounting on DIN rails

Installation

Note

Note the position of the securing bar, see also section “AUTOHOTSPOT“.

When supplied, the securing bar is in the wall mounting position. To change the position of the securing bar, refer to the section “Changing the position of the securing bar (Page 32)“.

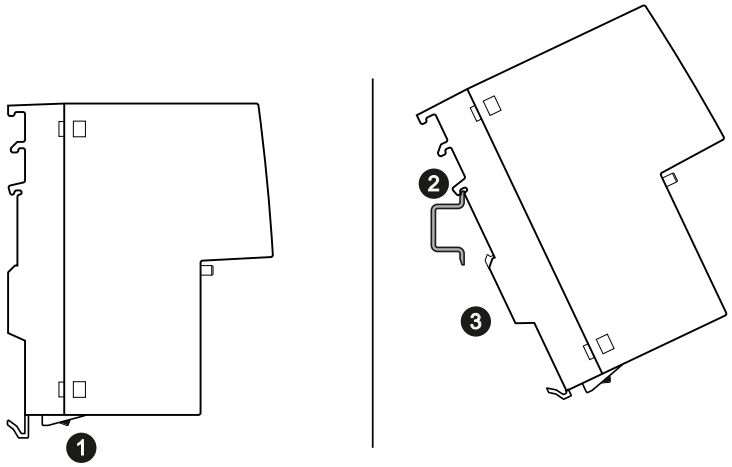


Figure 4-1 DIN rail mounting with securing bar in the wall mounting position.

Securing bar in the wall mounting position (as supplied).

To install the device on a 35 mm DIN rail complying with DIN EN 60715, follow the steps below:

1. Loosen the knurled screw with your hand or a screwdriver.
2. Place the third housing guide of the device on the top edge of the DIN rail.

3. Press the device down against the DIN rail until the spring securing bar locks in place.
4. When you tighten the knurled screw. you cannot release the securing bar (torque 0.5 Nm). The device is additionally fixed.
5. Connect the electrical connecting cables, refer to the section "Connecting (Page 35)".

Removal

To remove the device from a DIN rail, follow the steps below:

1. Disconnect all connected cables.
2. If necessary, loosen the knurled screw with your hand or a screwdriver.
3. Lever the securing bar down using a screwdriver as far as it will go.
4. Pull the device away from the bottom of the DIN rail with the bar pulled.

4.6 Installation on a standard S7-300 rail

Installing on an S7-300 standard rail

Note

Note the position of the securing bar, see also section “AUTOHOTSPOT”.

When supplied, the securing bar is in the wall mounting position. To change the position of the securing bar, refer to the section “Changing the position of the securing bar (Page 32)”.

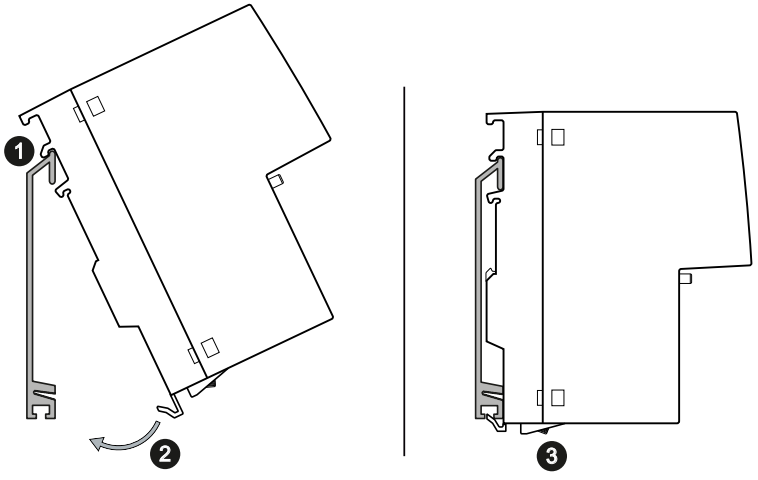


Figure 4-2 S7-300 mounting rail installation with the securing bar in the wall mounting position.

Securing bar in the wall mounting position (as supplied).

To install the device on an S7-300 standard rail, follow the steps below:

1. Place the second housing guide of the device on the top edge of the standard rail.
2. Swing the device down towards the back against the mounting rail.
3. Loosen the knurled screw with your hand or a screwdriver. The spring mounted securing bar locks in place.
4. When you tighten the knurled screw. you cannot release the securing bar (torque 0.5 Nm). The device is additionally fixed.
5. Connect the electrical connecting cables, refer to the section "Connecting (Page 35)".

Removal

To remove the device from a standard rail, follow the steps below:

1. Disconnect all connected cables.
2. If necessary, loosen the knurled screw with your hand or a screwdriver.
3. Lever the securing bar down using a screwdriver as far as it will go.
4. Remove the device from the mounting rail with the bar pulled.

4.7 Installation on a standard S7-1500 rail

Installing on an S7-1500 standard rail

Note

Note the position of the securing bar, see also section “AUTOHOTSPOT“.

When supplied, the securing bar is in the wall mounting position. To change the position of the securing bar, refer to the section “Changing the position of the securing bar (Page 32)“.

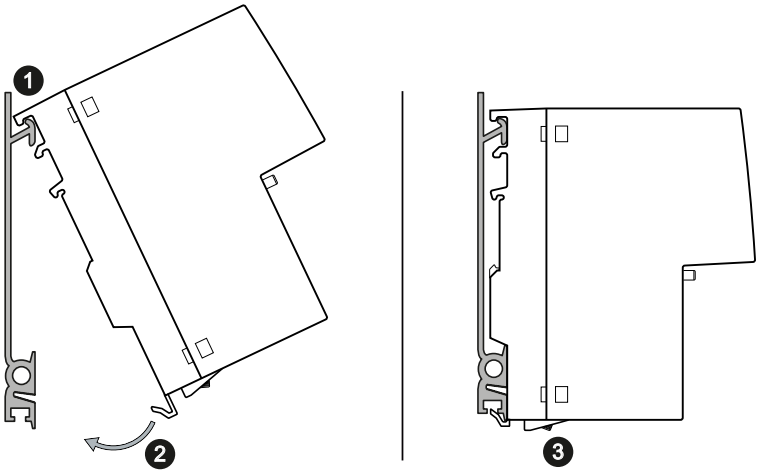


Figure 4-3 S7-1500 mounting rail installation with the securing bar in the wall mounting position.

Securing bar in the wall mounting position (as supplied).

To install the device on an S7-1500 standard rail, follow the steps below:

1. Place the first housing guide of the device on the top edge of the standard rail.
2. Swing the device down towards the back against the mounting rail.
3. Loosen the knurled screw with your hand or a screwdriver. The spring mounted securing bar locks in place.
4. When you tighten the knurled screw. you cannot release the securing bar (torque 0.5 Nm). The device is additionally fixed.
5. Connect the electrical connecting cables, refer to the section "Connecting (Page 35)".

Removal

To remove the device from a standard rail, follow the steps below:

1. Disconnect all connected cables.
2. If necessary, loosen the knurled screw with your hand or a screwdriver.
3. Lever the securing bar down using a screwdriver as far as it will go.
4. Remove the device from the mounting rail with the bar pulled.

4.8 Wall mounting

Preparation

Note the position of the securing bar, see also section “AUTOHOTSPOT”.

When supplied, the securing bar is in the wall mounting position. You do not need to prepare the device any further.

If the securing bar is in the rail mounting position, note the section “Changing the position of the securing bar (Page 32)“.

Tools

To mount the device on a wall, you require the following:

- 2 wall plugs with a diameter of 6 mm and a minimum length of 35 mm.
- 2 oval-head screws with a diameter of 3.5 mm to 4 mm and a minimum length of 50 mm.

Note

Use suitable fitting material depending on the mounting surface.

Mounting on a concrete wall

The following table shows the size of the drill hole and the required fastening material using a concrete drill hole as an example:

Base	Concrete	
Drill hole	Depth	Min. 45 mm
	Diameter	6 mm
Fastening material	Plugs	6 x 35
	Oval-head screws	4 x 50

Assembly

Note

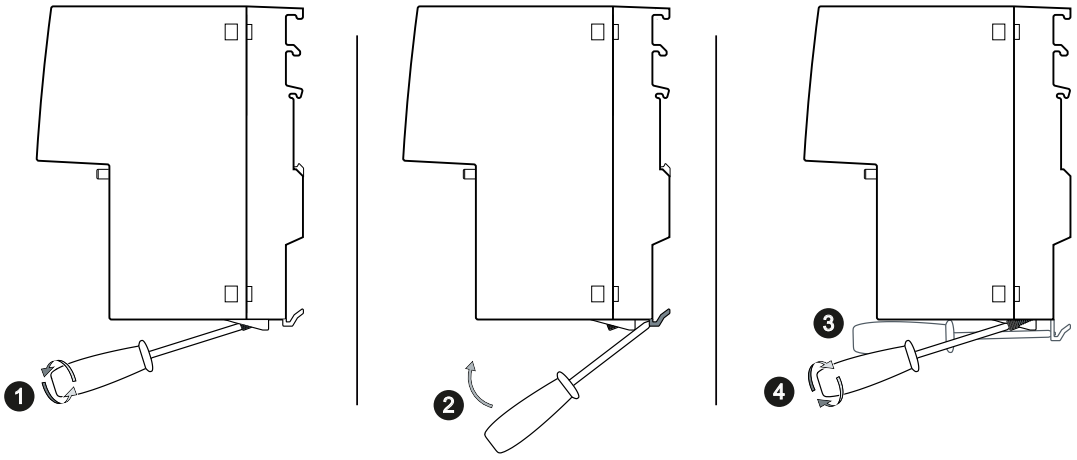
The wall mounting must be capable of supporting at least four times the weight of the device.

To mount the device on a wall, follow the steps below:

1. Prepare the wall mounting with drilled holes and plugs. For the precise dimensions, refer to the section "Dimension drawings (Page 59)".
2. Turn the upper screw in to the wall so that 10 mm remains jutting out.
3. Hang the device with the keyhole hanging mechanism on the rear on the screw.
4. Fix the device to the wall with the lower screw.
5. Connect the electrical connecting cables, refer to the section "Connecting (Page 35)".

4.9 Changing the position of the securing bar

Rail mounting position - wall mounting position



To change the securing bar from the rail mounting position to the wall mounting position follow the steps below:

1. If necessary, loosen the knurled screw with your hand or a screwdriver.
2. Move the securing bar down as far as it will go.
   - Use the levering aid and level the securing bar down using a screwdriver into this position.
   - Push the securing bar down using your hand.
3. Hold the securing bar in this position.
   - Hold the securing bar with the screwdriver.
   - Use the gap on the rear of the device and fix the securing bar briefly with a pin.
4. Tighten the knurled screw (torque 0.5 Nm).
   The securing bar is fixed in the wall mounting position.
5. Remove the pin.

Wall mounting position - rail mounting position

To move the securing bar from the wall mounting position to the rail mounting position, loosen the knurled screw.

4.10 Disassembly

⚠ WARNING

Improper disassembly

Improper disassembly may result in a risk of explosion in hazardous areas.

For proper disassembly, observe the following:

- Before starting work, ensure that the electricity is switched off.
- Secure remaining connections so that no damage can occur as a result of disassembly if the system is accidentally started up.

Connecting

5

5.1 Safety when connecting up

Safety notices

When connecting up the device, keep to the safety notices listed below.

Note

The power supply must be connected by the operator/user in line with the national installation regulations.

Only use power supplies with the same approvals as the device to be connected. The approvals for the power supply and the device must correspond to the requirements of the end application.

Operate the device with a power supply according to "Limited Energy". When connecting up the device, keep to the safety notices listed below.

⚠ WARNING

Safety notices for operation with a power supply according to "Limited Energy"

1. If the device is supplied by a power supply with limited power (Limited Energy) that complies with IEC/UL61010-1 or VDE 0805-1, no additional power limitation is required according to National Electrical Code (r) (ANSI/NFPA 70).
   If the device is connected to a redundant power supply (two separate power supplies), there must be a fuse between each of the two power supplies and each power supply input of the device. The fuses must ensure that the sum of the power at the two power supply inputs does not exceed 100 W.
   To comply with EU Directive 2014/34/EU (ATEX 114), UK Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB 3836.3.
2. If the device is operated with a power supply for without power limitation and the entire power requirement does not exceed 100 W, a fuse must be installed between the power supply and each supply input of the device to meet the requirements for limited power (Limited Energy) according to IEC/UL61010-1 or VDE 0805-1. For more information, see "Suitable fusing for the power supply cables" below.
   If the device is connected to a redundant power supply (two separate power supplies), there must be a fuse between each of the two power supplies and each power supply input of the device. The fuses must ensure that the sum of the power at the two power supply inputs does not exceed 100 W.
   To comply with EU Directive 2014/34/EU (ATEX 114), UK Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB 3836.3.
3. If the device is operated with a power supply without power limitation and the entire power requirement exceeds 100 W, the device must be installed in a fire protection housing according to ANSI/UL-61010-1:2018, paragraph 9.3.

NOTICE

Suitable fuse for the power supply cables (corresponds to "Limited Energy")

The current on the terminal may not exceed 3 A. Use a fuse for the power supply that is suitable for protection of AC/DC power supply circuits *) and protects against currents > 3 A.

- In areas subject to the NEC or CEC, the fuse must meet the following requirements:
  - Suitable for AC/DC *) (min. 60 V / 3 A)
  - Breaking current at least 10 kA
  - Approval according to ANSI/UL 248-14 (suppl. fuses), ANSI/UL 248-4 (Class CC), ANSI/UL 248-8 (J), ANSI/UL 248-15 (T), or CSA C22.2-4 No. 248.14 (suppl. fuses), No. 248-4 (Class CC), No. 248-8 (J), No. 248-15 (T)
- In other areas, the fuse must meet the following requirements:
  - Suitable for AC/DC *) (min. 60 V / 3 A)
  - Breaking current at least 10 kA
  - Approval according to IEC/EN 60947-1/2/3 or IEC/EN 60898-1/2 for circuit breakers
  - Breaking characteristics: B or C
  - Approval according to IEC/EN 60127-1 for fuses
  - Breaking characteristics: max. 120 s at 2 x I_n (corresponds to melting integral $I^2t < 4320$)

If the properties of the supplying current source are known, the following fuse is also possible:

- In areas subject to the NEC or CEC, the fuse must meet the following requirements:
  - Suitable for AC/DC *) (min. 60 V / 3 A)
  - Breaking current > highest possible current of the current source (incl. short circuit current and fault)
  - Approval according to UL 1077 or CSA C22.2 No. 235
- In other areas, the fuse must meet the following requirements:
  - Suitable for AC/DC *) (min. 60 V / 3 A)
  - Breaking current > highest possible current of the current source (incl. short circuit current and fault)
  - Approval according to IEC/EN 60934
  - Breaking characteristics: max. 120s at 2 x I_n

*) AC or DC depending on availability

Safety notices on use in hazardous areas

General safety notices relating to protection against explosion

WARNING

EXPLOSION HAZARD

Do not connect or disconnect cables to or from the device when a flammable or combustible atmosphere is present.

⚠ WARNING

EXPLOSION HAZARD

Do not press the SET button if there is a potentially explosive atmosphere.

⚠ WARNING

Suitable cables at high ambient temperatures in hazardous area

At an ambient temperature of ≥ 60 °C, use heat-resistant cables designed for an ambient temperature at least 20 °C higher. The cable entries used on the housing must comply with the IP degree of protection required by EN IEC / IEC 60079-0, GB/T 3836.1.

⚠ WARNING

Unsuitable cables or connectors

Risk of explosion in hazardous areas

- Only use connectors that meet the requirements of the relevant type of protection.
- If necessary, tighten the connector screw connections, device fastening screws, grounding screws, etc. according to the specified torques.
- Close unused cable openings for electrical connections.
- Check the cables for a tight fit after installation.

⚠ WARNING

Lack of equipotential bonding

If there is no equipotential bonding in hazardous areas, there is a risk of explosion due to equalizing current or ignition sparks.

- Ensure that equipotential bonding is available for the device.

⚠ WARNING

Unprotected cable ends

There is a risk of explosion due to unprotected cable ends in hazardous areas.

- Protect unused cable ends according to IEC/EN 60079-14.

⚠ WARNING

Improper installation of shielded cables

There is a risk of explosion due to equalizing currents between the hazardous area and the non-hazardous area.

- Ground shielded cables that cross hazardous areas at one end only.
- Lay a potential equalization conductor when grounding at both ends.

⚠ WARNING

Insufficient isolation of intrinsically safe and non-intrinsically safe circuits

Risk of explosion in hazardous areas

- When connecting intrinsically safe and non-intrinsically safe circuits, ensure that the galvanic isolation is performed properly in compliance with local regulations (e.g. IEC 60079-14).
- Observe the device approvals applicable for your country.

Notes for use in hazardous locations according to ATEX, IECEx, UKEX and CCC Ex

If you use the device under ATEX, IECEx, UKEX or CCC Ex conditions you must also keep to the following safety instructions in addition to the general safety instructions for protection against explosion:

⚠ WARNING

Do not remove or replace while circuit is live when a flammable or combustible atmosphere is present.

⚠ WARNING

Transient overvoltages

Take measures to prevent transient surges of more than 40% of the rated voltage. Under no circumstances may transient surges exceed 119 V. This is the case if you only operate devices with SELV (safety extra low voltage).

Safety notices when using the device according to Hazardous Locations (HazLoc)

If you use the device under HazLoc conditions you must also keep to the following safety notices in addition to the general safety notices for protection against explosion:

⚠ WARNING

EXPLOSION HAZARD

You may only connect or disconnect cables carrying electricity when the power supply is switched off or when the device is in an area without inflammable gas concentrations.

Further notes

⚠ WARNING

Safety notice for connecting with a LAN ID (Local Area Network)

A LAN or LAN segment with all the interconnected devices should be contained completely in a single low voltage power distribution in a building. The LAN is designed either for "Environment A" according to IEEE802.3 or "Environment 0" according to IEC TR 62102.

Do not connect any electrical connectors directly to the telephone network (telephone network voltage) or a WAN (Wide Area Network).

5.2 Industrial Ethernet

5.2.1 Electrical

Note

Strain relief for the Ethernet cables

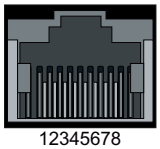
In order to avoid mechanical stress on the Ethernet cables and resulting interruption of the contact, fasten the cables at a short distance from the connector using a cable guide or busbar.

R-45 connector technology

The attachment to Industrial Ethernet uses RJ-45 connected technology with MDI-X assignment.

Pin assignment

The following table shows the pin assignment of the R-45 connectors.

Pin number	Assignment		R-45 connector
	10/100 Mbps	10/100/1000 Mbps	
Pin 1	RD+	D1+	 12345678
Pin 2	RD-	D1-	
Pin 3	TD+	D2+	
Pin 4	n. c. (Not connected)	D3+	
Pin 5	n. c. (Not connected)	D3-	
Pin 6	TD-	D2-	
Pin 7	n. c. (Not connected)	D4+	
Pin 8	n. c. (Not connected)	D4-	

MDI / MDI-X autocrossover

With the MDI/MDI-X autocrossover function, the send and receive contacts of an Ethernet port are assigned automatically. The assignment depends on the cable with which the communications partner is connected. This means that it does not matter whether the port is connected using a patch cable or crossover cable. This prevents malfunctions resulting from mismatching send and receive wires. This makes installation much easier for the user.

Note

Formation of loops

Please note that the direct connection of two ports on the IE switch or accidental connection over several IE switches causes an illegal loop. Such a loop can lead to network overload and network failures.

Autonegotiation

Autonegotiation means the automatic detection/negotiation of the transmission rate and the operating mode of ports at the opposite end. This makes it possible to configure different devices automatically.

Two components connected to a link segment can exchange information about the transfer and can adapt their settings to each other. The mode with the highest possible speed is set.

Note

- If a port operating in the "Auto negotiation" mode is connected to a partner port that is not operating in the"Auto negotiation" mode, the partner port setting must be fixed.
- Devices not supporting "Auto negotiation" must be set permanently to 100 Mbps or 10 Mbps half duplex.

5.2.2 Optical



CAUTION

Devices with beam sources

Connect cables to the optical ports or seal unused optical beam sources with the protective caps supplied.

NOTICE
Failure of the data traffic due to contamination of optical plug-in connections Optical sockets and plugs are sensitive to contamination of the end face. Contamination can lead to the failure of the optical transmission network. Take the following precautions to avoid functional impairments: • Clean the end face of field-assembled connectors carefully before connecting. No residues of processing may remain on the connector. • Only remove the dust caps of optical transceivers and pre-configured cables shortly before connecting the cables. • Close unused optical sockets and plugs as well as pluggable transceivers and slots with the supplied protective caps.

LC connector technology

The attachment to Industrial Ethernet uses LC connector technology (Lucent Connector).



Pluggable transceiver slot/
plugged in transceiver

5.3 Wiring rules

When wiring use cables with the following AWG categories or cross sections.

Wiring rules for ...		**Screw/spring-loaded terminals**
connectable cable cross sections for flexible cables ...	without wire end ferrule	0.25 - 2.5 mm^2
		AWG: 24 - 13
	with wire end ferrule with plastic ferrule**	0.25 - 2.5 mm^2
		AWG: 24 - 13
	with wire end ferrule without plastic ferrule**	0.25 - 2.5 mm^2
		AWG: 24 - 13
	with TWIN wire end ferrule**	0.5 - 1 mm^2
		AWG: 20 - 17
Stripped length of the cable		8 - 10 mm
Wire end ferrule according to DIN 46228 with plastic ferrule**		8 - 10 mm

* AWG: American Wire Gauge

** See note "Wire end ferrules"

Note

Wire end ferrules

Use crimp shapes with smooth surfaces, such as provided by square and trapeze shaped crimp cross sections.

Crimp shapes with wave-shaped profile are unsuitable.

5.4 Power supply

Notes on the power supply

⚠ WARNING

Incorrect power supply

Never operate the device with AC voltage or DC voltage higher than 54 V DC.

⚠ CAUTION

Damage to the device due to overvoltage

The connector of the external power supply is not protected against strong electromagnetic pulses that can, for example, result from lightning strikes or switching large loads.

One of the tests used to attest the immunity of SCALANCE XCM-100 IE switches to electromagnetic interference is the "surge immunity test" according to EN61000-4-5.

Note

The device can be disconnected from the power supply with the terminal block.

Information on the power supply

- Make sure that the external power supply unit meets the following basic requirements, among others:
  - The output voltage (PoE voltage) is a safety extra-low voltage (SELV).
  - The output voltage (PoE voltage) meets the isolation requirements according to IEEE 802.3at (in other words 500 V AC or 2250 V DC) to ground, to touchable conductive parts and (if they exist) other secondary voltages. If you operate the device with plug-in transceivers, the insulation voltage is reduced to 500 Vrms.
  - Fuse the output voltage (PoE voltage) externally, see the section "Connecting (Page 35)".
- Select a suitable power of the external power supply unit, so that the power supply to the power consumers is ensured, see the section "Power over Ethernet (PoE) (Page 21)".
- For the cable supplying the power supply, use a cable with a length of max. 3 m.

- The power supply is connected using a 4-pin plug-in terminal block (spring-loaded terminal). The terminal block ships with the device and can also be ordered as a spare part, see section "Product overview (Page 13)".
- The power supply can be connected redundantly. Both inputs are isolated. There is no distribution of load. The power supply unit with the higher output voltage supplies the device alone.
- The power supply is connected over a high resistance with the enclosure to allow an ungrounded set up. The two power inputs are non-floating.
- The "L1" and "L2" LEDs indicate the current range of the power supply, see the section "LED display (Page 18)".
- Note the wiring rules (Page 42).

Position and assignment

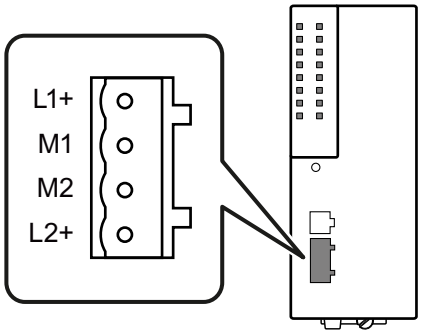


Figure 5-1 Position of the power supply on the SCALANCE XC-100 and the assignment of the terminal block

Contact	Assignment
L1+	L1+ 19.2 to 54 V DC
M1	Ground
M2	Ground
L2+	L2+ 19.2 to 54 V DC

5.5 Signaling contact

Information on the signaling contact

- The signaling contact is a floating switch that signals error statuses by opening the contact. The signaling contact must be operated within the range of the operating voltage.
  If an error/fault occurs, the signaling contact opens. In normal operation, the signaling contact is closed.
- The signaling contact is connected using a 2-pin plug-in terminal block (spring-loaded terminal). The terminal block ships with the device and can also be ordered as a spare part.
- Note the wiring rules.

NOTICE
Damage due to voltage being too high You can load the signaling contact with the operating voltage of the device and a maximum of 100 mA. Higher voltages or currents can damage the device.

Position and assignment

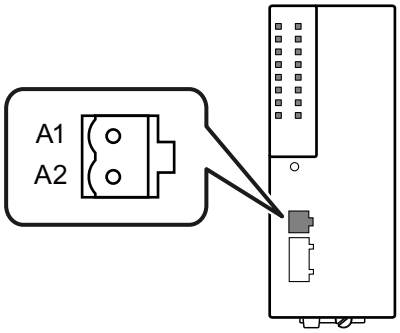


Figure 5-2 Position of the signaling contact on the SCALANCE XC-100 and the assignment of the terminal block

Contact	Assignment
A1	Alarm contact 1
A2	Alarm contact 2

Signaling faults

- The indication of errors by the signaling contact is synchronous to the "A" alarm LED, see section "LED display (Page 18)".
  All errors indicated by the "A" alarm LED (freely configurable) are also signaled by the signaling contact.
- If an internal fault occurs, the "A" alarm LED lights up and the signaling contact opens.
- If you connect a communications node to an unmonitored port or disconnect it, this does not cause an error message.
- The signaling contact remains open until one of the following events occurs:
  - The problem is eliminated.
  - The current status is entered in the fault mask as the new desired status.

5.6 Functional ground

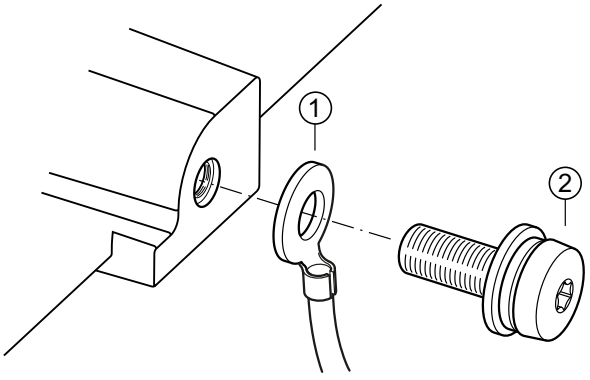
EMC disturbances are diverted to ground via the functional ground. This ensures the immunity of the data transmission.

The functional ground must be implemented with low impedance. The connection of the functional ground must be established directly on the mounting plate or the DIN rail terminal.

The IE switch has a grounding screw (fillister head screw with clamping washer und disk) for functional ground, refer to the section "Device views (Page 15)".

The grounding screw is identified by the following symbol for the functional ground ⏚.

Follow the steps below to connect the functional ground:



① Grounding terminal with cable
② Fillister head screw with spring washer and washer

1. Loosen the grounding screw).
2. Put the grounding terminal and grounding screw together.
3. Tighten the grounding screw with a maximum torque of 0.75 Nm.

Protective/functional ground

The connection of the reference potential surface with the protective ground system is normally in the cabinet close to the power feed-in. This ground conducts fault currents to ground safely and according DIN/VDE 0100 is a protective ground to protect people, animals and property from too high contact voltages.

Apart from the protective ground, there is functional grounding in the cabinet. According to EN60204-1 (DIN/VDE 0113 T1) electrical circuits must be grounded. The chassis (0 V) is grounded at one defined point. Here, once again the grounding is implemented with the lowest leakage resistance to ground in the vicinity of the power feed-in.

With automation components, functional ground also ensures interference-free operation of a controller. Via the functional ground, interference currents coupled in via the connecting cables are discharged to ground.

Maintenance and troubleshooting

6

⚠ WARNING

Unauthorized repair of devices in explosion-proof design

Risk of explosion in hazardous areas

- Repair work may only be performed by personnel authorized by Siemens.
- For function checks, maintenance and servicing work, you need to observe the requirements on checking and maintaining plants in hazardous areas according to the standards EN / IEC 60079-17.

⚠ WARNING

Impermissible accessories and spare parts

Risk of explosion in hazardous areas

- Only use original accessories (Page 16) and original spare parts (Page 13).
- Observe all relevant installation and safety instructions described in the manuals for the device or supplied with the accessories or spare parts.



⚠ CAUTION

Hot surfaces

Risk of burns during maintenance work on parts with a surface temperature above 70 °C (158 °F).

- Take appropriate protective measures, for example, wear protective gloves.
- Once maintenance work is complete, restore the touch protection measures.

NOTICE

Cleaning the housing

If the device is not in a hazardous area, only clean the outer parts of the housing with a dry cloth.

If the device is in a hazardous area, use a slightly damp cloth for cleaning.

Do not use solvents.

Fuses

Some devices have a resettable fuse (PTC). If the fuse blows, all LEDs are off although the power supply is correctly connected. In this case, disconnect the device from the power supply for approximately 30 minutes before you turn it on again.

Link display on the optical ports

Devices with optical ports support "Far-end fault" at the optical ports. This function is, however, not used for the corresponding link display. If only the receive direction is plugged in, a “far end fault” is detected and no data is forwarded. The port LED is already lit.

Device defective

If a fault develops, send the device to your SIEMENS service center for repair. Repairs on-site are not possible.

Technical specifications

7

7.1 Technical specifications of the SCALANCE XCH108PoE (6GK5108-2RS00-2FC2)

The following technical specifications apply to SCALANCE XCH108PoE (6GK5108-2RS00-2FC2).

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning; PoE
	Transmission speed	10 / 100 / 1000 Mbps
Slots for SFP transceivers	Quantity	2
	Connector	SFP transceiver (LC port)
	Transmission speed	1000 / 10000 Mbps
Electrical data		
Power supply [1)]	Rated voltage	24 to 54 V DC
	Voltage range (incl. tolerance)	19.2 to 55 V DC safety extra-low voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly
Current consumption	At 19.2 V DC	Max. 7.5 A
	At 54 V DC	Max. 2.5 A
Active power at max PoE load	At 24 to 54 V DC	Max. 144 W
Thermal Design Power	At 24 V DC	Max. 12 W
	At 54 V DC	Max. 10 W
Overvoltage category		CAT II
Fusing	Basic device	2.5 A / 125 V
	PoE consumers	15 A / 125 V
PoE power per device	At 24 to 54 V DC	120 W Observe the permissible ambient temperature for operation.
Signaling contact [1)]	Quantity	1
	Design	Terminal block, 2 terminals
	Permitted voltage range	24 to 54 V DC
	Load capability	Max. 100 mA
Permitted ambient conditions		

Technical specifications		
Ambient temperature [2]	During LAN operation with RJ45 plugs with max. PoE load up to 2000 m above sea level	During operation in horizontal installation position: • -40 °C to +60 °C During operation in a different installation position: • -40 °C to +50 °C
	When operating with SFP transceivers up to 2000 m above sea level, see "Dependency between SFP transceivers, installation position and ambient temperature during operation (derating) (Page 56)"	
	With operation between 2000 m and 3000 m above sea level	The maximum ambient temperature is reduced by 5 °C [3]
	With operation between 3000 m and 4000 m above sea level	The maximum ambient temperature is reduced by 10 °C [3]
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95% without condensation
Housing, dimensions and weight		
Design	Compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Properties	Coated printed circuit board (conformal coating)	
Degree of protection	IP 20 [4]	
Dimensions (W x H x D)	80 x 147 x 125 mm	
Weight	870 g	
Installation options	• Wall mounting • Installation on a DIN rail • Mounting on an S7-300 standard rail • Mounting on an S7-1500 standard rail	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 64.2 years	

[1] Wiring rules

Note the wiring rules (Page 42).

[2] Ambient temperature with SFP

The maximum ambient temperature during operation depends on the operating elevation and the inserted SFP transceivers. For more information on the SFP transceiver types, see section "Accessories (Page 16)".

[3] Derating

The derating values depend on the maximum ambient temperatures during operation up to 2000 m.

[4] Degree of protection

The degree of protection was not examined in the context of FM certification.

7.2 Technical specifications of the SCALANCE XCM108PoE (6GK5108-2RS00-2AC2)

The following technical specifications apply to SCALANCE XCM108PoE (6GK5108-2RS00-2AC2).

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning; PoE
	Transmission speed	10 / 100 / 1000 Mbps
Slots for SFP transceivers	Quantity	2
	Connector	SFP transceiver (LC port)
	Transmission speed	1000 / 10000 Mbps
Electrical data		
Power supply [1]	Rated voltage	24 to 54 V DC
	Voltage range (incl. tolerance)	19.2 to 55 V DC safety extra-low voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly
Current consumption	At 19.2 V DC	Max. 7.5 A
	At 54 V DC	Max. 2.5 A
Active power at max PoE load	At 24 to 54 V DC	Max. 144 W
Thermal Design Power	At 24 V DC	Max. 12 W
	At 54 V DC	Max. 10 W
Overvoltage category		CAT II
Fusing	Basic device	2.5 A / 125 V
	PoE consumers	15 A / 125 V
PoE power per device	At 24 to 54 V DC	120 W Observe the permissible ambient temperature for operation.
Signaling contact [1]	Quantity	1
	Design	Terminal block, 2 terminals
	Permitted voltage range	24 to 54 V DC
	Load capability	Max. 100 mA
Permitted ambient conditions		

Technical specifications		
Ambient temperature [2]	During LAN operation with RJ45 plugs with max. PoE load up to 2000 m above sea level	During operation in horizontal installation position: • -40 °C to +60 °C During operation in a different installation position: • -40 °C to +50 °C
	When operating with SFP transceivers up to 2000 m above sea level, see "Dependency between SFP transceivers, installation position and ambient temperature during operation (derating) (Page 56)"	
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95% without condensation
Housing, dimensions and weight		
Design	Compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP 20 [3]	
Dimensions (W x H x D)	80 x 147 x 125 mm	
Weight	870 g	
Installation options	• Wall mounting • Installation on a DIN rail • Mounting on an S7-300 standard rail • Mounting on an S7-1500 standard rail	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 64.2 years	

[1] Wiring rules

Note the wiring rules (Page 42).

[2] Ambient temperature with SFP

The maximum ambient temperature during operation depends on the operating elevation and the inserted SFP transceivers. For more information on the SFP transceiver types, see section "Accessories (Page 16)".

[3] Degree of protection

The degree of protection was not examined in the context of FM certification.

7.3 Technical specifications of the SCALANCE XCM108PoE (6GK5108-0PA00-2AC2)

The following technical specifications apply to SCALANCE XCM108PoE (6GK5108-0PA00-2AC2).

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning; PoE
	Transmission speed	10 / 100 Mbps
Electrical data		
Power supply [1)]	Rated voltage	24 to 54 V DC
	Voltage range (incl. tolerance)	19.2 to 55 V DC safety extra-low voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly
Current consumption	At 19.2 V DC	Max. 7.5 A
	At 54 V DC	Max. 2.5 A
Active power at max PoE load	At 24 to 54 V DC	Max. 144 W
Thermal Design Power	At 24 V DC	Max. 12 W
	At 54 V DC	Max. 10 W
Overvoltage category		CAT II
Fusing	Basic device	2.5 A / 125 V
	PoE consumers	15 A / 125 V
PoE power per device	At 24 to 54 V DC	120 W Observe the permissible ambient temperature for operation.
Signaling contact [1)]	Quantity	1
	Design	Terminal block, 2 terminals
	Permitted voltage range	24 VDC
	Load capability	Max. 100 mA
Permitted ambient conditions		
Ambient temperature	With operation with max. PoE load up to 2000 m above sea level	During operation in horizontal installation position: -40 °C to +60 °C During operation in a different installation position: -40 °C to +50 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95% without condensation
Housing, dimensions and weight		
Design	Compact	

Technical specifications		
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP 20 [2)]	
Dimensions (W x H x D)	80 x 147 x 125 mm	
Weight	870 g	
Installation options	• Wall mounting • Installation on a DIN rail • Mounting on an S7-300 standard rail • Mounting on an S7-1500 standard rail	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 62.8 years	

[1)] Wiring rules

Note the wiring rules (Page 42).

[2)] Degree of protection

The degree of protection was not examined in the context of FM certification.

7.4 Technical specifications of the SCALANCE XCM108PoE (6GK5108-0RA00-2AC2)

The following technical specifications apply to SCALANCE XCM108PoE (6GK5108-0RA00-2AC2).

Technical specifications		
Connection to Industrial Ethernet		
Electrical connectors	Quantity	8
	Connector	RJ45 jack
	Properties	Half/full duplex, MDI-X pinning; PoE
	Transmission speed	10 / 100 / 1000 Mbps
Electrical data		
Power supply [1)]	Rated voltage	24 to 54 V DC
	Voltage range (incl. tolerance)	19.2 to 55 V DC safety extra-low voltage (SELV)
	Design	Terminal block, 4 terminals
	Property	Implemented redundantly
Current consumption	At 19.2 V DC	Max. 7.5 A
	At 54 V DC	Max. 2.5 A
Active power at max PoE load	At 24 to 54 V DC	Max. 144 W
Thermal Design Power	At 24 V DC	Max. 12 W
	At 54 V DC	Max. 10 W
Overvoltage category		CAT II

Technical specifications		
Fusing	Basic device	2.5 A / 125 V
	PoE consumers	15 A / 125 V
PoE power per device	At 24 to 54 V DC	120 W Observe the permissible ambient temperature for operation.
Signaling contact [1)]	Quantity	1
	Design	Terminal block, 2 terminals
	Permitted voltage range	24 VDC
	Load capability	Max. 100 mA
Permitted ambient conditions		
Ambient temperature	With operation with max. PoE load up to 2000 m above sea level	During operation in horizontal installation position: -40 °C to +60 °C During operation in a different installation position: -40 °C to +50 °C
	During storage	-40 °C to +85 °C
	During transportation	-40 °C to +85 °C
Relative humidity	During operation at 25 °C	≤ 95% without condensation
Housing, dimensions and weight		
Design	Compact	
Housing material	Basic housing	Die cast aluminum, powder coated
	Front cover	Polycarbonate (PC-GF10)
Degree of protection	IP 20 [2)]	
Dimensions (W x H x D)	80 x 147 x 125 mm	
Weight	870 g	
Installation options	• Wall mounting • Installation on a DIN rail • Mounting on an S7-300 standard rail • Mounting on an S7-1500 standard rail	
Mean time between failure (MTBF)		
MTBF (EN/IEC 61709; 40 °C)	> 60.9 years	

[1)] Wiring rules

Note the wiring rules (Page 42).

[2)] Degree of protection

The degree of protection was not examined in the context of FM certification.

7.5 Mechanical stability (in operation)

Device	IEC 60068-2-27 shock	IEC 60068-2-6 vibration
	15 g, 11 ms duration 6 shocks per axis	**10 - 58 Hz: 0.075 mm 85 - 150 Hz: 1 g 1 octave/min, 20 sweeps**
SCALANCE XCH108PoE	●	●
SCALANCE XCM108PoE	●	●

7.6 Resistance to harmful gases according to ISA-71.04

The devices listed in the scope of validity meet the following requirements regarding resistance to harmful gases:

Corrosive gases as airborne contaminants Reactive species H_2S and SO_2	ISA-71.04 severity level	G1, G2, G3 RH ≤ 75%, no condensation
	Test according to	IEC 60068-2-42 (SO_2 10ppm)
		IEC 60068-2-43 (H_2S 1ppm)

7.7 Dependency between SFP transceivers, installation position and ambient temperature during operation (derating)

The following table shows the dependencies between SFP transceivers used, possible installation positions and the maximum ambient temperature during operation:

SFP transceivers			**SCALANCE XCH-100/XCM-100 with SFP transceiver slots**	
Group	**Type**	**Article number**	**Installation position**	**Maximum ambient temperature**
Group 1	SFP992-1	6GK5 992-1AL00-8AA0	Horizontal/other	60 °C/50 °C
	SFP992-1 (C)	6GK5 992-1AL00-8FA0		
	SFP992-1LD	6GK5 992-1AM00-8AA0		
	SFP992-1LD (C)	6GK5 992-1AM00-8FA0		
Group 2	SFP992-1+	6GK5 992-1AG00-8AA0		
	SFP992-1LD+	6GK5 992-1AM30-8AA0		
	SFP992-1LH	6GK5 992-1AN00-8AA0		
	SFP992-1LH+	6GK5 992-1AP00-8AA0		
	SFP992-1ELH	6GK5 992-1AQ00-8AA0		
	SFP992-1BXMT	6GK5 992-1AL00-8TA0		
	SFP992-1BXMR	6GK5 992-1AL00-8RA0		
	SFP992-1BX10T	6GK5 992-1AM00-8TA0		
	SFP992-1BX10R	6GK5 992-1AM00-8RA0		

SFP transceivers			SCALANCE XCH-100/XCM-100 with SFP transceiver slots	
Group	**Type**	**Article number**	**Installation position**	**Maximum ambient temperature**
Group 3	SFP993-1	6GK5 993-1AT00-8AA0	Horizontal, other	50 °C
	SFP993-1LD	6GK5 993-1AU00-8AA0		
Group 4	SFP993-1LH	6GK5 993-1AV00-8AA0	Horizontal	40 °C

7.8 Switching properties

Note the following switching properties:

Switching properties	
Aging time	45 seconds
Max. number of learnable MAC addresses	2048
Response to LLDP frames	Blocking
Response to spanning tree BPDU frames	Forwarding
CoS acc. to IEEE 802.1Q	Yes
QoS priority queues	4
IEEE 802.1Q tags (VLAN ID, priority) transparent forwarding	Yes
Maximum frame size	1536 bytes
Forwarding of PRP frames (Parallel Redundancy Protocol)	Yes
Broadcast storm protection	5% broadcast frames

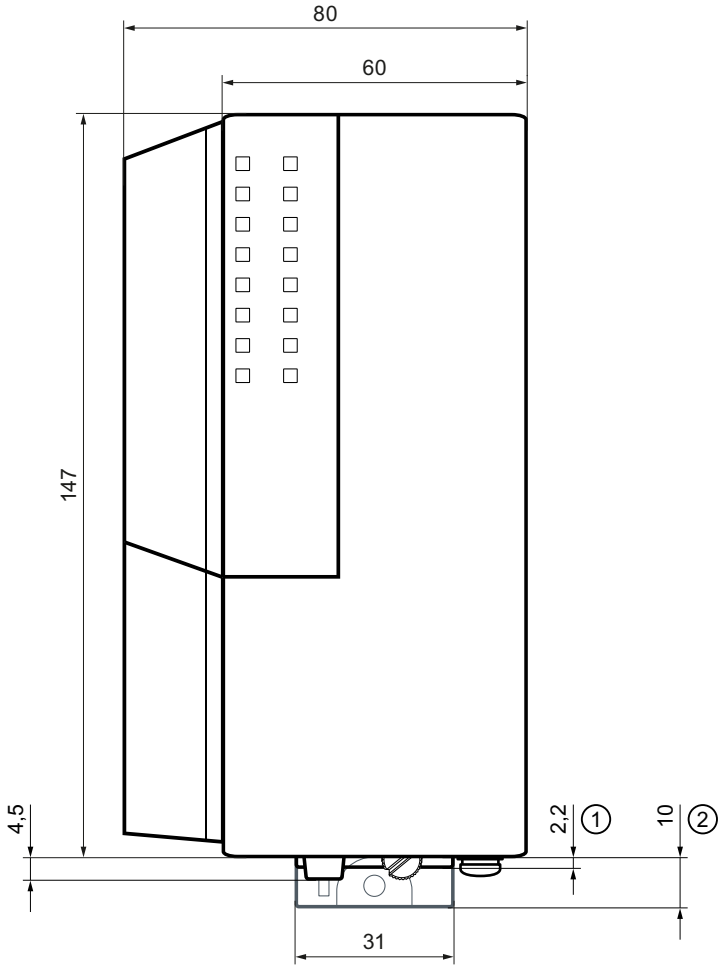
Dimension drawings

8

Note

Dimensions are specified in mm.

Front view

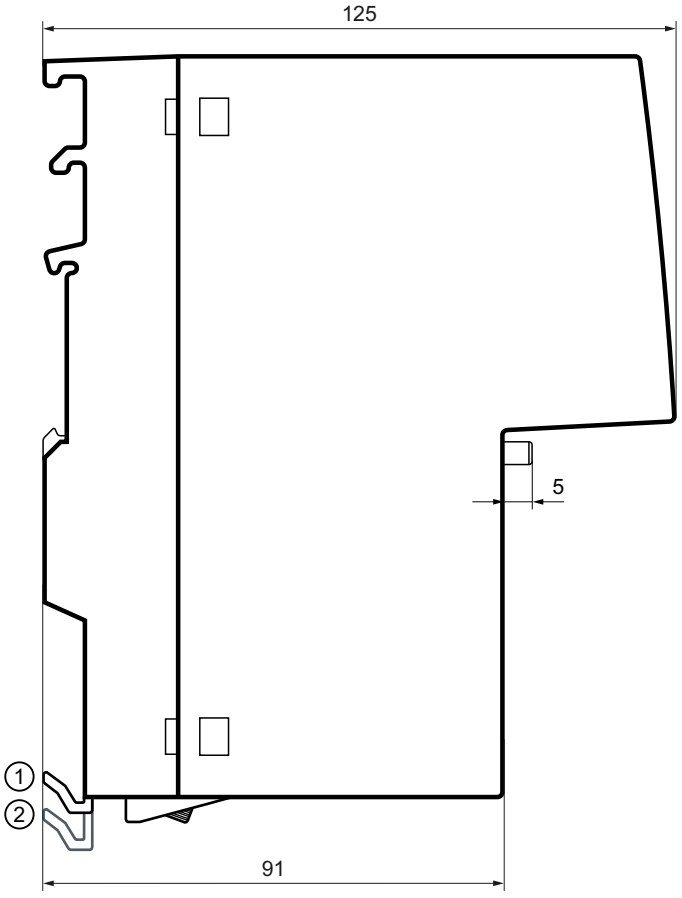


① Securing bar in the rail mounting position

② Securing bar in the wall mounting position (as supplied).

Figure 8-1 Width and height

Side view



① Securing bar in the rail mounting position

② Securing bar in the wall mounting position (as supplied).

Figure 8-2 Depth

Drilling template for wall mounting

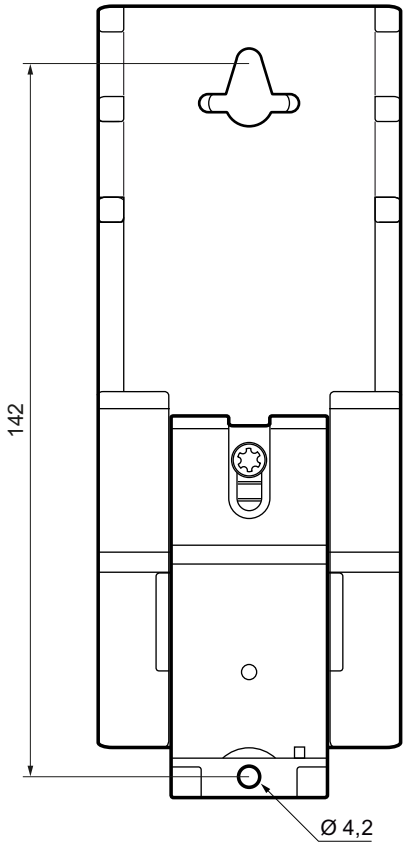


Figure 8-3 Drilling template

Approvals

9

The SIMATIC NET products described in these Operating Instructions have the approvals listed below.

Note

Issued approvals on the type plate of the device

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

Current approvals on the Internet

You will find the current approvals for the product on the Internet pages of Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/15273/cert).

Notes for the manufacturers of machines

This product is not a machine in the sense of the EC Machinery Directive or the Supply of Machinery (Safety) Regulations (UK).

There is therefore no declaration of conformity relating to the EC Machinery Directive 2006/42/EEC or the Supply of Machinery (Safety) Regulations 2008 (UK) for this product.

If the product is part of the equipment of a machine, it must be included in the procedure for obtaining the EU/UK conformity assessment by the manufacturer of the machine.

Machinery directive

The product is a component in compliance with the EC Machinery Directive 2006/42/EEC and the Supply of Machinery (Safety) Regulations 2008 (UK).

According to the Machinery Directive respectively the Supply of Machinery (Safety) Regulations (UK), we are obliged to point out that the product described is intended solely for installation in a machine.

Before the final product can be put into operation, it must be tested to ensure that it conforms with the Machinery Directive 2006/42/EEC and the Supply of Machinery (Safety) Regulations 2008 (UK).

EC Declaration of Conformity

CE

The SIMATIC NET products described in these operating instructions meet the requirements and safety objectives of the following EC directives and comply with the harmonized

European standards (EN) which are published in the official documentation of the European Union and here.

- **2014/34/EU (ATEX explosion protection directive)**
  Directive of the European Parliament and the Council of 26 February 2014 on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres, official journal of the EU L96, 29/03/2014, pages. 309-356
- **2014/30/EU (EMC)**
  EMC directive of the European Parliament and of the Council of February 26, 2014 on the approximation of the laws of the member states relating to electromagnetic compatibility; official journal of the EU L96, 29/03/2014, pages. 79-106
- **2011/65/EU (RoHS)**
  Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, official journal of the EC L174, 01/07/2011, pages 88-110

You will find the EC Declaration of Conformity for these products on the Internet pages of Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/15273/cert).

The EC Declaration of Conformity is available for all responsible authorities at:

Siemens Aktiengesellschaft

Digital Industries
DE-76181 Karlsruhe
Germany

UK Declaration of Conformity

UK CA

The UK declaration of conformity is available to all responsible authorities at:

Siemens Aktiengesellschaft
Digital Industries
Process Automation
DE-76181 Karlsruhe
Germany

Importer UK:

Siemens plc,
Manchester M20 2UR

You can find the current UK Declaration of Conformity for these products on the Internet pages under Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/15273/cert).

The SIMATIC NET products described in this document meet the requirements of the following directives:

- UKEX Regulation
  SI 2016/1107 Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016, and related amendments
- EMC Regulation
  SI 2016/1091 Electromagnetic Compatibility Regulations 2016, and related amendments
- RoHS Regulation
  SI 2012/3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012, and related amendments

ATEX, IECEx, UKEX and CCC Ex certification

⚠ WARNING

Risk of explosion in hazardous areas

When using SIMATIC NET products in hazardous area zone 2, make absolutely sure that the associated conditions in the following document are adhered to:

"SIMATIC NET Product Information Use of subassemblies/modules in a Zone 2 Hazardous Area".

You will find this document

- on the data medium that ships with some devices.
- on the Internet pages under Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/view/78381013).

Enter the document identification number "C234" as the search term.

The markings of the electrical devices are:

II 3 G Ex ec IIC T4 Gc
DEKRA 18ATEX0025 X
IECEx DEK 18.0017X

II 3 G Ex ec IIC T4 Gc
DEKRA 21UKEX0001 X

Importer UK:
Siemens plc,
Manchester, M20 2UR, UK

(Ex ec IIC T4 Gc, not on the nameplate)

The products meet the requirements of the following standards:

- EN/IEC 60079-7, GB/T 3836.3
- EN IEC/IEC 60079-0, GB/T 3836.1

You will find the current versions of the standards in the currently valid certificates.

Note for devices with CLASS 1 LASER

Important note on products certified according to Type Examination Certificate KEMA 07ATEX0145 X as of Issue 95 / DEKRA 18ATEX0025 X and IECEx Certificate of Conformity DEK 14.0025X as of Issue 43 / DEK 18.0017X and containing Class 1 optical radiation sources.

Note

CLASS 1 LASER

The device contains optical radiation sources which comply with the limits of Class 1 according to IEC 60825-1. Fiber-optic cables connected to these optical radiation sources may therefore be routed either to or through hazardous areas requiring Category 2G, 3G, 2D or 3D equipment.

EMC (electromagnetic compatibility)

The SIMATIC NET products described in these operating instructions meet the electromagnetic compatibility requirements according to the EU Directive 2014/30/EU as well as the UK-Regulation SI 2016/1091 and their associated amendments.

Applied standards:

- EN 61000-6-2 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN 61000-6-4 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

You will find the current versions of the standards in the currently valid EC/UK Declaration of Conformity.

RoHS

The SIMATIC NET products described in these operating instructions meet the requirements on the restriction of the use of certain hazardous substances in electrical and electronic equipment according to the EU Directive 2011/65/EU as well as the UK-Regulation SI 2012/3032 and their associated amendments.

Applied standard:

- EN IEC 63000

FM

The product meets the requirements of the standards:

- Factory Mutual Approval Standard Class Number 3611
- FM Hazardous (Classified) Location Electrical Equipment:
  Non Incendive / Class I / Division 2 / Groups A,B,C,D / T4 and
  Non Incendive / Class I / Zone 2 / Group IIC / T4

cULus approval PROG. CNTLR.



cULus Listed PROG. CNTLR.

Underwriters Laboratories Inc. complying with

- UL 61010-1
- CSA 22.2 No. 61010-1
- UL 61010-2-201
- CSA C22.2 No. 61010-2-201

Report no. E85972

cULus Approval Hazardous Location



cULus Listed PROG. CNTLR. FOR HAZ. LOC.

Underwriters Laboratories Inc. complying with

- UL 121201 (Programmable Controllers)
- CSA C22.2 No. 213

Approved for use in
Cl. 1, Div. 2, GP A, B, C, D T4
Cl. 1, Zone 2, GP IIC T4

Report no. E223122

E1

The device meets the requirements of the ECE R10 directive.

Test number 10 R - 057876

Note for Australia - RCM

The product meets the requirements of the RCM standard.

Applied standards:

- AS/NZS CISPR11 (Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement).
- EN 61000-6-4 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

You will find the current versions of the standards in the currently valid RCM SDoCs (Self-Declaration of Conformity).

MSIP 요구사항 - For Korea only

A급 기기(업무용 방송통신기자재)

이 기기는 업무용(A급) 전자파 적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 외의 지역에서 사용하는것을 목적으로 합니다.

Marking for the customs union

EAC (Eurasian Conformity)

Eurasian Economic Union of Russia, Belarus, Armenia, Kazakhstan and Kyrgyzstan

Declaration of conformity according to the technical regulations of the customs union (TR ZU)

FDA and IEC marks

The following devices meet the FDA and IEC requirements listed below:

Device	Article number	CLASS 1 LASER Product
SCALANCE XCH108PoE	6GK5108-2RS00-2FC2	●
SCALANCE XCM108PoE	6GK5108-2RS00-2AC2	●
	6GK5108-0PA00-2AC2	-
	6GK5108-0RA00-2AC2	-



Figure 9-1 FDA and IEC approvals

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Installation guidelines

The devices meet the requirements if you adhere to the installation and safety instructions contained in this documentation and in the following documentation when installing and operating the devices.

- "Industrial Ethernet / PROFINET Industrial Ethernet" System Manual (https://support.industry.siemens.com/cs/ww/en/view/27069465)
- "Industrial Ethernet / PROFINET - Passive Network Components" System Manual (https://support.industry.siemens.com/cs/ww/en/view/84922825)
- "EMC Installation Guidelines" configuration manual (https://support.industry.siemens.com/cs/ww/en/view/60612658)

⚠ WARNING

Personal injury and property damage can occur

The installation of expansions that are not approved for SIMATIC NET products or their target systems may violate the requirements and regulations for safety and electromagnetic compatibility.

Only use expansions that are approved for the system.

Note

The test was performed with a device and a connected communications partner that also meets the requirements of the standards listed above.

When operating the device with a communications partner that does not comply with these standards, adherence to the corresponding values cannot be guaranteed.

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